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Economic Implications of Lifting Sanctions on Iran



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WORLD BANK MIDDLE EAST AND NORTH AFRICA REGION
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Economic Implications of Lifting Sanctions on Iran

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HIGHLIGHTS

Normally a quiet month before the August break, July has been unusually active for the global economy this year. First, there was Greece's debt crisis, a referendum on the terms of a bailout, and ensuing negotiations over debt relief. Next, China's stock market plunged by about 30 percent from its mid-June peak, stoking fears that the growth slowdown may be sharper than expected. Finally, Iran and the Permanent Members of the UN Security Council and Germany (P5+1) reached a deal on July 14, 2015 that limits Iranian nuclear activity in return for lifting all international sanctions that were placed on Iran (Box 1). This issue of the MENA Quarterly Economic Brief (QEB) traces the economic effects of the latter development—removing sanctions on Iran—on the world oil market, on Iran's trading partners, and on the Iranian economy.

The most significant change will be Iran's return to the oil market. The World Bank estimates that the eventual addition of one million barrels a day (mb/d) from Iran, assuming no strategic response from other oil exporters, would lower oil prices by 14 percent or \$10 per barrel in 2016. Oil importers, including the European Union (EU) and United States (US), will gain while oil exporters, especially the Gulf countries, will lose.

Secondly, once sanctions and restrictions on financial transactions are relaxed, Iran's trade, which had both declined in absolute terms and shifted away from Europe towards Asia and the Middle East, will expand. The World Bank estimates that sanctions reduced Iranian exports by \$17.1 billion during 2012-14, equivalent to 13.5 percent of total exports in that period. Our analysis suggests that the countries that will see the largest post-sanctions increase in trade with Iran include Britain, China, India, Turkey, and Saudi Arabia.

Thirdly, the Iranian economy, which was in recession for two years, will receive a major boost from increased oil revenues—conservatively estimated at about \$15 billion in the first year—and lower trade costs. In addition, there are estimates that Iran holds about \$107 billion worth of frozen assets (including LCs and oil exports earnings) overseas, of which an estimated \$29 billion will be released immediately after sanctions removal. Finally, foreign direct investment (FDI), which had declined by billions of dollars following the tightening of sanctions in 2012, is expected to pick up. There has already been some interest shown by foreign multinationals since the April 2015 framework agreement, especially in the oil and gas sectors. The World Bank expects FDI to eventually increase to about \$3 - 3.5 billion in a couple of years, double the level in 2015 but still below the peak in 2003.

In addition to slowing down, the Iranian economy underwent a structural shift during the sanctions era, with the oil, automobile, construction and financial sectors declining the most. As sanctions are lifted, these sectors are likely to see an expansion of output.

All these changes to the economy involve shifting resources from one use to another. The most

significant aspect of sanctions relief is that it enables resources to be shifted to where they are more productive, that is, for the economy to produce more efficiently. For example, Iran can now produce and export those goods in which it has a comparative advantage, and import goods in which it does not. In short, sanctions relief can be thought of as an economic windfall to the Iranian economy. The World Bank estimates the size of this windfall as a welfare gain of \$13 billion or 2.8 percent of current welfare. Like all windfalls, however, they have to be properly managed in order that they sustainably benefit the population. In particular, as oil revenues enter the economy, the exchange rate will appreciate. While this will make imports cheaper, it will also make non-oil exports less competitive. During the early 2000s, when oil prices were soaring (and sanctions were not restrictive), Iran experienced this phenomenon. Many of the exporting industries suffered. In fact, the only ones that made progress were the petrochemicals and chemicals industries, which received massive subsidies, including subsidies on their consumption of fuel. With the lifting of sanctions, the government of Iran has the opportunity to put in place a policy framework that will enable the economy to make maximum use of this windfall and put the economy on a path of sustained economic growth.

Box 1. Timeline of international sanctions on Iran

1979 November - US imposes the first sanctions on Iran, banning imports from Iran and freezing \$12bn in assets.

1995 March - US companies are prohibited from investing in Iranian oil and gas and trading with Iran.

1996 April - Congress passes a law requiring the US government to impose sanctions on foreign firms investing more than \$20m a year in the energy sector.

2006 December - The UN Security Council imposes sanctions on Iran's trade in nuclear-related materials and technology and freezes the assets of individuals and companies.

2007 October - US announces sweeping new sanctions against Iran, the toughest since 1979. UN Security Council tightens economic and trade sanctions on Tehran.

2010 June - UN Security Council imposes a fourth round of sanctions against Iran over its nuclear program, including tighter financial curbs and an expanded arms sanctions.

2011 May and December – the assets of 243 Iranian entities and around 40 more individuals are frozen and visa bans imposed.

2012 January - US imposes sanctions on Iran's central bank, for its oil export profits. Iranian threatens to block the transport of oil through the Strait of Hormuz.

2012 June - US bans the world's banks from completing oil transactions with Iran, and exempts seven major customers India, South Korea, Malaysia, South Africa, Sri Lanka, Taiwan and Turkey - from economic sanctions in return for their cutting imports of Iranian oil.

2012 July - European Union boycott of Iranian oil exports comes into effect.

2012 October - Iran's currency, the Rial, falls to a record low against the US dollar, losing about 50% of its value since 2011. EU countries announce further sanctions against Iran focusing on banks, trade and gas imports and freezing assets of individuals and companies that supply Iran with technology.

2013 November - Iran agrees to curb uranium enrichment above 5% and give UN inspectors better access in return for about \$7 billion in sanctions relief at talks with the P5+1 group - US, Britain, Russia, China, France and Germany - in Geneva.

2015 April - Iran and the EU reach a nuclear framework agreement and set for a final agreement in July 2015 with attendant lifting of the EU and the US sanctions on Iran.

2015 July 14th - The P5+1 group reach an agreement with Iran on limiting Iranian nuclear activity in return for the lifting of sanctions.

2015 July 20th - The U.N. Security Council unanimously approved the July 14th agreement.

Source: International media sources.

GLOBAL EFFECTS

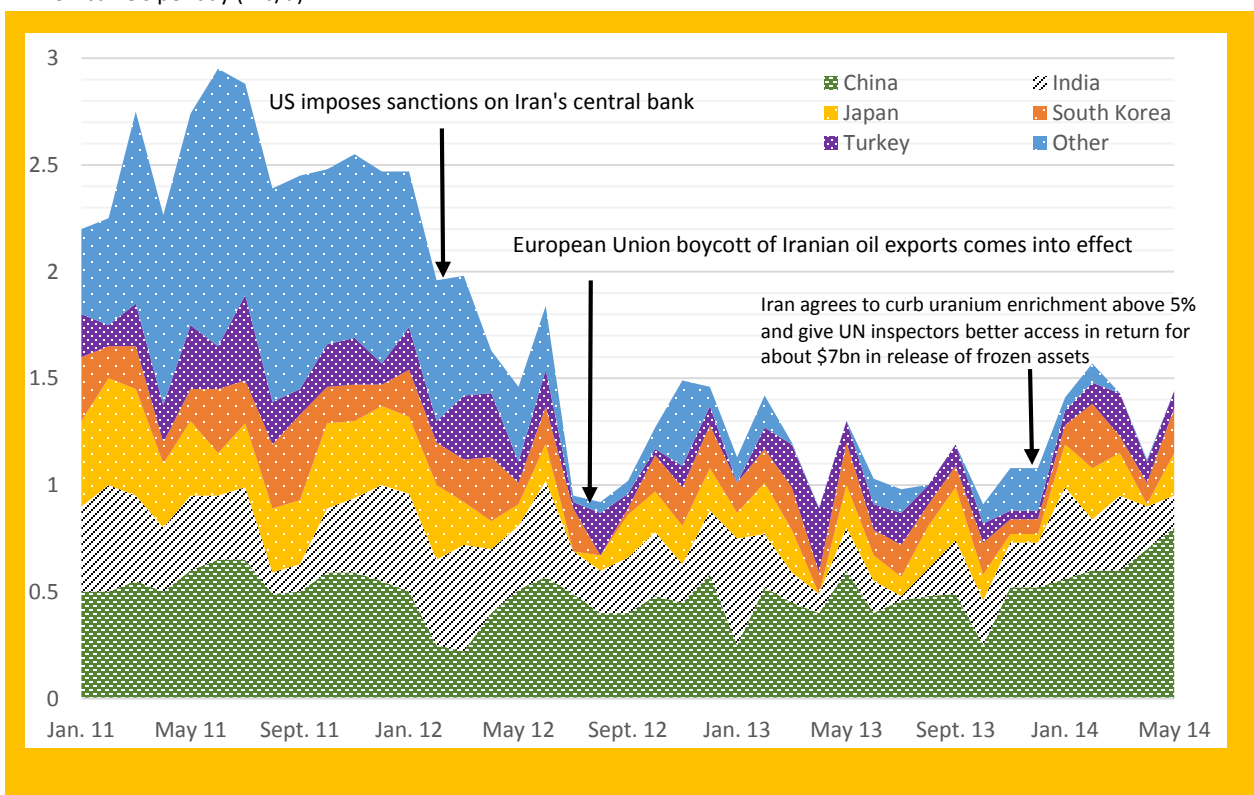
The removal of sanctions following the nuclear deal reached on July 14, 2015, and the opening up of the Iranian economy will impact the global economy through two channels: (i) world oil prices; and (ii) bilateral trade.

