Oil Revenue Volatility, Sanctions and Mismanagement: Lessons from Iran

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Based on joint work with Hadi Salehi Esfahani (University of Illinois), Jeff Nugent (USC), M. Hashem Pesaran (USC), Mehdi Raissi (IMF), and Hoda Selim (IMF).

Panel on the "Impact of 'Maximum Pressure' Sanctions on Iran" at the London School of Economics

June 21, 2019

Iranian Economy: Challenges

- Iranian economy has been functioning below capacity due to years of economic mismanagement, 8 years of war with Iraq, prolonged and at times severe trade and financial sanctions.
- **High and persistent inflation**. Annual rate of inflation has been around 20% and been persistently high whilst inflation has been falling worldwide.
- **High unemployment and low female labour participation**: Unemployment has been consistently above 12% with youth and female at 30-40%.
- **Fragile banking and financial sector**. US financial sanctions against Iran has worsened the risk facing the commercial banks.
- **Continued dependence on oil revenues**: over 60% of foreign exchange revenues and 40% of government revenues are from oil exports.
- **Rising income inequality and poverty.**

Oil Revenue is a Blessing: Growth of Real Output and Real Oil Export Revenue (per capita)

Sample Period	Real Output per capita Growth (in percent)	Real Oil Export Revenues per capita Growth (in percent)	Correlation
1937-2010	2.54	2.80	0.31
1960-2010	2.14	2.80	0.47
1960-1978	5.48	12.30	0.15
1979-2010	0.16	-2.84	0.53
1988-2010	2.20	3.63	0.33

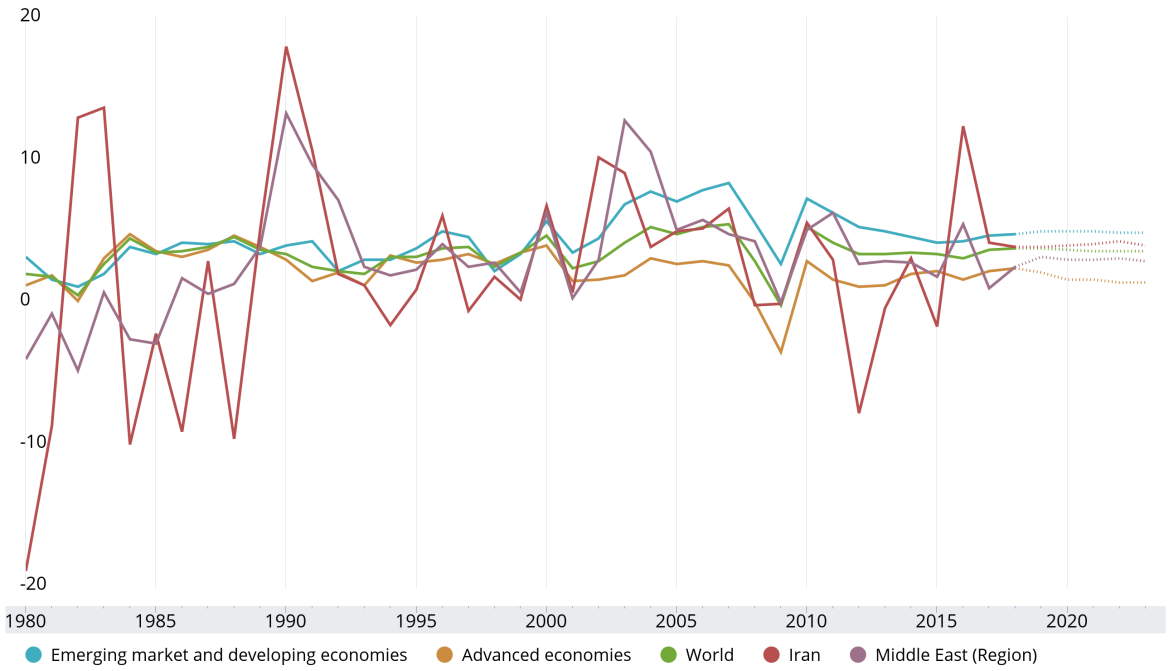
Source: IMF *World Economic Outlook*, OPEC *Annual Statistical Bulletin*, and Esfahani and Pesaran (2009).

Iran and World Output Growths and their Volatilities

- If commodity revenue volatility and external shocks are **not managed properly**, they can result in higher GDP growth volatility and **disappointing long-term economic performance**.

- Since the Revolution the average output growth has been around 2% with volatility of 7.7%, whilst world output growth has averaged at 2.9% with volatility of 1.3%. That is **Iran's economy has been 6 times more volatile as compared to the rest of the world**.

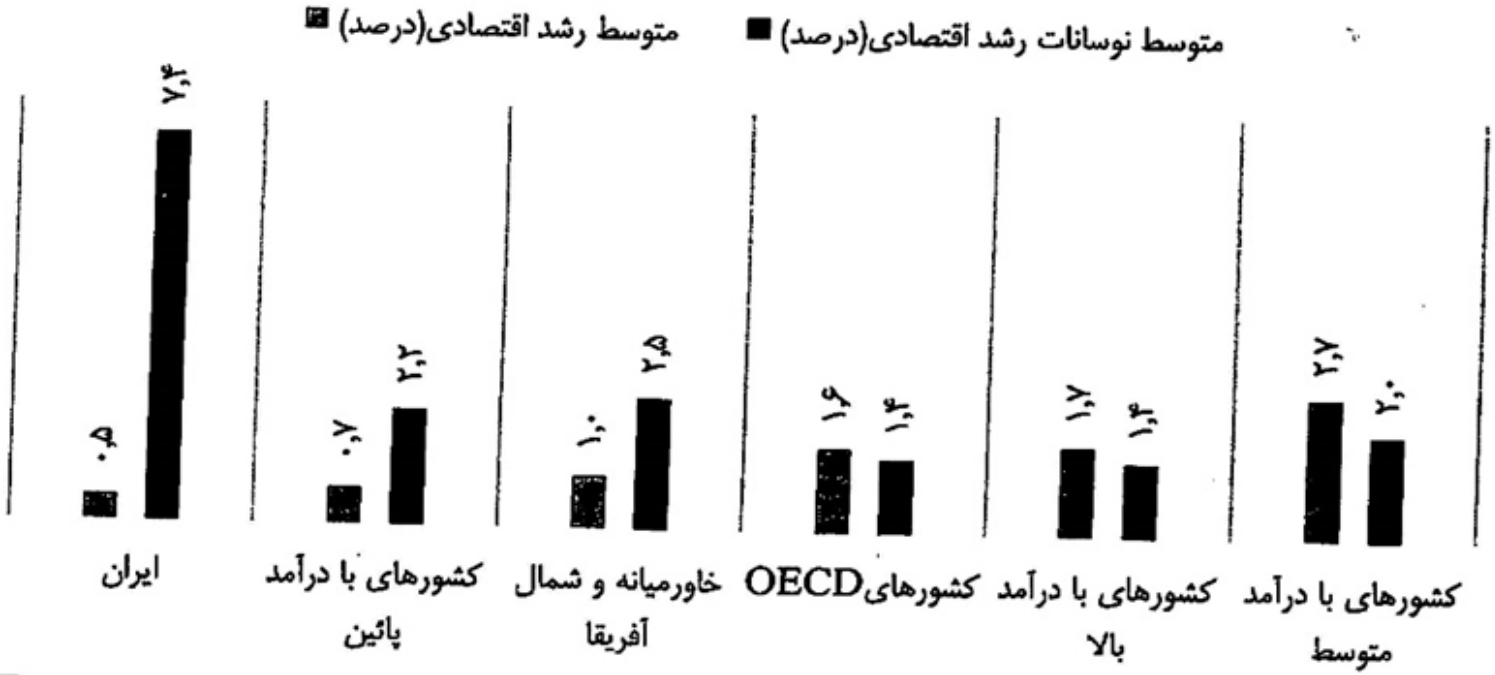
- We need strong **institutions** and better **macroeconomic policies**.