Oil Prices

The tightening of sanctions in 2012, which banned the purchase and transport of Iranian crude oil and natural gas to the EU, clearly affected the oil sector in Iran. In one year, Iran's oil exports declined from 2.8 mb/d in July 2011 to below 1 mb/d in July 2012 (Figure 1). Half of the reduction in oil exports was from European companies' boycott of Iran's oil. The other half was from a decrease in purchases by Asian countries (See Box 1). The ban on European companies' insuring Iranian oil shipments impeded sales of Iranian crude to all of its customers.

Figure 1. Iran exports of crude oil and condensates

Million barrels per day (mb/d)



Source: US Energy Information Administration (EIA).

Since 2014, and with partial sanctions relief, oil exports have recovered slightly as non-EU countries found alternatives to insurance coverage by EU companies. Some Asian countries issued sovereign guarantees for vessels carrying Iranian crude oil and condensate. China and

India also began to accept Iranian guarantees on the vessels that shipped oil to their refineries. Today, the largest buyers of Iranian crude and condensate are China, India, Japan, South Korea, and Turkey. Nonetheless, Iranian exports failed to reach pre-sanctions levels (Figure 1).

With the nuclear deal and lifting of sanctions, Iran could gradually step up oil exports. While it will take time to resume oil production because of under investment in the sector, most observers predict that in 8 to 12 months, Iran's crude oil exports can reach pre-2012 levels. This means an extra 1 mb/d of crude oil hitting the oil market. Simulations with a multi-country, multi-sector computable general equilibrium (CGE) model show that, without any policy interventions by OPEC members and other oil producers, international oil prices will drop by 14 percent (See Annex 1).¹ Assuming that the futures oil price for delivery in December 2015 stands at \$66 per barrel, this will reduce oil prices to an estimated \$56. The World Bank estimates that a drop of \$10 in oil prices could worsen the fiscal balances of major oil exporters in the MENA region, to the tune of 5 percent of GDP in Saudi Arabia and 10 percent of GDP in Libya. This amounts to a loss of \$40 billion for Saudi Arabia and \$5 billion for Libya in annual oil export revenues. Iran will be the least affected oil-exporting country as the additional revenues from increased exports of oil will outweigh the negative impacts of falling oil prices. The current account balances of all MENA oil exporters will also worsen. Meanwhile, oil importers will benefit from the reduction in world oil prices. Being the largest oil importers, the EU and US will gain the most in absolute terms, although not much as a share of their GDP. Countries with significant petrochemicals industries, including the US, Russia and Israel, as well as those in the EU, will see an increase in their production (Ianchovichina et al., 2015).

While the resumption of Iran's oil exports to pre-2012 levels will take time, the immediate reaction of the oil market could be to take into account Iran's 30-40 million barrels of stockpiled crude oil and condensate stored in the Persian Gulf.² Many observers believe that Iran could immediately export about 400,000 – 500,000 barrels per day from this stockpile - which would then last for about three months - and get ready in a few months to increase oil exports substantially. Thus, the short term impacts on oil prices will still be a decline but less than what is estimated when Iran's exports get back to full throttle.

Bilateral Trade

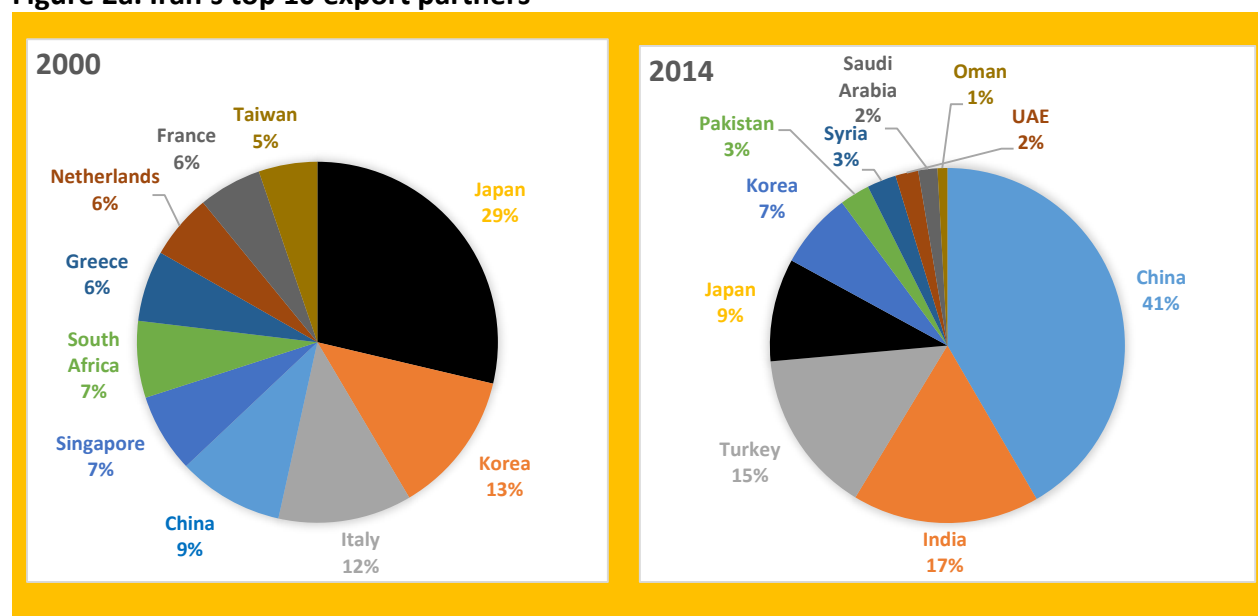
During the first half of the 2000s, European countries including Germany, France, Italy and Greece were Iran's major trading partners, accounting for more than one third of Iran's total exports and imports. This share declined significantly after 2005 under former President Ahmadinejad's

¹ Brent crude oil prices dropped by 2 percent after the announcement of the nuclear deal on July 14th and reached \$57.43 a barrel.

² Thomson – Reuters estimate.

foreign policy of “looking to the East”. In 2011, China followed by India and South Korea were Iran’s major trading partners, while shares of Italy, Greece and Spain in total trade declined sharply. The tightening of sanctions in 2012 shifted the direction of Iran’s trade further towards Asia, particularly China and India, as well as Turkey and the United Arab Emirates (UAE) (Figure 2a and 2b). Iran’s exports to the EU were halted in 2012-14, and imports declined by more than 50 percent during the same period. Trade with the U.S. was at minimum levels during 2012-14. Sanctions prohibited almost all US trade with Iran, with exceptions for humanitarian activity including export of medical and agricultural equipment, humanitarian assistance and trade in informational materials. More than half of Iran’s exports in 2014 went to China and India and about three-quarters of its imports were from UAE and China (Figure 2a and 2b). But even trade with Asian countries showed a slowdown after 2012 due to the sanctions, which limited trade and financial transactions with these countries.

Figure 2a. Iran’s top 10 export partners

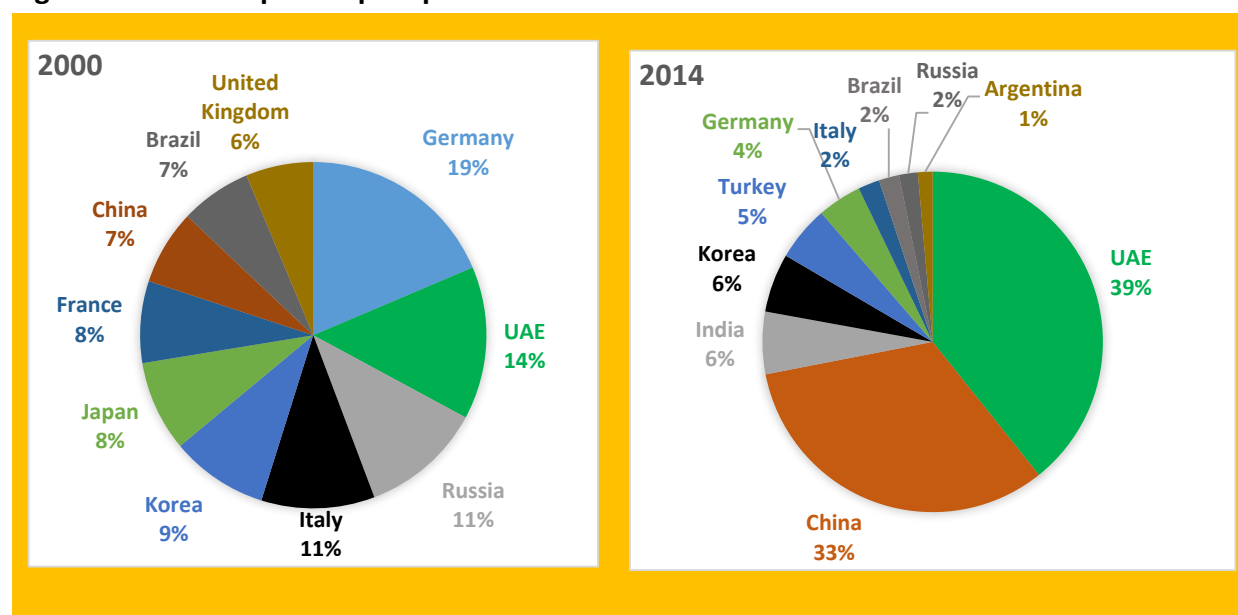


Source: IMF Direction of Trade Statistics.

Less is known about the quantitative magnitude of the effect of international sanctions on bilateral trade between Iran and its trading partners. For this reason, the analysis of this section uses a trade model to estimate the impact of sanctions and uses the results to calculate what Iran would earn in exports revenues once these sanctions are removed. A modified Gravity Model of Trade is used to predict trade flows across Iran and its major trading partners over the period of 2000-2014 (See Annex 2). The estimated coefficients on GNPs can be interpreted as the trade elasticity of growth, and the coefficients on the dummy variables could be interpreted as the percentage shift in exports when the tighter sanctions were in effect (in 2012, 2013 and 2014). These estimates have the expected signs and are significant at the 95 percent confidence level

or higher, with exceptions for some countries (See Annex 2 for trade models and estimation results). As expected, sanctions had a large impact on bilateral trade flows, consistently reducing them over time.³

Figure 2b. Iran's top 10 import partners



Source: IMF Direction of Trade Statistics.

The findings of the analysis indicate that the tightening of US and EU sanctions led to a loss of \$17.1 billion in export revenues during 2012-14, equivalent to 13.5 percent of total export earnings and about 4.5 percent of its GDP (Table 1). In particular, Iran lost approximately \$7.5 billion in export earnings to Japan, followed by \$4.4 billion to South Korea and \$3.9 billion in total exports to European countries. In Europe, exports to Italy were hardest hit, losing \$2.9 billion followed by Germany and France. Only a few countries in the wider MENA region, Central Asia and South Asia saw their trade altered. In particular, trade with Morocco, Qatar and Tunisia slowed down during the same period. The coefficients of the independent variable (log GNPs) in the export models represent the income elasticity of exports and can be used to estimate the volume of bilateral trade in any pair of countries. The income elasticities of exports have the expected sign and are statistically significant in all cases except for Morocco (See Annex Table 1). For Jordan and the US, the elasticities are not significant at the 90 percent level. Of the 28 countries, 4 countries have point estimate elasticities close to or greater than one. For these

³ The model used here is described in detail in Gary Clyde Hufbauer et al. (1997). The model includes other variables that might be expected to affect trade but for the purpose of this analysis, we dropped the variable “distance” and “language” because of lack of data and also they were not significant in most cases. The independent variables are logarithm (GNP_i*GNP_j) Gross National Products (income here) for every pair of countries, a set of dummy variables are used to take into account the existence of sanctions in 2012, 13 and 14, and the dependent variable is the logarithm of exports between the two countries expressed in current US dollars of country i and country j. The model is estimated in a log-linear form.

countries, exports will significantly grow faster than changes in national income. For the rest of the countries, the estimated elasticities range between 0.2 and 0.8.

Table 1. Iran's exports loss due to international sanctions during 2012-14

Global	Exports in 2011 US\$ million	Estimated coefficient on sanctions	Estimated loss of exports in 2012-14 US\$ million
Japan	11,688	-0.5	7,542
South Korea	10,303	-0.3	4,403
Italy	6,762	-2.1	2,899
Singapore	2,022	-3.8	979
Germany	907	-0.8	535
France	2,225	-3.6	214
US	1	-2.8	4
UK	525	-1.1	165
Netherlands	2,000	-3.4	307
MENA region			
Morocco	10	-5.0	3
Qatar	58	-0.6	57
Tunisia	8	-0.7	7
Total			17,114

Source: Mottaghi (2015). The percentage change in trade is calculated by taking the exponent of the coefficient value for the dummy and subtracting 1. For example the coefficient on sanctions for Japan is -0.5. The value of the natural number e taken to the exponent -0.5 is 0.60. This indicates that bilateral trade was only 0.61 times as large, or 40 percent lower, between the two countries due to tightening of sanctions than it would have been if the sanctions were not in place.

if sanctions are removed and trade picks up, World Bank estimates show that exports will increase substantially for those trading partners with an income elasticity of exports greater than one (See Annex Table 1). These countries include Britain, China, India, Turkey, and Saudi Arabia. A one percent increase in national income will expand exports to these countries by more than 1 percent. These could likely include a surge in oil and gas exports to India and China (they have also made major investments in Iran). A resumption of trade with Britain will also include a reopening of oil and gas exports which was halted previously. Trade with Russia, South Korea, Tajikistan, Pakistan, and Hong Kong will likely increase post-sanctions, but by less than the magnitude of the first group, since their income elasticities of exports are between 0.7 and 0.8. Elasticities for the rest of the countries including France, Germany, Italy and UAE are within the range of 0.2 - 0.6, meaning that trade with these countries will increase, but with a lesser magnitude than the other two groups, after sanctions are removed.

The UAE, China, India, South Korea and Turkey were the top 5 import partners of Iran in 2013, while the US and European countries' shares (except for Germany) were literally zero. The findings of this study show that trade could shift towards the latter countries in the post-sanctions era. The coefficients on the dummy variables for European countries (see Annex Table 2 for the list of countries) have a negative sign and are statistically significant, indicating that sanctions had reduced imports from these countries. If the Iranian economy opens up and trade resumes, imports will likely shift towards the US, Germany, Netherlands, and in Asia towards South Korea, China, and Singapore, all with income elasticities of imports between 0.5-0.8 compared to the rest of the countries on our list with elasticities below 0.3, except for Hong Kong with an income elasticity of 1.4. Within the wider MENA region (see Annex Table 2 for a list of countries), imports will likely increase from UAE, Turkey, Oman, and Pakistan, all having income elasticities of imports close to or greater than 1⁴. Expansion in exports and imports could also affect Iran's bilateral trading partners' economies, particularly UAE, positively and could boost their growth.

Foreign Direct Investment

Prior to 2011, FDI to the Iranian economy averaged about \$4 billion a year in the form of greenfield investment. The extractive sector (oil and gas) and manufacturing were the two major sectors receiving large amounts of FDI. Within these, oil and gas industries attracted more than half of total FDI inflows, followed by metal and manufacturing sectors (Figure 3). However, in terms of job creation, of the 42,000 jobs created during 2003-15, only 6,000 came from the oil and gas sector and the rest were created in the manufacturing, metal and services sectors. This is not surprising as the oil and gas sector is highly capital intensive compared to the other sectors. Data on greenfield FDI inflows to Iran shows that during 2011, foreign investment in real estate created 10 times more jobs than FDI inflows in the extractive industry.

The tightening of international sanctions adversely affected FDI inflows to Iran, particularly in the oil sector. While FDI inflows to Iran declined sharply following the financial crisis in 2008, Iran still received about \$4 billion in 2010 mostly in the manufacturing and oil sectors. Estimates by *fDi market* show that greenfield FDI inflows to Iran came to a complete halt in 2012, after sanctions were intensified, and only resumed slowly in 2015 (Figure 3).

The decline in foreign investment hurt the oil industry the most, as sanctions cut Iran's access to technology, knowhow and investment. The production capacity of oil and gas fields became restricted. There are rough estimates that Iran lost billions of dollars in investment in the sector

⁴ To the extent that imports from the UAE and Turkey are final and some intermediate goods, but those from the US and EU are machinery and technological equipment, and the need for technological upgrading is great, the shift to trade with the west could accelerate faster.

following the tightening of the sanctions in 2012 as international firms pulled out from some of their Iran projects, declined to make further investments, or resold their investments to other companies. To develop its oil fields, Iran has had to depend on local and a few Asian companies. Chinese and Russian companies are the only ones directly or indirectly involved with developing oil fields. These countries, however, have reduced their investment due to restrictions on trade with Iran (Figure 3).

Figure 3. FDI inflows to Iran and by sector



Source: fDi Market and World Bank. Data record greenfield FDI, not M&As and other FDI flows.

Since the nuclear framework agreement of April 2, 2015, there has been renewed interest from foreign multinationals seeking to invest in the oil and gas sector. Iranian officials estimate that the oil and gas sector needs \$130 - 145 billion in new investment by 2020 to keep oil production capacity from falling, of which the large South Pars gas field alone requires \$100 billion. The World Bank estimates that FDI inflows could range between about \$3 - 3.2 billion in 2016 and 2017 respectively, if international sanctions are lifted and economic growth rebounds to 5.5 percent in 2017 (Figure 3).⁵ This is twice as much FDI inflows as in 2015 but one-third of the peak in 2003. India, China and Russia, which were the top 3 investors in the 2000s, are expected to be joined by the US and some European countries, particularly Italy, and the UAE. Most of the FDI inflows are expected to go into the oil and energy sector, which sorely needs it, followed by the automobile and pharmaceutical industries in the manufacturing sector.

NATIONAL EFFECTS

The Macro-economy

Until last year, the Iranian economy had been in recession for more than two years. Growth dropped to negative 6.8 and 1.9 percent in 2012 and 2013, respectively. Although the economy rebounded in 2014, the level of GDP was the same as in 2009 (Figure 4). The largest slowdown was observed in the oil sector, which has been under tight sanctions since 2012, where production and exports declined dramatically over these two years. In FY 2010/11, prior to the sanctions, oil production was close to 3.7 mb/d of which 2 mb/d were exported. In 2012/13, soon after sanctions were tightened, both crude oil production and exports dropped by 1 mb/d. The construction sector and auto industry, the main sectors (along with services) for job creation, also contracted sharply. Production in the auto industry declined by half and in the construction sector by 3.6 and 3.1 percent in 2012 and 13, mostly as a result of lower imports of materials and equipment and also lower investment following a halt in FDI inflows. Demand for construction permits declined by an average 3 percent over this period. While official unemployment rates do not reflect these job losses, unofficial estimates point to an increase by 2 percentage points in the unemployment rate standing at 14 percent in 2014.