Output Growth and Volatility in Iran and by Regions

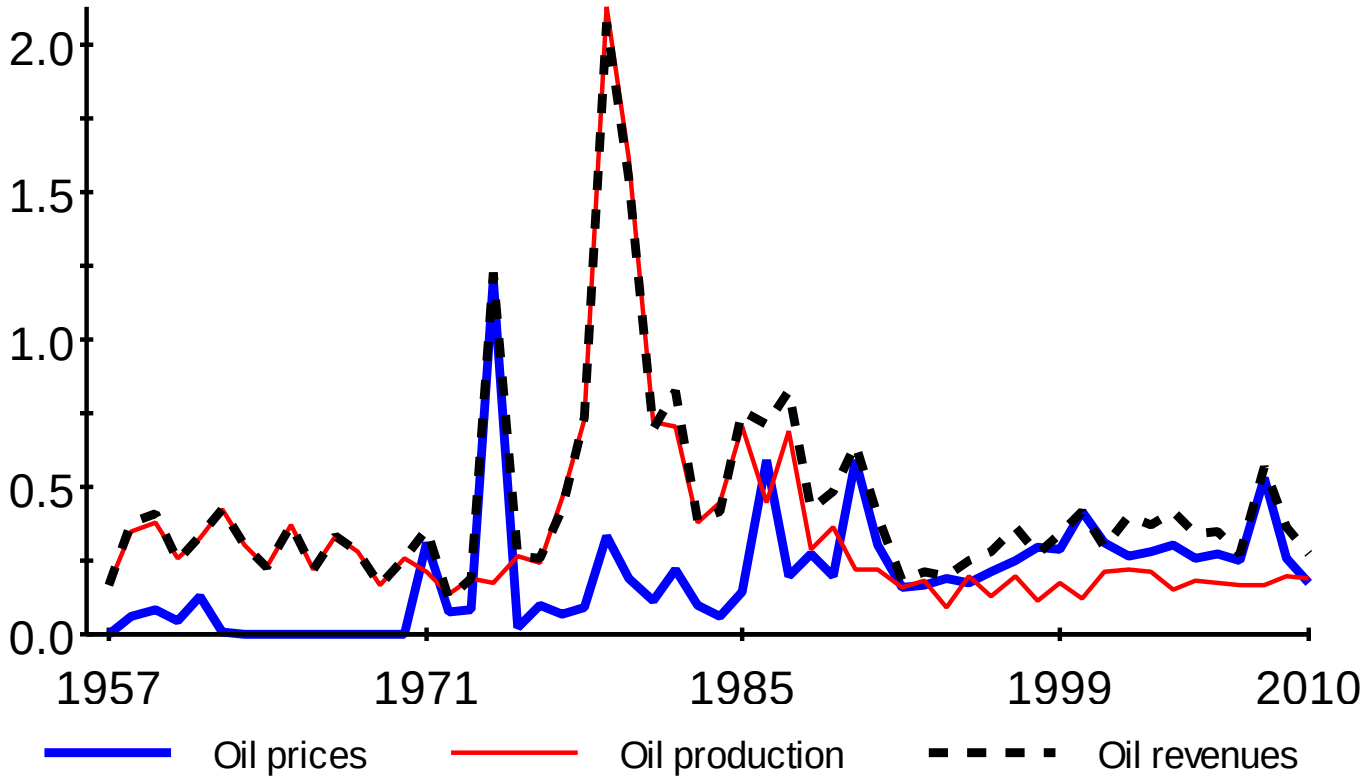
- **Three main sources of volatility**: oil revenues, sanctions, and mismanagement of the economy.

شکل ۱-۲۰- مقایسه متوسط رشد اقتصادی و نوسانات آن در بازه زمانی ۱۹۸۰-۲۰۱۵



منبع: بانک جهانی

Realized Volatility of Oil Prices, Production, and Revenues



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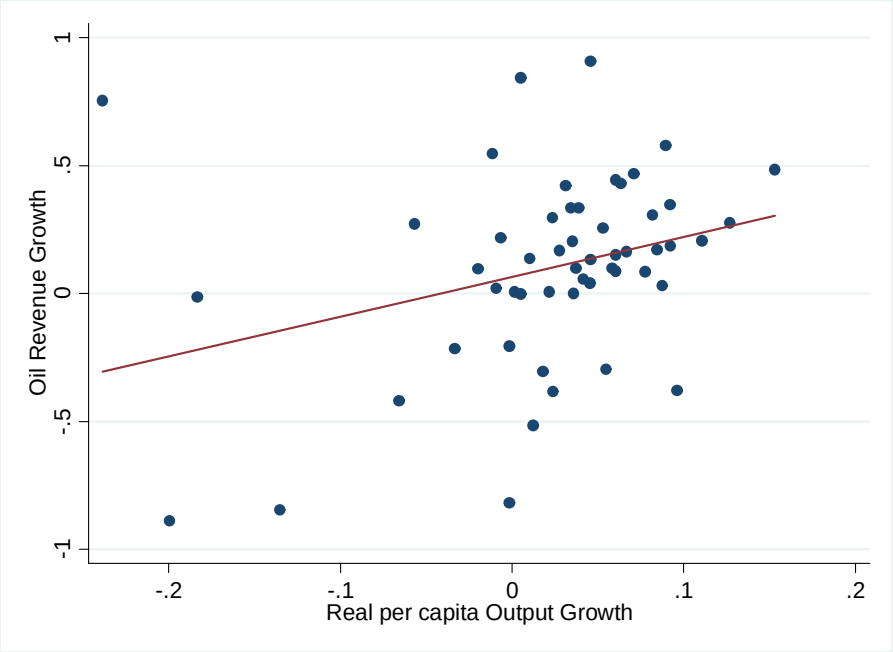
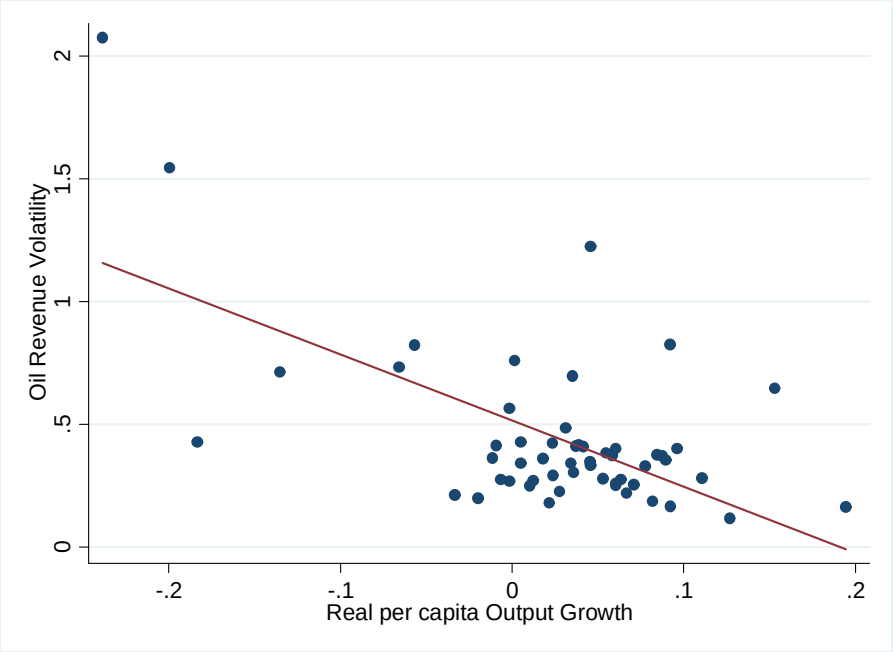
Realized Volatility of Oil Prices, Production, and Revenues