The new administration has taken some steps recently to tighten fiscal and monetary policies, lowering inflation, while boosting growth through capital investment. Central Bank data show that growth in the third quarter of 2014/15 (September 21-November 21, fiscal year ended March 21st 2015) has reached 3 percent (compared to -1.8 percent in the same quarter of last year) driven by a pickup in activity in the manufacturing, mining and services sectors (Figure 4). Despite low oil prices and oil production, the real GDP growth rate is estimated at about 3 percent

⁵ FDI ratio to GDP remains constant throughout the projection period.

for 2014/15 and this year as a whole. Inflation has been halved to 14.3 percent in first-quarter 2015 compared to 42 percent in the same period in 2013, thanks to tightening of monetary policy and stabilizing the value of the national currency in the black market. Notwithstanding these efforts, the government's macroeconomic policy changes frequently and is often difficult to predict, putting private actors at a disadvantage. As a result, growth has remained below potential. This has contributed to the already high unemployment figures (Figure 4).

Figure 4. Iran's macroeconomic status



Source: World Bank, Statista and Central Bank of Iran. Fiscal year ending March 21.

With the removal of sanctions following a nuclear deal, the Iranian economy is expected to expand significantly in 2016 and the following year, through increased oil production and exports,

auto production, and expansion of trade (See Annex 3 for policies post-sanctions). Assuming sound macroeconomic policies are in place, this could boost economic growth. It will also create ample fiscal space (up to \$15 billion annually in oil export earnings, equivalent to 3.5 percent of GDP – see page 4) for the government to take on investment projects. The World Bank’s estimates show that in an upside scenario of complete removal of sanctions, real GDP growth could reach 5.1 and 5.5 percent in 2016/17 and 2017/18 respectively, approaching that of the pre-sanction period (Table 2).

Table 2. Real GDP growth, percent

Fiscal year	Estimates					Projections		
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
GDP growth	5.9	3.0	-6.8	-1.9	3.0	3.3	5.1	5.5

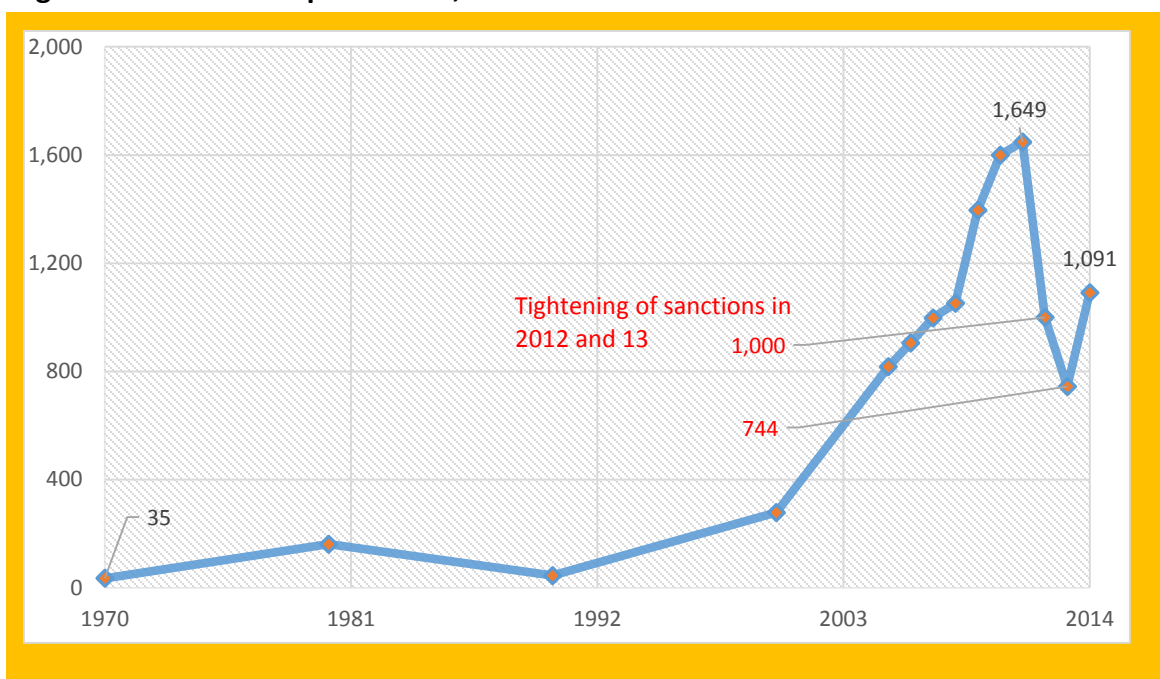
Source: Mottaghi (2015a). Fiscal year ending March 21st.

Economic Sectors

While all sectors could benefit from an opening up of the economy, the automotive and pharmaceutical industries are expected to get a significant boost. Iran’s car industry, comprising the major companies of the Bahman Group, Iran Khodro and Saipa, is one of the largest industrial sectors, accounting for more than 10 percent of GDP. After the tightening of sanctions in 2012, the production of cars declined sharply and reached 700,000 cars annually compared to 1.6 million prior to the sanctions (Figure 5). The main reasons for the slowdown in the auto industry were the depreciation of the national currency, which increased the cost of imported parts and components, and the ban on imports of material and equipment. Car sales revenues fell by half, costing the industry billions of dollars annually. Data are not available but estimates show that the decline in auto production led to layoffs in this sector, which accounts for 4 percent of the workforce and is considered one of the main job-creating sectors in Iran.

If sanctions are lifted and international companies resume cooperation with Iran, the expectation is that automobile production will get a boost and reach somewhere close to its pre-sanctions level within the next two years. Production in the pharmaceutical industries will also rise, as these firms will now be able to import parts and machinery that have been subject to sanctions in the past two years. It is expected that pharmaceutical exports to Europe, which were worth \$2.5 billion prior to 2012, will resume after sanctions are removed. Exports to Asia and Africa have not suffered a substantial decline as a result of sanctions, but even exports to these continents are expected to increase with the reduction of restrictions on sea cargo transportation and cargo insurance.

Figure 5. Automobile production, Thousands



Source: International Organization of Motor Vehicle Manufacturers.

The Labor Market

During the sanctions era, the labor market worsened. There are estimates that about 800,000-900,000 Iranians enter the labor market each year.⁶ Even before the 2012 tightening of sanctions, the economy was able to create only 200,000 jobs a year. That number has since declined substantially. As the immediate impact of removing sanctions will be increased production in the oil industry, which employs a negligible share of the Iranian workforce, the demand for labor is unlikely to be directly affected. By contrast, demand for capital will rise; the CGE model estimates that the real price of capital will increase by about 8 percent in the medium term. However, demand for labor will grow through the effects of spending from increased oil revenues, and growth in labor-intensive sectors such as automobiles, pharmaceuticals, construction, tourism, banking and communications. The World Bank estimates that the Iranian economy needs to create five million jobs over the next 5 years, under the assumption of a 5.5 percent GDP growth rate, to be able to keep the unemployment rate at 10 percent. This means an increase of one million jobs every year in an economy that has been creating less than one fifth that amount. As the labor-intensive sectors grow, the unemployment rate should begin to decline and wages rise. Simulations with the CGE model suggest that, in the medium-run, wages

⁶ Statistical Center of Iran and International Sources.

of skilled workers will rise by 2 percent in real terms, and those of unskilled workers by 0.5 percent.

The removal of sanctions could impact the distribution of income through the labor market in different ways. The reintegration of the Iranian economy into world markets could increase the returns to skills and talent and widen income gaps, as has happened in some countries in the process of globalization. There is a possibility that the revival of investment in the non-oil sectors could expand the demand for labor more generally and help raise wage rates relative to returns to capital. Some types of labor may gain and some may lose in relative terms. One key consideration is the relative position of females versus males in the labor market. Women's labor force participation (LFP) rate in Iran has been on a declining trend and their unemployment rates have risen sharply in the past several years (Table 3).

The intensification of sanction in mid-2012 appears to have exacerbated the situation in the labor market for women, while for men the unemployment rate actually declined. This divergence could be due to a variety of factors, including cohort effects that are different for men and women. The greater mobility of men versus women is likely to have played a key role. Sanctions caused closure of many jobs, but they also opened up opportunities in tradable sectors, to which men moved faster. Conversely, women were attracted to job opportunities in the services sector in part because of new technologies that are entering the market, creating jobs matching the skills of educated women more closely.

The economic windfall after removing sanctions could likely cause real exchange rate appreciation (See Box 2), which could put pressure on agriculture and industry and encourage the service sector. This could be disruptive for men who have greater dependency on tradable sectors, while women have been finding better job matches in the service sector. This could likely lead to a surge in female labor force participation (LFP) as their job opportunities expand. This could also help raise incomes of many women with positive effects on household incomes across the board. It is also probable that the kinds of rewarding jobs being created by the economy's reconnection with global markets will require greater skills (e.g., proficiency in a foreign language and familiarity with recent technologies and professional and business practices). In this case, incomes of those in the upper deciles of the expenditure distribution will rise fast. Indeed, this may be inevitable because the only way Iranian workers will be able to compete with their counterparts who lack natural resource rents is to turn their foreign revenues into human capital and gain sufficient productivity advantage.

The overall impact of sanctions removal and the attendant windfall on poverty trends in Iran is expected to be muted or even positive. The rise in the returns to skills is not expected to increase poverty, given that all incomes could rise as the economy improves and that Iran has developed effective social safety nets and poverty-reduction institutions. Moreover, if appropriate policies

are adopted to improve the quality of education and to facilitate access to new skills and information for the population, it will positively impact the distribution of income and reduce poverty.

Table 3. Labor market trends by gender in Iran

	Women					Men				
	2005	2009	2010	2012	2014	2005	2009	2010	2012	2014
Labor Force (millions)	4.8	4.4	4.3	4.0	3.9	18.5	19.4	19.5	19.7	20.0
LFP Rate (%)	17.0	14.5	14.1	12.6	12.0	64.7	62.8	62.1	61.6	62.5
Employed (millions)	4.0	3.7	3.5	3.1	3.1	16.7	17.3	17.2	17.6	18.2
Unemployed (millions)	0.8	0.7	0.9	0.8	0.8	1.9	2.1	2.3	2.1	1.8
Unemployed, 15-24 (millions)	0.5	0.3	0.4	0.3	0.2	0.9	0.9	0.9	0.8	0.5
Unemployment Rate, 15-24 (%)	32.6	32.4	41.3	42.7	43.8	20.4	22.7	25.5	23.4	21.3
Unemployed, 15-29 (millions)	0.7	0.6	0.7	0.6	0.5	1.3	1.4	1.5	1.3	1.0
Unemployment Rate, 15-29 (%)	29.9	31.0	39.7	40.3	40.1	17.8	19.7	21.8	20.9	17.8
Employed in Agriculture (millions)	1.3	1.1	1.0	0.8	0.7	3.8	3.3	3.0	3.1	3.1
Share in Employment (%)	33.6	30.5	28.0	26.3	21.8	22.6	18.8	17.5	17.6	17.2
Employed in Industry (millions)	1.1	0.9	0.8	0.7	0.8	5.1	5.7	5.8	6.2	6.4
Share in Employment (%)	38.0	44.0	24.4	23.3	24.3	30.8	33.1	33.8	35.2	35.4
Employed in Services (millions)	1.5	1.6	1.6	1.6	1.7	7.8	8.3	8.4	8.3	8.6
Share in Employment (%)	38.0	44.0	47.6	50.4	53.8	46.5	48.1	48.8	47.1	47.4

Source: Calculated based on the data published by the Statistical Center of Iran.

Managing the Economic Windfall

The end of international sanctions will enable Iran to access billions of dollars of blocked assets, which are sizable given that Iran has little foreign debt. The relief from sanctions will also reduce the foreign trade costs for Iran and enable it to export more than its current level of about \$130 billion. The trade costs in some cases add up to about a third of the value of the goods being

traded and half to be borne entirely by the Iranian side. Removing this extra burden may not affect non-oil exports by much in the short run. But it can lower the costs of imports, investment, and production, enabling Iranian exporters and service providers to become more competitive in the medium run. Iran is likely to receive a major investment boost in its oil and gas fields, which could eventually raise the country's exports close to 3 million barrels per day. Even if oil prices remain the same or fall somewhat, Iran's revenues will increase (See page 4). In addition, the inflow of foreign investment is likely to rise sharply in response to the enormous market opportunities anticipated as the Iranian economy sheds the constraints imposed on it by the sanctions, particularly in the context of the slowdown in other emerging market economies and the historically low returns in advanced countries (See Foreign Direct Investment section). In short, the Iranian economy stands to reap a substantial windfall. Simulations with the CGE model show that the pure efficiency gain from sanctions removal is about 2.8 percent of welfare.

Whether this windfall translates to sustained economic growth and employment depends critically on the underlying policies and institutions of the government, especially those that support exports and diversification. Iran's track record with past windfalls is mixed (Box 2). At least three pitfalls should be avoided.

First, as the new funds enter the foreign exchange market in Iran, the rial will substantially appreciate in real terms. This could be disruptive to the economy's tradable sector, especially non-traditional exports. Between 2002 and 2012, when the real exchange rate appreciated (thanks to high commodity prices), non-oil exports also rose. But this was because the government used oil rents to promote the petrochemicals, plastics and some food industries, which also enjoyed subsidized fuel. When government funds found other uses, these exports quickly dwindled. To counter the harmful effects of the inexorable real exchange rate appreciation, the government needs to improve the supply of nontradables in the economy.

Second, Iran's investment needs are substantial. Currently, investment is about 5 percent of GDP, or \$20 billion dollars, below the level that had allowed the economy to grow at an average of 5-6 percent per year between the late 1990s and late-2000s. To grow faster and to make up for the lost growth during the past several years, investment needs to increase substantially. But to do so, the government needs to avoid the temptation to spend large parts of the windfall on consumption. In addition, investment projects should be scrutinized carefully, to prevent the waste that often accompanies large investment booms.

How can Iran improve the supply of nontradables, protect investment resources and reduce waste? There are no easy solutions, but some principles are worth noting.

The first is to give priority to governance, particularly transparency, administrative effectiveness, and control of corruption. This helps build confidence in the government and enables it to carry out policies, including public investment decisions, in the public interest that would otherwise be

struck down by rent-seekers who want the government to shape policies in their favor. Another important benefit is that efficient public services lower the cost of production of nontradables, thus ensuring competitiveness despite large inflows of foreign exchange.

The second is to carefully manage the Stabilization Wealth Fund (SWF). The current nuclear deal seems to generate more confidence that Iran can use its assets as any other country. With proper arrangements for its management, the SWF can help augment transparency, while helping to smooth revenues and protect investment.

The third is to address potential infrastructure bottlenecks. Iran's infrastructure is extensive in many dimensions, but lacks quality in some areas and could develop bottlenecks when the economy gathers speed. The road system has been growing in the past two and a half decades, but road quality is often poor, manifested in the fact that Iran has the highest number of road accident deaths in the world (World Health Organization, 2012). The Internet and telecoms services have expanded fast in recent years but transmission speeds are very slow, which puts Iranian businesses at a disadvantage vis-à-vis those in other emerging markets. Given Iran's educated labor force and access to resource rents, its chances of gaining comparative advantage in low technology industries are low since Iranian labor is going to be too expensive for such industries. Therefore, it is imperative to promote high-tech industries and support innovation and research and development in those industries. This should be a central part of any plan aimed at turning the country's natural resource assets into human capital with lasting productivity consequences.

Box 2: Iran's Experience with Oil Windfalls

Iran's experience with managing oil windfalls is sobering. When oil production and exports first started to increase, the government established a Planning Organization in 1948 and provided it with a portion of oil revenues to be used for boosting investment, especially in infrastructure development. The result was a couple of decades of spectacular economic growth. But with the quadrupling of oil prices in 1973 and an expansion of output, the Shah of Iran sidelined the Planning Organization and guided investment and expenditure decisions personally. Due to the lack of planning and appropriate deliberation, serious bottlenecks emerged in the economy. Inflation accelerated and the real exchange rate appreciated. The process was not sustainable and the expenditure shock proved economically and socially disruptive. A couple of windfall occasions in 1980 and 1982 were short lived. As the country was embroiled in post-revolution turmoil and the war with Iraq, there was little planning and investment associated with them.

The end of the Iran-Iraq war in the late 1980s offered another windfall, which has some similarities with today's situation. The war had disrupted Iran's oil production and trade. The domestic economy had experienced severe decline, isolation and austerity. Soon after the war ended, the government expanded oil production, which raised foreign revenues. The government also drew up investment plans to develop the infrastructure, open up markets, and reconstruct the country. The economy began to recover quickly and a strong sense of optimism was in the air. Firms, mostly public, borrowed short-term in international markets to boost investment and inventories. The government also brought down the sky-high official real exchange rate, briefly unified the multiple exchange rates, and opened up the external capital account. The devaluation increased government revenues in rials and allowed it to expand expenditures substantially, including development spending. However, there was little buildup of reserves to deal with contingencies. As a result, when the short-term debts came due in 1993-1994, the economy landed in a balance of payments crisis, prompting a return to multiple exchange rates and harsh market controls. Investment, especially in the private sector, declined sharply.

The latest oil windfall started in the early 2000s when oil prices started rising. As in the early 1990s, the government devalued the official exchange rate and unified the currency, though this time around the central bank had built more reserves, the capital account was not opened, and a foreign currency savings account (CSA) was established to act as a shock absorber. Unlike sovereign wealth funds, the CSA was managed by the government and its funds were mostly used to make foreign currency loans to domestic firms. As oil prices kept rising for some years, the government continued to spend more. A growing deficit emerged. In 2005, a populist president, who focused on redistributive projects with quick returns, was elected. Rising oil revenues enabled the government to overspend, offer massive subsidies to consumers, especially for energy, and to oblige the banking system to expand credit, keeping the nominal exchange relatively constant to control inflation. At the end of 2010, the government attempted to reduce energy subsidies by a quantum amount. But it implemented the policy by offering cash subsidies worth well over twice the subsidy reduction. The system became increasingly vulnerable to external shocks because the economy was not developing many alternatives to oil exports. The private sector was increasingly engaged in construction of residential and commercial buildings. The government launched a mass housing project, which proved extremely costly and inflationary. To compensate for its excessive commitments, the government started cutting back on development expenditure after 2008. By the late 2000s, domestic investment had shifted increasingly towards housing construction, which could not serve much of an export function. The CSA resources had all been lent out and it was not clear the funds could be collected back at the time of need. The situation finally came to a head in mid-2012 when international sanctions on Iran intensified. As oil revenues fell, the rial crashed and inflation shot up to over 40 percent. Sharp declines in development expenditure, investment, and GDP soon followed.

Source: Esfahani, H. "Iran's experience with oil windfall," 2015.

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Annex 1. A Global Modeling Exercise of Removing Iran's Sanctions

The proposed lifting of sanctions on Iran, following its July 14, 2015 nuclear agreement with the permanent members of the UN Security Council and Germany ("P5+1"), will have consequences for the global, regional and Iranian economies. The resumption of Iranian oil exports to pre-2012 levels could eventually add one million barrels per day on the world oil market, bidding down world prices. Iran's major trading partners, including the United Arab Emirates and other countries in the Middle East and Central Asia, will see an expansion of oil and non-oil trade, as sanctions-induced trading costs come down. Most importantly, as barriers to trade are relaxed, the Iranian economy will shift its production mix in favor of goods that fetch high prices abroad and its consumption towards cheaper imports, with attendant effects on growth, distribution and household welfare.