Sample Period	Oil Price Volatility (in %)	Oil Production Volatility (in %)	Oil Revenue Volatility (in %)
1960-2010	20.6	34.8	45.3
1960-1978	11.3	29.3	35.5
1979-2010	26.1	38.0	51.1
1988-2010	27.9	18.8	35.3

Source: K. Mohaddes and M. H. Pesaran (2014), *One Hundred Years of Oil Income and the Iranian Economy: A Curse or a Blessing?*, in P. Alizadeh and H. Hakimian (eds.), *Iran and the Global Economy: Petro Populism, Islam and Economic Sanctions*, Routledge, London.

The Volatility Curse!





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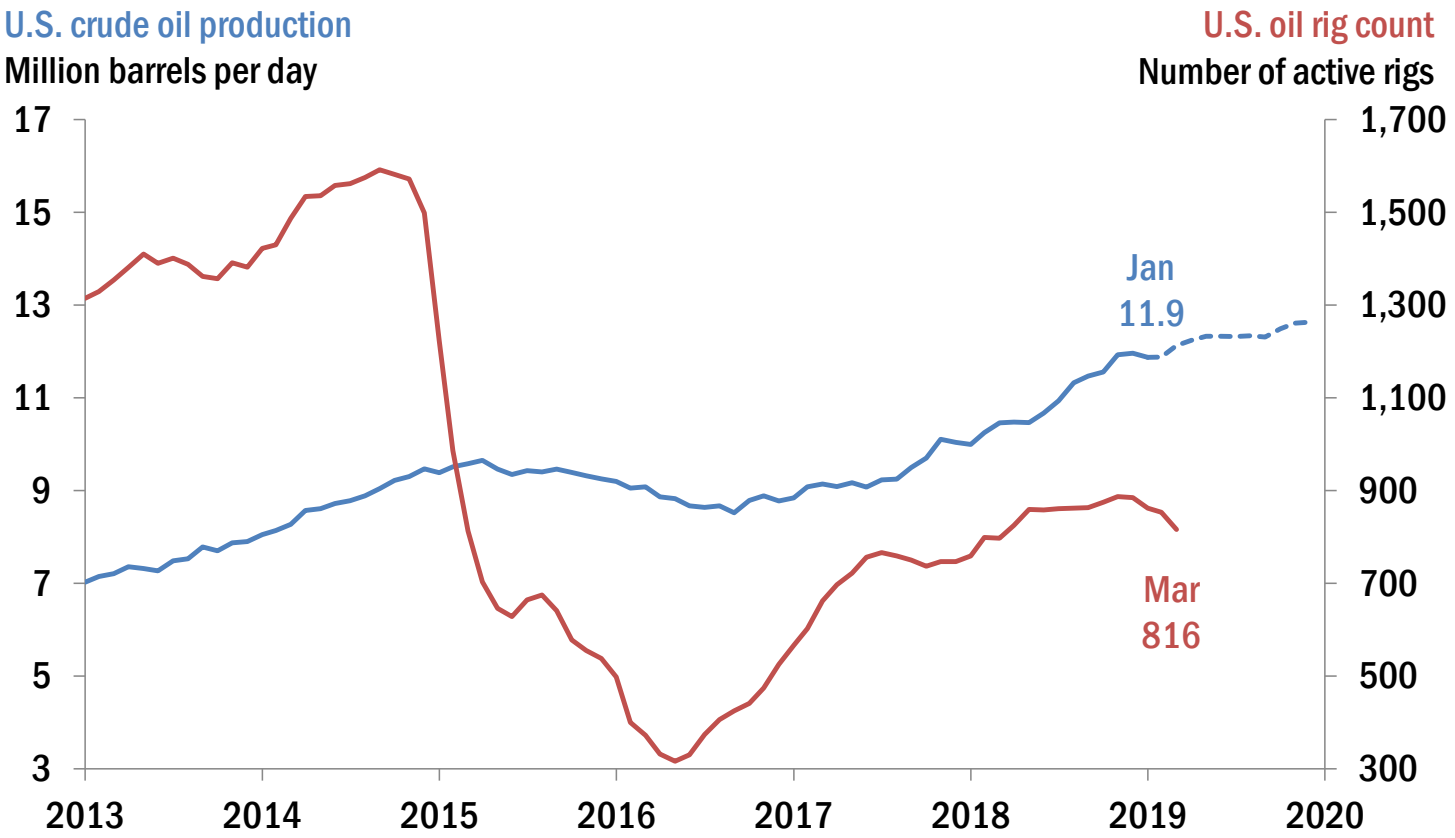
A New Oil Order: A Low Oil Price Environment?