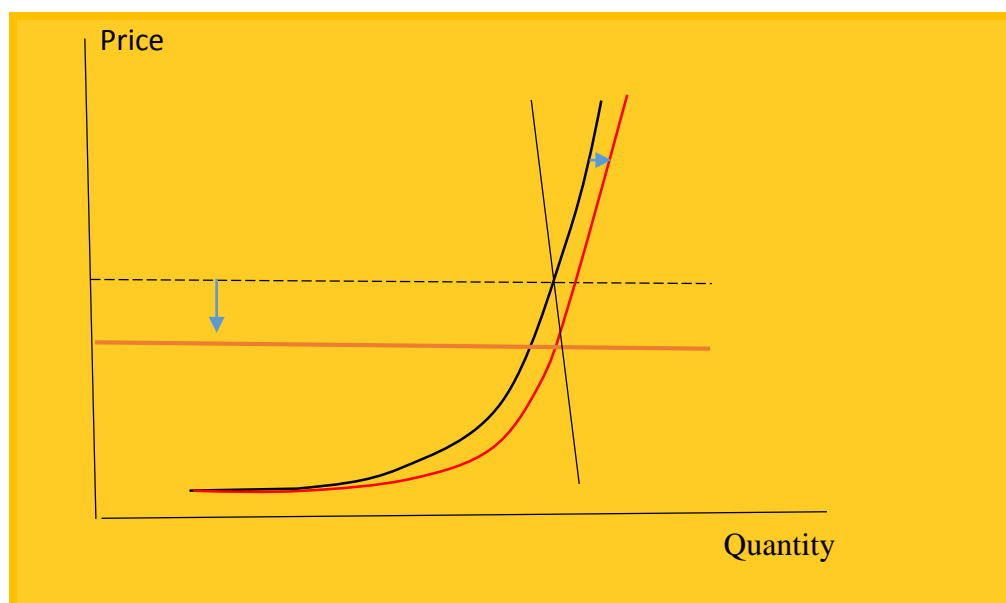
Ianchovichina et al. (2015) quantify the economic effects of the lifting of sanctions on Iran using a modified version of the GTAP 9 database and the global, computable general-equilibrium (CGE) model, as documented in Hertel (1997). CGE models capture the interaction between producers and consumers in the economy, mediated through the price mechanism. The global CGE model used here also captures the trade flows between countries and solves for a set of world prices that equilibrate global supply and demand. The model simulates the effect of a "shock", such as the removal of a trade sanctions, on the market-clearing prices at the global and national levels. We are therefore able to isolate the consequences of the lifting of sanctions from other ongoing developments in the economy. Since the model captures the new equilibrium of an economy that has been perturbed, the time horizon of a simulation is best thought of as one to two years.

In the simulation, the lifting of sanctions on Iran has three components: (i) a lifting of the EU oil sanction; (ii) a reduction in transport costs on trade with Iran; and (iii) improvements in the productivity of cross-border trade in services. The 2012 restrictions on imports of Iranian oil by the EU was the most far-reaching of the sanctions (see below). Its removal is expected to have the largest macroeconomic impact on Iran and the rest of the world: oil accounts for 65 percent of Iranian export revenue and Iran has a relatively large share (8 percent) of total world exports. As cargo inspections on Iranian exports and imports, imposed as part of the sanctions regime, are removed or reduced significantly, transport costs on trade with Iran will decline. This will have an effect on merchandise trade and boost in particular exports of agricultural, machinery, and other goods with large transport margins. And as the US and other partners lift restrictions on finance, tourism and transport trade with Iran, the productivity of cross-border trade in these services will improve. The removal of these restrictions will boost exports of finance, insurance, and tourism exports from Iran.

The paper finds that Iran's gains from the sanctions removal are sizable, resulting in a welfare gain of \$13 billion to the economy, or an increase in per capita welfare of 2.8 percent. Most of

these gains (2 percent or approximately \$10 billion) stem from the lifting of the EU oil sanctions while the reduction in trade costs and improvements in conditions for cross-border trade result in an additional gain of close to one percent. In the global economy, net oil importers gain and net oil exporters lose as the world price of oil declines by about 14 percent in real terms due to the additional amount of oil sold on the global market. That additional one million barrels could cause such a sizeable decline in oil prices is due to the low demand and supply elasticities of oil (Annex Figure 1).

Annex Figure 1. Iran's sanctions removal effects on oil prices



The gains to the EU and the US, both net oil importers, are sizable in absolute terms US\$74 billion and US\$37 billion but small in relative terms as per capita welfare increases by a half of a percent in the EU and a third of a percentage point in the US. The losses are steepest for OPEC members, especially the GCC, which is expected to lose 4.4 percent in per capita welfare (equivalent to US\$62 billion in 2011 prices). Per capita welfare for other OPEC members and Russia declines by 3 percent (\$22 billion) and 1.8 percent (\$34 billion), respectively. The rest of the world is not affected by the reduction in Iran's trade costs because Iran is responsible for a negligible share of the world's non-oil exports.

The removal of the EU oil sanctions will foster an expansion of Iran's oil sector raising the real price of capital by 8 percent (the oil sector is intensive in capital use) and to a lesser extent the wages of skilled and unskilled Iranian workers (1.1 and 0.4 percent, respectively). The wage increase comes from the spending of oil revenues and not from the direct effect of oil sector expansion as the oil sector employs a negligible share of the Iranian workforce. The boost in overall trade on account of lower trade costs translates into additional increases in wages,

especially for skilled labor. Overall, wages of skilled and unskilled labor are expected to go up by 2 and 0.5 percent, respectively, as sanctions on Iran are removed. The supply response to lower trade costs will be negligible but the increases in volumes of exports, albeit from a small base, will be significant: 19 percent for agricultural and food products, 33 percent for metals and mineral products, 13 percent for machinery, 18 percent for textiles, 24 percent for light manufactures, 10 percent for finance and insurance, 7 percent for transport services, and 18 percent for tourism and recreation.

Annex 2. Estimating Iran's Export Earnings Loss Due to Sanctions

International sanctions particularly of the past three years have significantly impacted the trade sector in Iran. The analysis (Mottaghi, 2015) of this section attempts to measure the quantitative magnitude of the impact of the sanctions on bilateral trade flows between Iran and its major trading partners. The analysis uses a modified Gravity model of trade (Hufbauer et al, 1997) to estimate the overall impacts of trade sanctions and use the results to calculate what Iran would earn in export revenues once these sanctions are removed. The dependent variable in this model is export and import flows expressed in US dollars. Independent variables are log of GNP (here income) for a pair of countries, distance, and language between pairs of countries where data were available. We have added a series of dummy variables to capture the effects of trade sanctions on bilateral trade between two set of countries. These variables take a value of one for 2012, 2013 and 2014 where sanctions were intensified, and zero for the rest of the years. The model is log linear where all variables are presented in natural log form.

Data set includes 28 countries (listed in Annex Table 1 and 2), and are annual for the period of 2000-2014. Regressions are based on standard fixed-effects model controlling for country income and dummies. For the ease of analysis, Iran's trading partners are divided into two groups; global and regional (wider MENA region, including border countries in South Asia and Central Asia). Trade data are from the International Monetary Fund's Direction of Trade Statistics (IMF DOTS); and GNP data come from the World Bank's World Development Indicators and IMF's World Economic Outlook, they are expressed in US dollars. Regression results are reported in Annex Tables 1 and 2.

The overall explanatory power of the model as explained by our R^2 and adjusted R^2 as well as F values were strong. Because of the logarithmic form of the model, the coefficients on the independent variables can be interpreted as elasticity. For example, a one percent change in the exporter's GNP will correspond to a percentage change in bilateral trade flows based on the regression coefficient for that variable. Dummy coefficients are interpreted as shocks to the sector resulting from tightening of sanctions. For the purpose of the analysis we take the exponent of the coefficient of the dummy variable for the pair of countries and interpret as shock to the sector because exports/imports (dependent variable) are expressed in logarithmic form. Therefore, the coefficients on the dummy variables can be interpreted as percentage shifts in the dependent variable when the dummy takes the value of 1. For example, if the coefficient on a dummy is -0.5, then when the dummy takes the value 1, the value of the natural number e taken to the exponent -0.5 is 0.60 (the base e to the exponent -0.5 = 0.60). This means that the bilateral trade was only 0.60 times as large or 40 percent lower between two countries as a result of sanctions. For this study, we took the exponent of the regression coefficient for each of these

variables (exports and imports) and subtracted one to get the percent change in total exports and imports.

The results of this study show that tightening of sanctions has had a large impact on trade flows between Iran and its major trading partner, consistently reducing them over the period of 2012-14 (see Bilateral Trade section). Trade flows would have been higher by at least \$17.1 billion, should these sanctions were not in place.