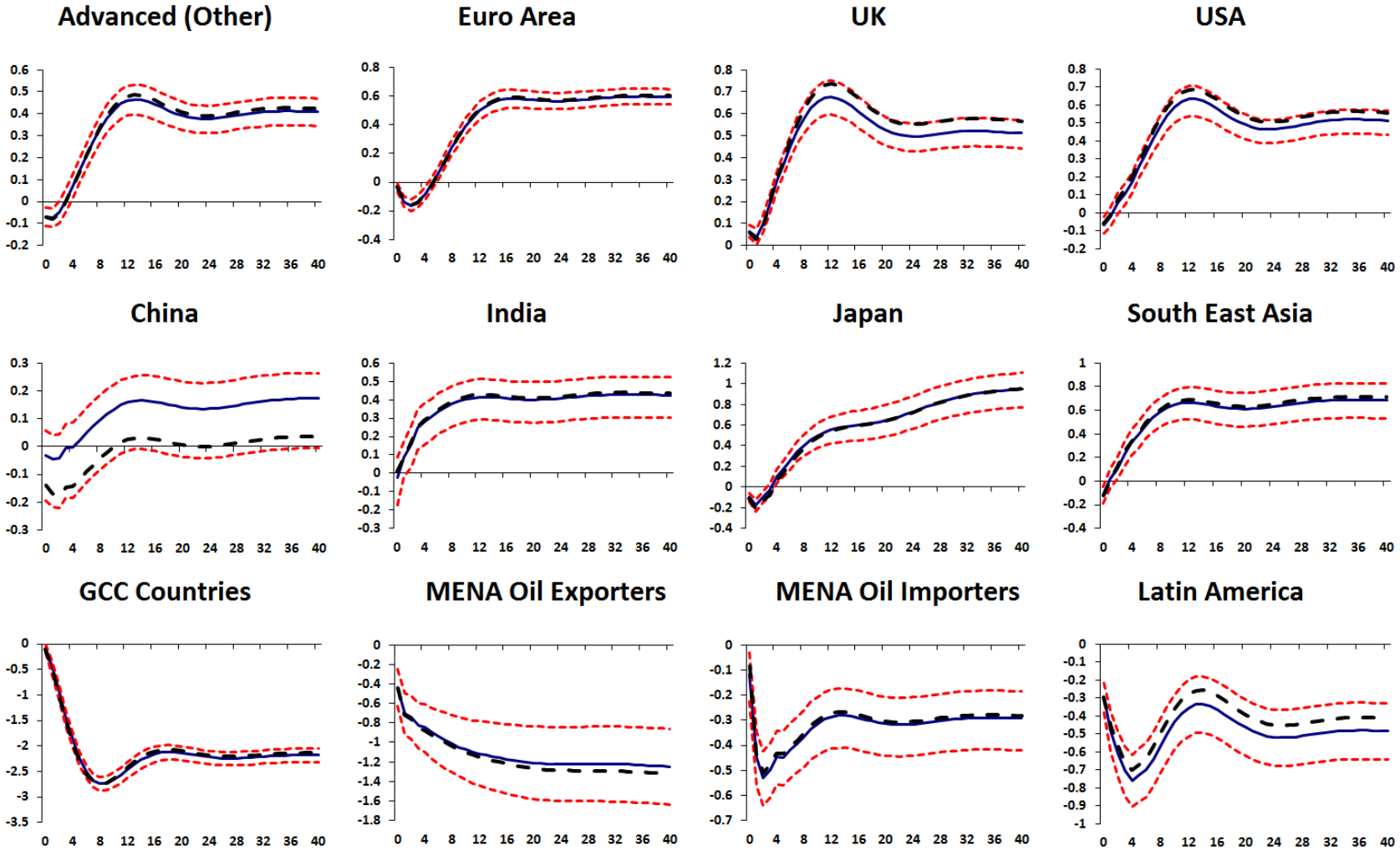
- The technological advancements over the last decade have not only reduced the costs associated with the production of unconventional oil, but they have also made **extraction of tight oil resemble a manufacturing process** in which one can adjust production in response to price changes with relative ease.



Federal Reserve Bank of Dallas

NOTES: Dashed line shows the forecast as of 3/12/19. Rig count series shows the last weekly count each month.
SOURCES: Baker Hughes; Energy Information Administration.

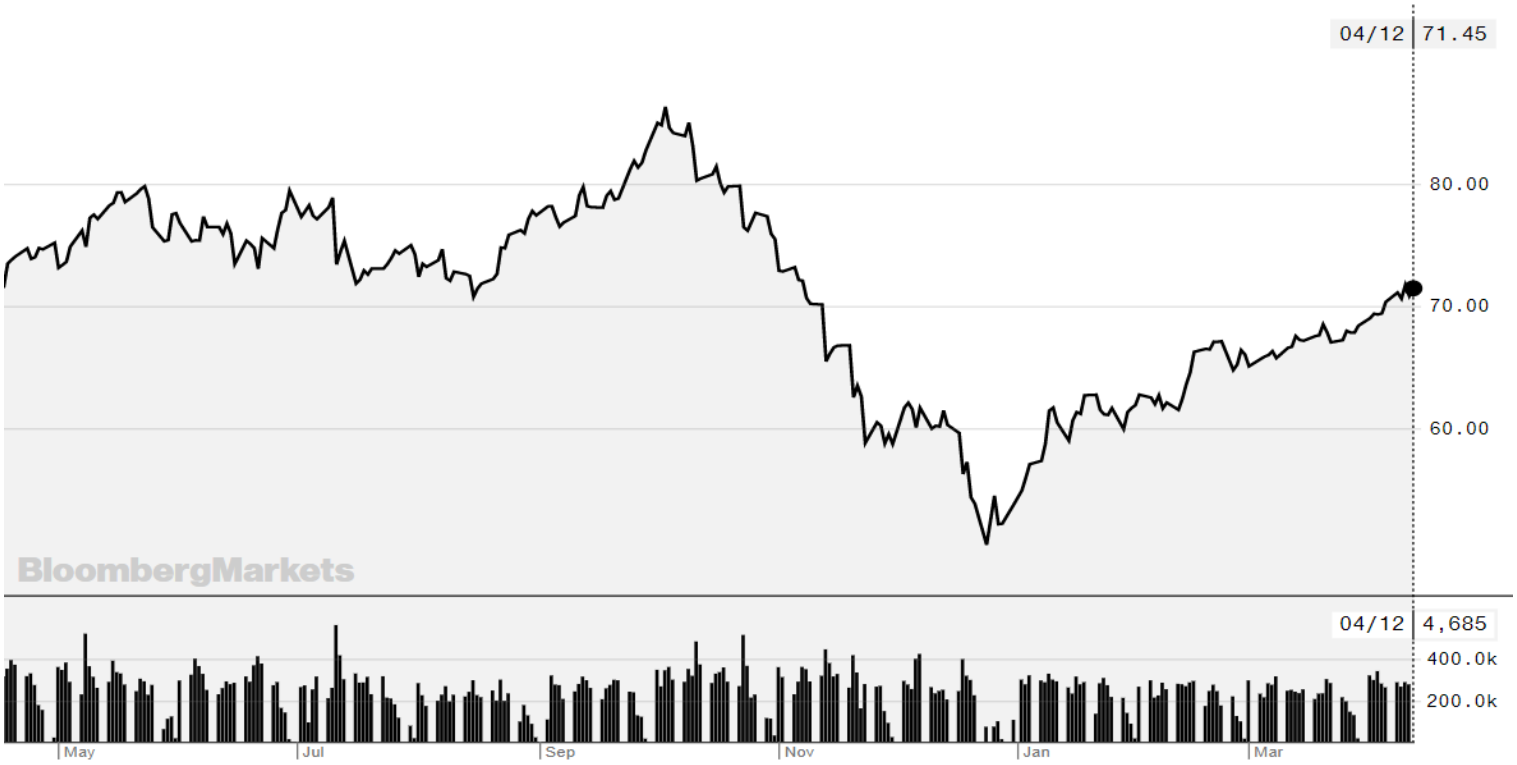
Impact of the U.S. Oil Supply Revolution on Real Output (Mohaddes and Raissi, 2019)



Notes: Figures are median (blue solid) and median target (black long-dashed) impulse responses to a one standard deviation fall in the price of oil, equivalent to an annualized drop of 51% in year 1 and 45% in year 2, together with the 5th and 95th percentile error bands. The impact is in percentage points and the horizon is quarterly.