Estimation results for exports

Annex Table 1			
Wider MENA partners			
	Log (GNP _i *GNP _j)	Standard error	T-Stat
Egypt	0.6	0.1	5.8
India	1.6	0.2	8.4
Jordan	-0.1	0.1	-1.5
Lebanon	0.1	0.0	2.4
Morocco	-0.4	0.5	-0.8
Oman	0.6	0.1	5.3
Pakistan	0.7	0.1	7.4
Qatar	0.4	0.1	6.0
Russia	0.7	0.1	9.3
Saudi Arabia	0.9	0.1	12.5
Syria	0.5	0.1	5.4
Tajikistan	0.8	0.0	18.4
Tunisia	0.6	0.2	2.7
Turkey	0.9	0.1	14.0
Turkmenistan	0.4	0.1	6.3
UAE	0.5	0.0	21.9
Yemen	0.2	0.1	4.3
Global partners			
	Log (GNP _i *GNP _j)	Standard error	T-Stat
Japan	0.5	0.1	4.8
South Korea	0.8	0.1	7.0
Italy	0.5	0.1	5.9
China	0.9	0.0	4.1
Singapore	0.4	0.1	3.4
Germany	0.4	0.1	4.1
France	0.4	0.1	3.0
US	-1.2	0.8	-1.5
UK	1.0	0.2	5.6
Netherlands	0.7	0.2	3.2
Hong Kong	0.7	0.2	4.0

Note: R² for all these regressions ranged between .80 – 0.98. We have used Ordinary Least Squares (OLS) regression for this study. The independent variables are logarithm (GNP_i*GNP_j) Gross National Products (income here) for every pair of countries, and the dependent variable is the logarithm of exports between the two countries expressed in current US dollars of country i and country j.

Estimation results for imports

Annex Table 2			
Wider MENA partners			
	Log (GNP _i *GNP _j)	Standard error	T-Stat
Afghanistan	1.2	0.4	3.2
Bahrain	0.2	0.2	1.4
Egypt	1.0	0.1	7.6
India	0.6	0.1	6.1
Jordan	0.1	0.3	0.3
Iraq	0.7	0.4	1.6
Kuwait	1.0	0.1	8.5
India	0.6	0.1	6.1
Lebanon	0.5	0.4	1.1
Pakistan	0.8	0.1	12.2
Oman	1.9	0.1	17.1
Russia	0.2	0.1	1.5
Saudi Arabia	0.2	0.2	1.4
Syria	0.9	0.3	2.9
Tajikistan	0.9	0.1	8.4
Tunisia	-0.5	-0.5	-1.1
Turkey	0.9	0.1	11.1
UAE	1.0	0.0	17.7
Uzbekistan	0.3	0.1	2.4
Global partners			
	Log (GNP _i *GNP _j)	Standard error	T-Stat
Japan	0.5	0.04	12.1
South Korea	0.8	0.6	12.1
Italy	0.3	0.07	4.2
China	0.8	0.1	10.5
Singapore	0.7	0.1	6.3
Germany	0.4	0.1	3.6
France	0.4	0.1	2.95
US	0.8	0.2	4.4
UK	0.3	0.3	1.0
Netherlands	0.5	0.0	6.8
Hong Kong	1.4	0.1	13.2

Note: R² for all these regressions ranged between .80 – 0.98. We have used Ordinary Least Squares (OLS) regression for this study. The independent variables are logarithm (GNP_i*GNP_j) Gross National Products (income here) for every pair of countries, and the dependent variable is the logarithm of exports between the two countries expressed in current US dollars of country i and country j.

Annex 3. Iran's Potential for Exports Growth Post Sanctions

Lifting of the international sanctions on Iran could offer the country a major economic opportunity not only to recover from its recent deep recession, but also to start a new long-term growth process. Iran has a relatively young and educated population that can form a very productive labor force if it gets access to capital, technology, and market opportunities. The country has also decent infrastructure and ample natural resources that can facilitate production. In addition, its enormous resource wealth and negligible foreign debt can ensure availability of capital and credit. In the past several years, intensifying international sanctions and flawed economic policies have stifled the country's economic growth. Now, with the removal of the sanction in sight, a key question is which policies can help Iran realize its enormous economic potentials. In particular, trade and industrial policies play central roles in the way Iran takes advantage of its upcoming international market opportunities and enhances its long-term growth. Those policies may be designed to give rise to dynamic export-oriented industries that act as one of the engines of growth. However, there is also a risk that the surge in resource exports and accessible reserves could lead to a significant real appreciation of the Iranian currency and neglect of non-fuel exports.

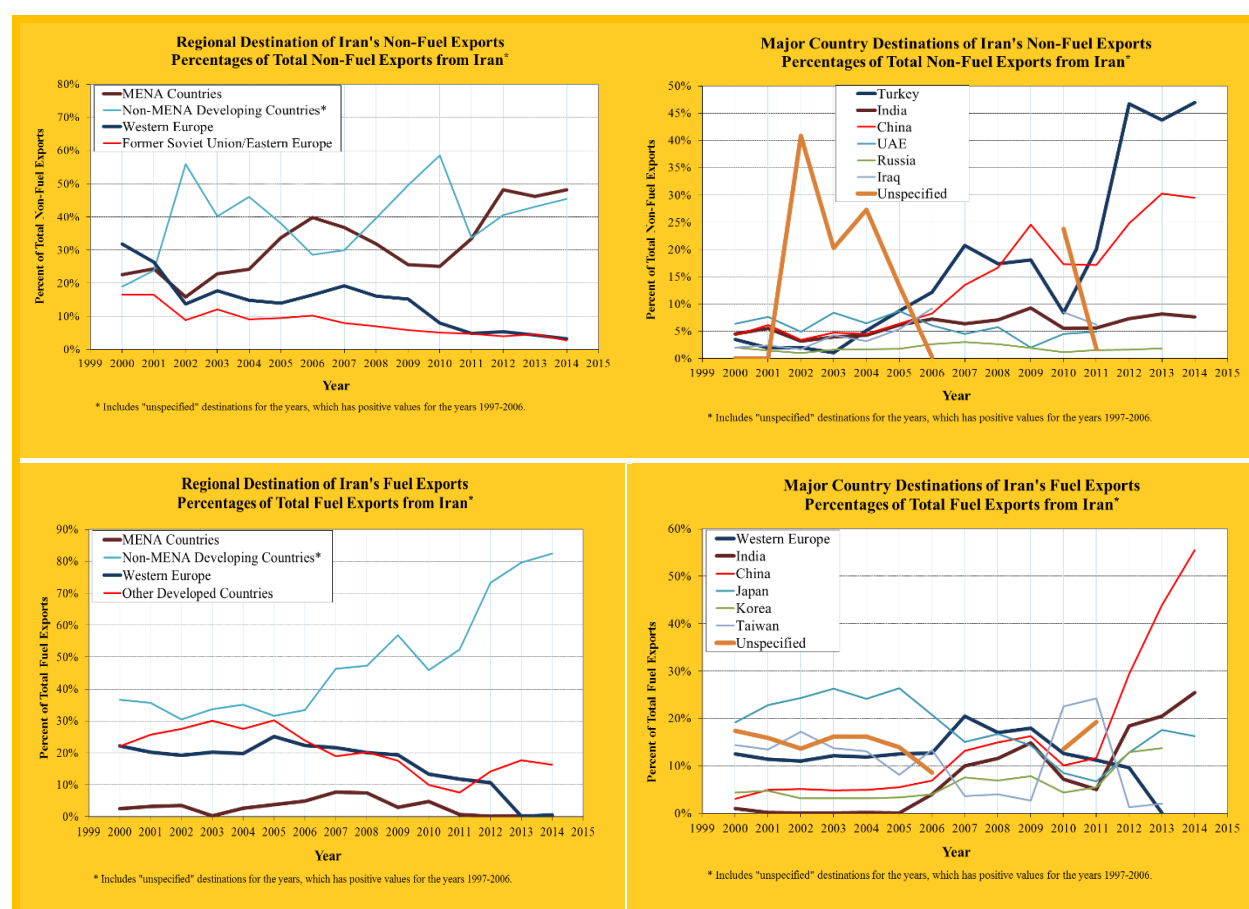
Iran needs a dynamic export sector to achieve the rates of economic growth and diversity that allow it to reduce its high unemployment rate and bring about economic prosperity for its young and educated labor force. Lifting of the international sanctions provides opportunities for export expansion. But, it could also bring about major real appreciation of the Iranian rial, which would be detrimental to export performance goal. This has happened in the past and the government's attempt to address the problem through subsidization has not been successful and cannot be sustainable. To enhance export performance and to ensure that it brings fruits for the economy as a whole, a key step is to deal with real appreciation in the first place. This may not seem avoidable due to Iran's significant resource revenues, which tend to raise the value of the domestic currency. However, the real exchange rate also depends on the supply of non-tradable local goods and services. If the labor and other local factors used in production are productive, they can help the domestic industry gain competitiveness even if there is a large inflow of foreign currency.

To achieve this, first the government needs to improve the availability and effectiveness of its own services. Public services are one of the most important non-tradable factors that can make or break an economy's competitiveness. Efficient and reliable government services not only make the citizens happy, they can make them productive and globally competitive. This, of course, includes less constraining trade policies, and streamlining the procedures for exports and imports as well as issuance of permits and licenses for business activities. Another aspect of government services for export promotion is the provision business information and networking

opportunities, especially for small and medium enterprises, through consulates around the world. A related, but more long-term step is to improve the court procedures and reliability to ensure disputes can be resolved fairly and quickly.

Another prong of the policy should focus on infrastructure. Iran's infrastructure is decent in many dimensions for the current level of economic activity. But, if economic growth gathers pace, parts of infrastructure such as airports, ports, roads, and water supply could quickly become major bottlenecks. There are also some aspects of the infrastructure that already act as constraints, most notably the Internet and mobile telecom services that need to expand and speed up substantially. Since it takes quite time to develop a reliable and efficient infrastructure, the government needs to plan and act on it urgently.

Annex Figure 2. Iranian exports destination



Source: Calculated based on World Integrated Trade Solutions (WITS) dataset, wits.worldbank.org

A third prong of export promotion policies in Iran should focus on support for high technology production activities and labor training. Given Iran's resource revenues and higher income levels that it entails, Iranian workers cannot be competitive in activities that most low and middle

income countries commonly pursue. Iranian businesses need to aim higher in terms of product quality and technology and to rely on innovation in their effort to gain competitiveness. This may be a feasible goal even in the shorter run because Iran's market has been relatively isolate and many well-educated professionals in the country have had to improvise to meet their technological needs. This pool of talents could be organized to think innovatively in original ways. Iranian expatriate entrepreneurs can also be engaged in providing the necessary complementary skills and global networking. Indeed, there is a large number of such entrepreneurs who have already organized and made efforts to link with innovators inside Iran.

Annex Table 3. Iran Macroeconomic Indicators

	GDP Growth (%)	GDP Growth Non Oil (%)	Growth rate Oil (%)
1979	-9.4	-0.9	-22.3
1980	-23.2	-0.3	-67.3
1981	-5.0	-7.0	6.9
1982	22.8	2.1	128.1
1983	9.7	13.1	2.0
1984	-7.6	-2.4	-20.5
1985	1.8	1.8	1.8
1986	-9.8	-8.5	-13.7
1987	0.2	-4.1	14.4
1988	-5.3	-10.4	8.8
1989	5.9	5.7	6.3
1990	14.0	11.7	19.4
1991	12.3	11.8	13.4
1992	3.1	4.3	0.4
1993	1.4	-0.3	5.0
1994	-0.9	1.6	-6.1
1995	2.7	3.4	1.1
1996	5.4	7.5	0.6
1997	0.8	3.5	-5.7
1998	2.2	2.2	2.1
1999	1.7	4.7	-6.3
2000	5.7	4.6	8.8
2001	2.1	6.4	-10.5
2002	8.1	9.8	2.4
2003	8.4	6.7	14.5
2004	4.6	5.3	2.4
2005	6.3	8.1	0.1
2006	6.1	7.1	2.2
2007	7.7	9.4	1.1
2008	0.6	1.0	-0.8
2009	1.3	2.8	-5.4
2010	6.5	7.0	4.2
2011	4.3	5.4	-1.0
2012	-6.8	-0.9	-37.4
2013	-1.9	-1.1	-8.9

	Growth rate of Agriculture (%)	Growth rate of Manufacturing and Mining (%)	Growth Rate of Construction (%)	Growth Rate of Services (%)
1979	6.1	-19.5	-23.1	-0.6
1980	3.7	1.9	-2.2	-1.1
1981	1.8	-8.6	-19.0	-11.0
1982	7.1	5.4	11.3	-2.3
1983	4.6	17.8	22.6	8.3
1984	7.3	-6.8	-19.1	-1.4
1985	7.9	-4.9	-7.9	2.1
1986	4.8	4.1	13.6	-14.2
1987	2.5	1.8	-5.6	-7.8
1988	-0.6	-17.3	-34.3	-9.2
1989	4.3	2.2	-0.5	6.7
1990	11.0	17.5	3.0	10.6
1991	5.6	23.6	29.3	10.4
1992	10.3	2.0	5.6	4.1
1993	1.0	-2.2	0.2	0.5
1994	2.1	2.1	-1.4	2.3
1995	3.7	-1.9	-6.4	3.1
1996	3.3	17.9	19.7	5.8
1997	1.0	4.4	-6.4	4.5
1998	10.6	-3.8	-7.6	3.4
1999	-7.3	11.0	12.5	3.1
2000	3.5	10.2	8.8	3.0
2001	-2.3	13.2	14.0	5.1
2002	13.6	14.3	18.8	7.1
2003	5.0	6.6	-1.1	7.6
2004	0.3	3.2	0.3	7.5
2005	11.3	7.7	2.7	8.4
2006	5.6	5.2	-3.3	8.9
2007	2.9	8.0	23.0	11.0
2008	-23.0	6.7	13.1	0.4
2009	9.6	4.2	-3.2	2.6
2010	4.9	7.9	1.0	6.7
2011	-0.1	5.0	2.5	5.8
2012	3.7	-6.4	-3.6	1.1
2013	4.7	-2.9	-3.1	-1.5

	Unemployment rate (%)	Inflation (%)	Net capital stock, total (billion rials)	Net capital stock, oil and gas (billion rials)	Net capital stock, electricity , gas and water (billion rials)
1978	...	...	2738353	175819	197364
1979	...	...	2891706	180327	201841
1980	...	...	3027262	174241	206572
1981	...	...	3126699	174037	215655
1982	...	...	3198708	175430	225122
1983	...	...	3355789	183758	237690
1984	...	...	3505982	189124	249810
1985	...	...	3559568	175669	254665
1986	14.2	...	3530435	166204	253244
1987	...	...	3564523	151415	253468
1988	...	...	3545968	145286	253043
1989	...	...	3588509	140359	255940
1990	...	...	3568450	138690	255853
1991	...	...	3720992	139152	271476
1992	...	...	3854575	137030	279842
1993	...	...	3943487	135366	295318
1994	...	...	4000791	136158	302912
1995	...	...	4043842	137229	309161
1996	9.1	...	4139621	147200	313182
1997	13.1	...	4253212	156044	318110
1998	12.5	...	4366981	164490	319549
1999	13.5	20.1	4489635	181015	319536
2000	14.3	12.6	4630609	197321	321085
2001	14.2	11.4	4843668	217988	325672
2002	12.8	15.8	5073888	230491	333910
2003	11.8	15.6	5318709	243732	342706
2004	10.3	15.2	5583078	263142	350804
2005	11.5	12.1	5855058	286071	364660
2006	11.3	11.9	6102945	302228	376151
2007	10.5	18.4	6391414	322509	390591
2008	10.4	25.4	6727578	342772	408202
2009	11.9	10.7	7067326	365276	427743
2010	13.5	12.4	7416106	365335	446687
2011	12.3	21.5	7770045	351457	462276
2012	12.1	30.5	7939219	342802	465164
2013	10.4	34.7	...	...	...

	Construction permits issued, all urban areas	Budget deficit/surplus (% GDP)	Current account (% GDP)	Exports FOB, goods (million dollars)	Imports FOB, goods (million dollars)	Non-Oil Export (million dollars)
1978	71637	-11.2	...	...	...	...
1979	114021	-8.2	...	...	...	...
1980	152120	-14.3	...	...	...	...
1981	155543	-11.5	...	...	...	...
1982	116785	-6.2	...	...	...	...
1983	140826	-6.6	...	...	...	...
1984	148533	-4.3	...	...	...	...
1985	129670	-4.1	...	...	...	...
1986	113116	-9.0	...	...	...	...
1987	107127	-7.6	...	...	...	...
1988	93345	-9.7	...	...	...	...
1989	118516	-4.2	...	...	...	...
1990	105483	-1.1	...	...	...	...
1991	105356	-2.1	...	...	...	...
1992	94860	-1.2	...	...	...	...
1993	108879	-0.6	...	...	...	...
1994	123236	0.2	...	...	...	...
1995	135415	0.1	...	...	...	...
1996	138645	0.1	...	...	...	...
1997	130510	-1.0	2.0	18602	14622	2670
1998	132894	-4.8	-3.8	13104	15014	2445
1999	138843	-0.1	4.8	20882	13442	2905
2000	136307	-0.1	9.2	28475	15860	3519
2001	146033	0.0	1.5	23989	18969	3836
2002	161333	-3.6	1.7	28110	22576	4325
2003	148941	-3.5	-0.5	33992	30141	5585
2004	135973	-3.1	-0.1	43835	38762	6386
2005	129729	-3.1	8.0	64525	43382	8734
2006	172602	-6.2	9.2	76190	49987	11525
2007	208922	-3.1	11.4	97667	58240	13162
2008	176683	-5.6	6.4	101289	70175	14670
2009	139458	-4.2	2.6	88326	69247	18369
2010	180994	-1.1	6.5	112788	75458	22597
2011	191382	-0.8	11.1	145806	78027	26658
2012	186809	-0.6	4.7	97271	68712	29213
2013	...	-0.9	...	93015	60047	28226

	GDP (current US\$ Billion)	Crude Oil Production (thousand barrels per day)	Crude oil exports (thousand barrels per day)	Official rate (USD/IRR)	Non - official rate (USD/IRR)
1978	...	4252	3455	70	100
1979	...	3433	2632	70	141
1980	101	1476	770	71	200
1981	115	1441	791	80	270
1982	144	2684	1686	84	350
1983	176	2709	2045	87	450
1984	182	2371	1607	92	580
1985	86	2504	1460	88	614
1986	90	2176	1250	77	742
1987	104	2460	1546	70	991
1988	91	2557	1647	69	966
1989	88	2947	1823	72	1207
1990	92	3231	2224	67	1412
1991	105	3366	2460	68	1420
1992	124	3484	2397	1459	1498
1993	93	3609	2184	1653	1806
1994	73	3603	2220	1750	2635
1995	98	3612	2290	1750	4036
1996	120	3610	2441	1754	4446
1997	115	3623	2342	1755	4782
1998	106	3666	2300	1755	6468
1999	113	3373	2079	1755	8634
2000	104	3660	2345	1755	8131
2001	127	3574	2208	1755	7925
2002	129	3305	2021	7958	7991
2003	152	3736	2396	8282	8323
2004	181	3834	2548	8719	8747
2005	218	4106	2602	9023	9042
2006	258	4051	2433	9195	9226
2007	337	4058	2480.5	9285	9357
2008	391	3946	2370.8	9574	9667
2009	397	3557	2056	9920	9979
2010	464	3536	2021	10339	10601
2011	564	3619	2032.7	10962	13568
2012	419	3732	1803.1	12260	26059
2013	380

Source: Central Bank of Iran and IMF.

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