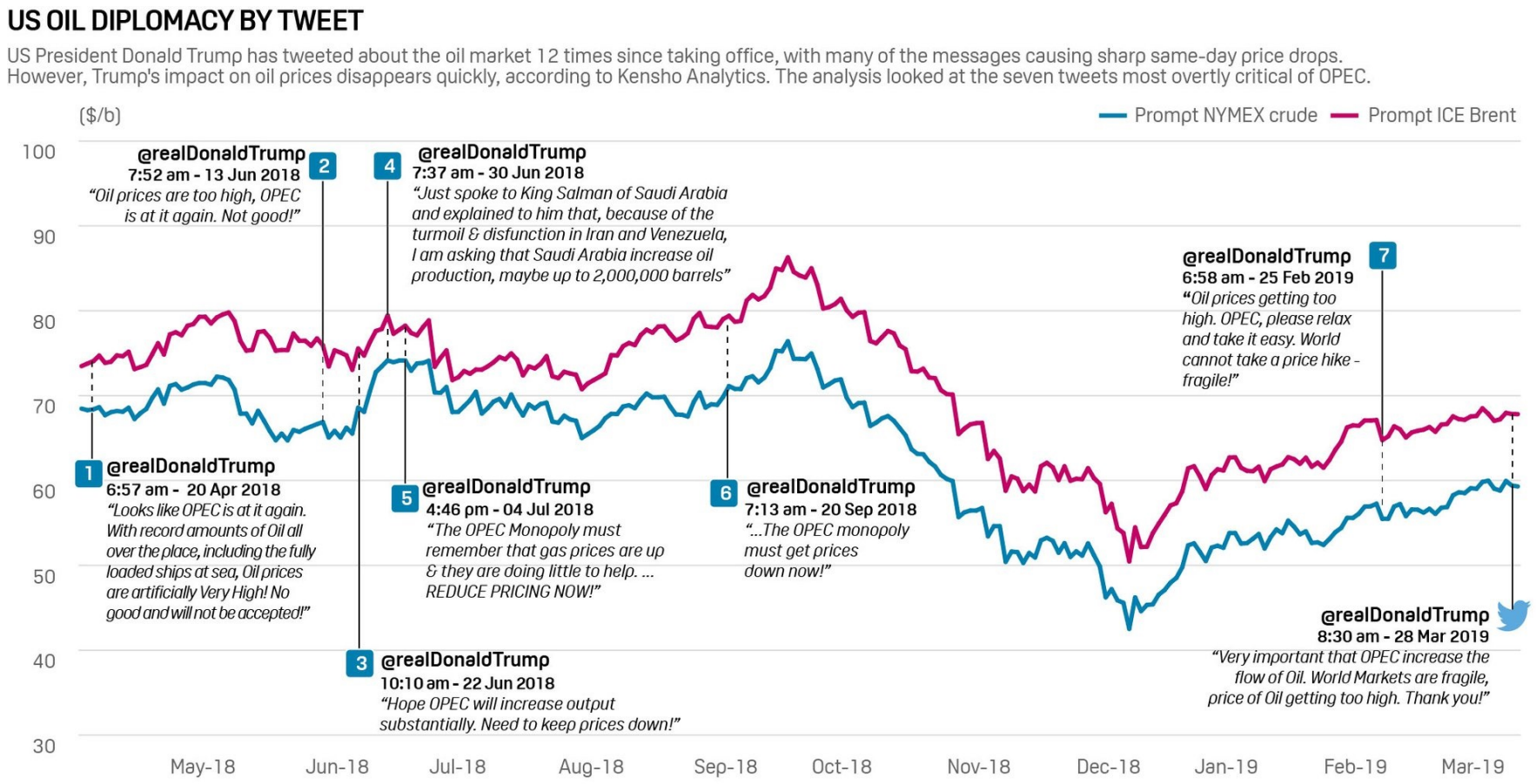
A New Oil Order: A More Volatile Environment

- With oil prices being 50% higher than January 2019, are we in a low oil price environment?
- This is not just about low oil prices, but more **uncertainty** and more **volatility**.
- Bottom line: policy makers should think about **volatility** as opposed to (just) **sustained low or high prices**.



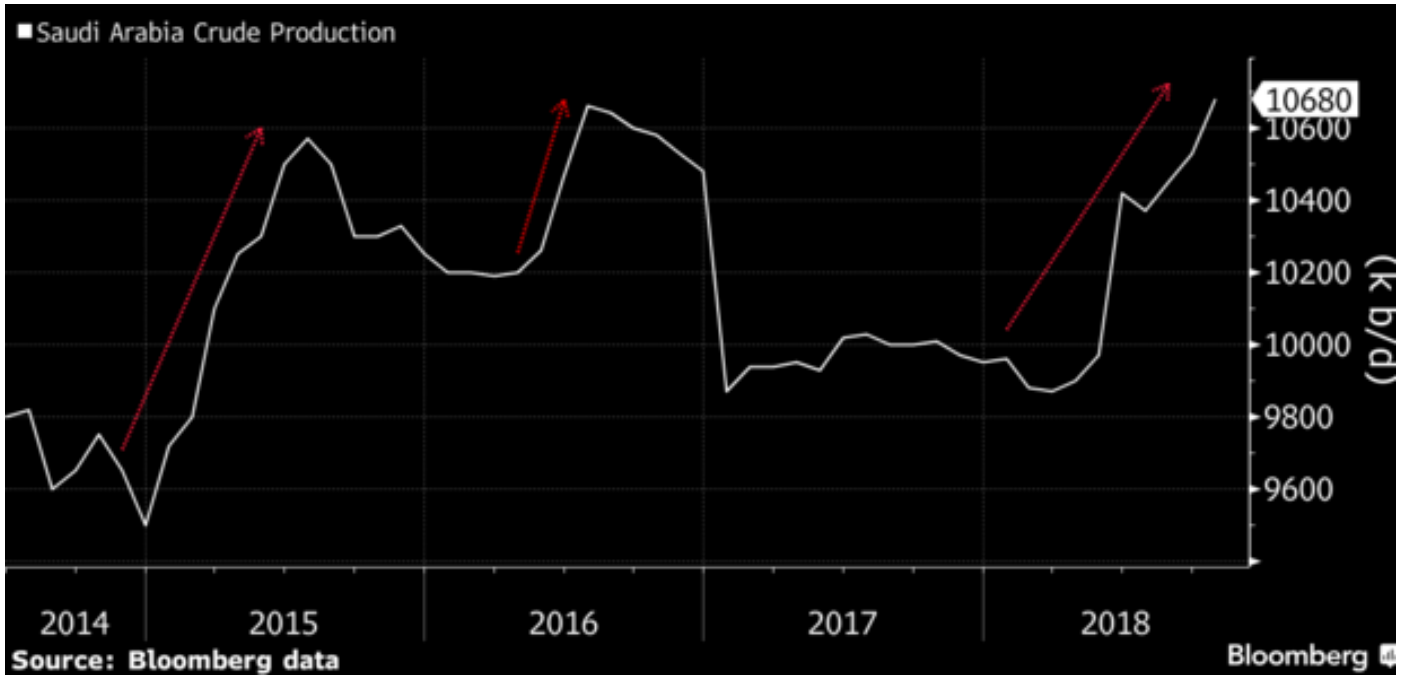
New Source of Volatility: the Trump Factor

- President Trump is the new "swing factor" in global oil markets.
- What are the effects of the **competing policy objectives** of the Trump administration on the oil market?
  - Geopolitical agenda: **sanctions on Iran**;
  - Domestic political agenda: lowering **American petrol prices**; and
  - **Trade wars** with China and the EU.

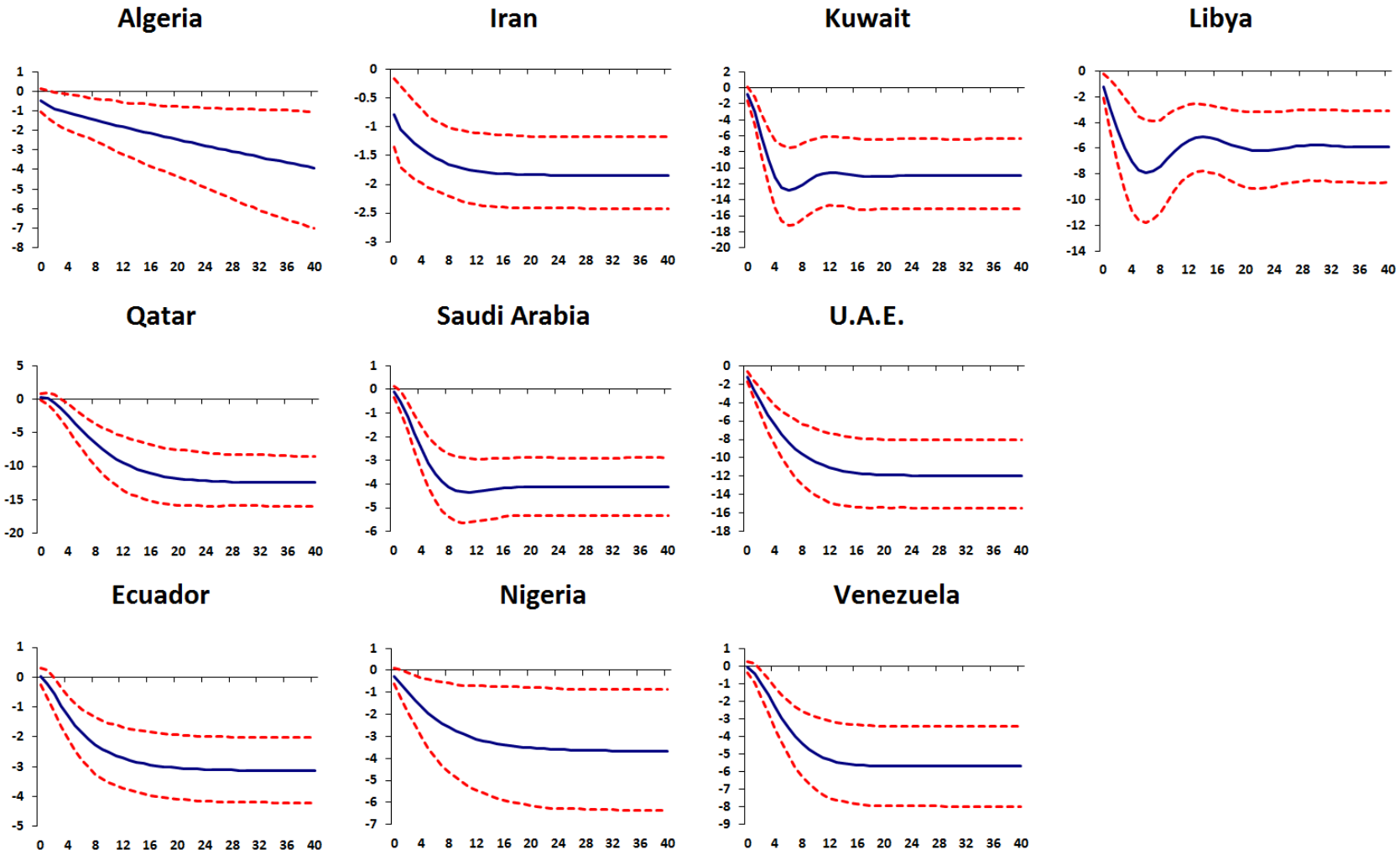


What about OPEC Policy?

- Major source of oil price volatility. Just take the last few years, where an **increase in supply has been quickly reversed**.
  - In 2015: waging a price war against U.S. shale oil producers;
  - In 2016: maximizing sales before OPEC agreements;
  - In 2018: pressure due to sanctions on Iran and President Trump (as discussed).



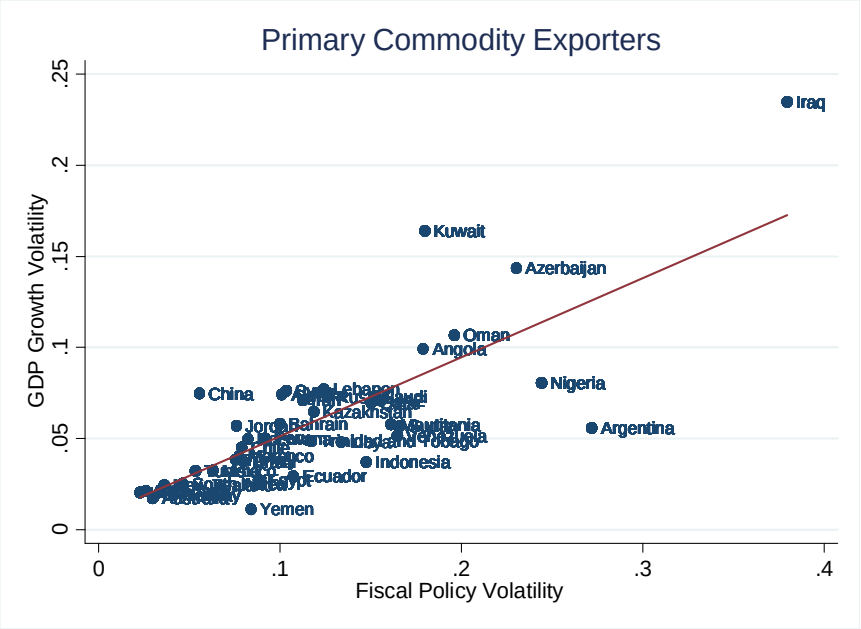
Impact of a Negative Oil Revenue Shock for OPEC Countries (Mohaddes and Raissi, 2019)

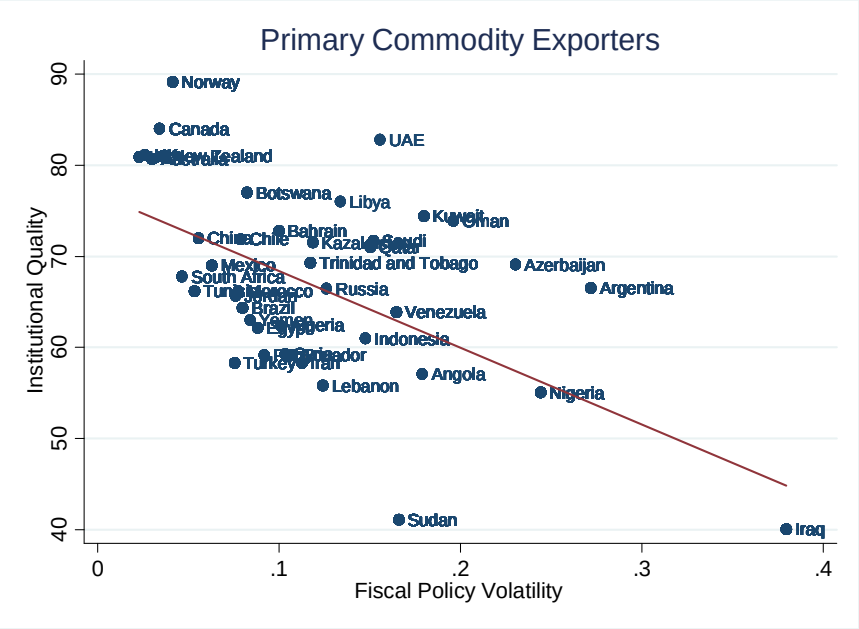


Notes: Figures are median generalized impulse responses to a one standard deviation fall in oil revenue, together with 95 percent bootstrapped confidence bounds. The impact is in percentage points and the horizon is quarterly.

The Role of Institutions and Policy Frameworks

- What is the potential **role of institutions and policy frameworks** in dampening the negative effects of volatility.





Source: K. Mohaddes, J.B. Nugent, and H. Selim (2019), *Institutions and Macroeconomic Policies in Resource-Rich Arab Economies*, Oxford University Press.
Notes: This volatility is interpreted as the component of discretionary policy which is not related to smoothing the business cycle, such as changes in political preferences or the decision by the politicians to generate a short-term boom so as to keep the population happy–as was seen in the region following the Arab Spring.

Bottom line: Oil Revenue Volatility and Economic Performance

- Therefore, while abundance of oil in itself is growth enhancing there are two main problems with this oil income for the Iranian economy: one is the volatility of oil revenues, and the second is that it accrues to the government.
- The fact that oil revenues accrue to the government tends to make the government less immediately accountable for their policies and actions, and increases incentives for **rent-seeking activities**.
- However, while democracy and accountability are both important, it is also crucial to have a system in place that deals with adverse effects of excess oil revenue volatility.
- Note that because of the lack of shock absorbers, oil revenue volatility has an even bigger impact on the Iranian economy in the short term.

Policy Implications

- The establishment of the Oil Stabilization Fund (OSF) in Iran was an important step towards managing the volatility curse. However, the adoption of populist policies during the Ahmadinejad presidency in 2005 resulted in the Fund being used during good times when oil prices were rising, and was thus rendered ineffective as an instrument of stabilization when oil prices started to collapse in 2009.

- The government can also intervene in the economy by increasing public capital expenditure when private investment is low, using proceeds from the stabilization fund.

- Alternatively the government can use these funds to increase the complementarities of physical and human capital, such as improving the judicial system, property rights, and human capital. This would increase the returns on investment with positive effects on capital accumulation, TFP, and growth.

- Improving the functioning of financial markets is also a crucial step as this allows firms and households to insure against shocks, decreasing uncertainty and therefore mitigating the negative effects of volatility on investment and economic growth.

Sanctions: A Counterfactual Exercise

- The disaggregated nature of the model in Mohaddes and Pesaran (2016) allows us to identify **country-specific** oil supply shocks (due to, for instance, **sanctions, wars, or natural disasters**) and answer counterfactual questions regarding the possible macroeconomic effects of oil supply disruptions on the global economy.

- Dealing with country-specific shocks raises a new issue which is absent from the global oil supply and demand analysis; namely, we need to make some assumptions about the likely contemporaneous responses of other oil producers to the shock.

- To allow for the possible cross-country oil supply spillover effects we make use of the structural GIRFs based on historically estimated covariances of the country-specific oil supply shocks.

Sanctions: A Counterfactual Exercise

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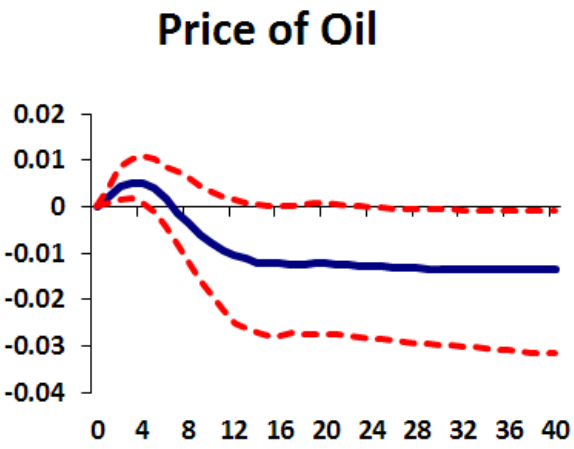
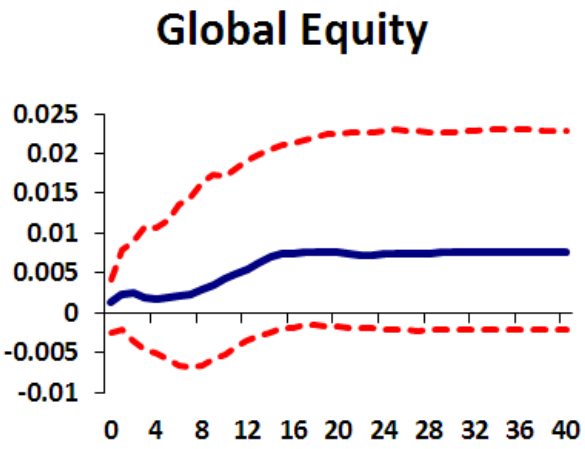
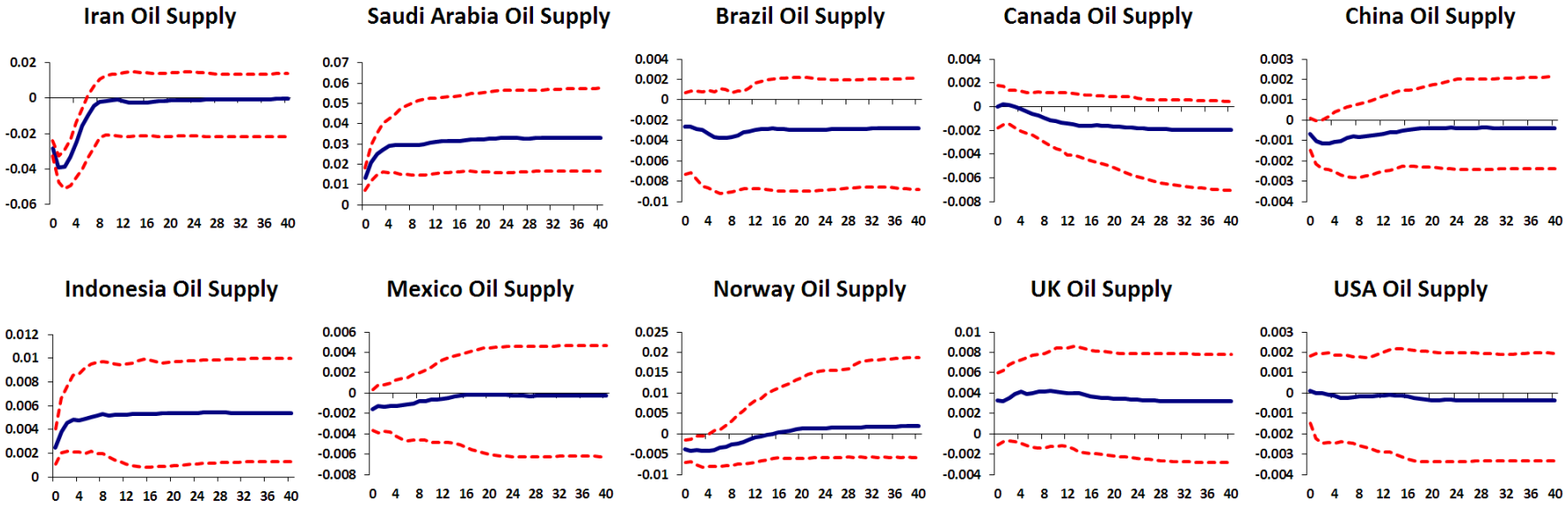
.@NordhausYale "sometimes #sanctions or #embargoes are launched as less destructive means of coercion...such embargoes should be expected to have no effect on world [#oil] prices or production, no impact on the target countries [#Iran]...They are purely symbolic measures." #ایران





Source: Mohaddes and Pesaran (2016). "*Country-Specific Oil Supply Shocks and the Global Economy: A Counterfactual Analysis*". Energy Economics 59, 382-399.

Sanctions: A Counterfactual Exercise



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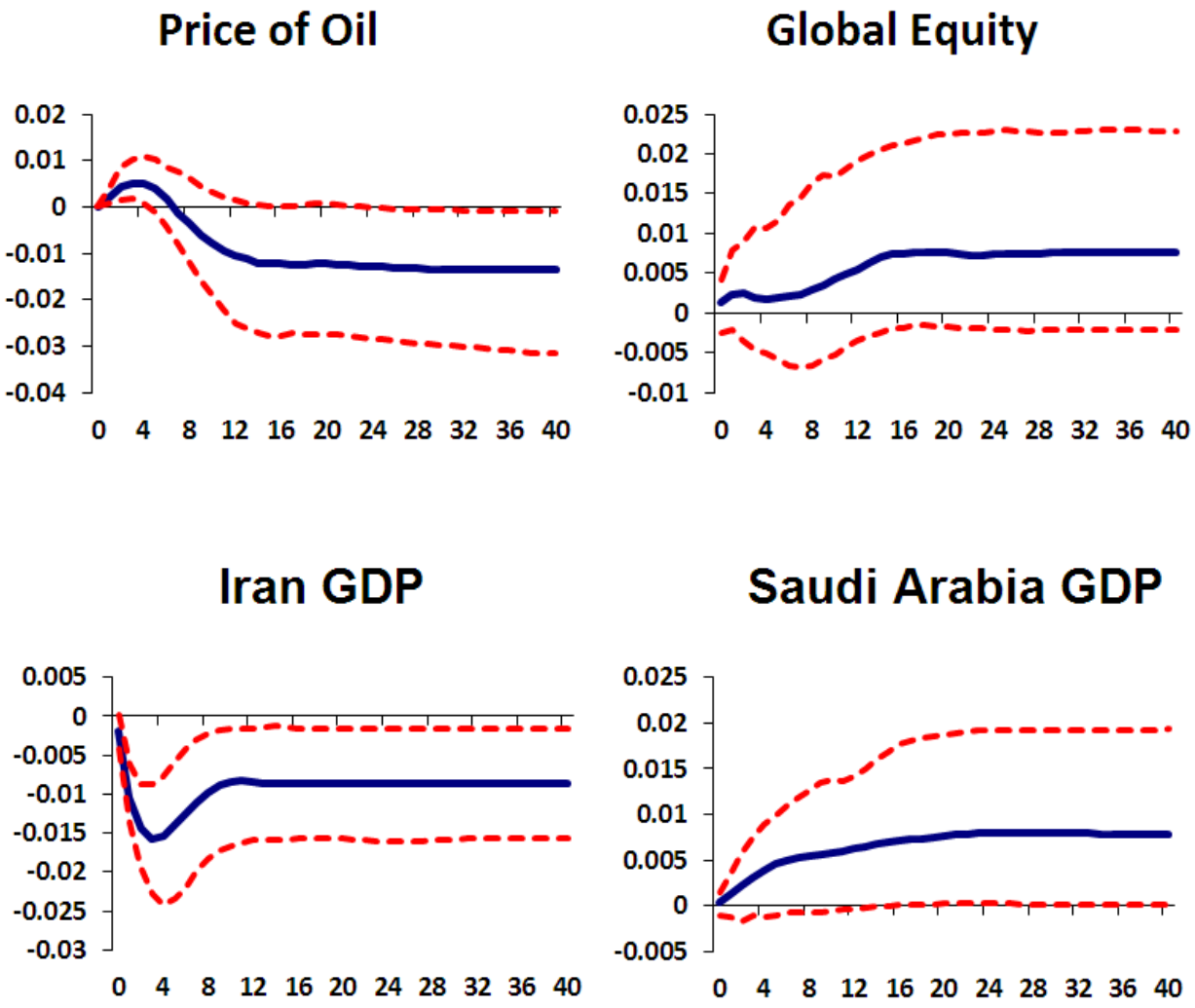

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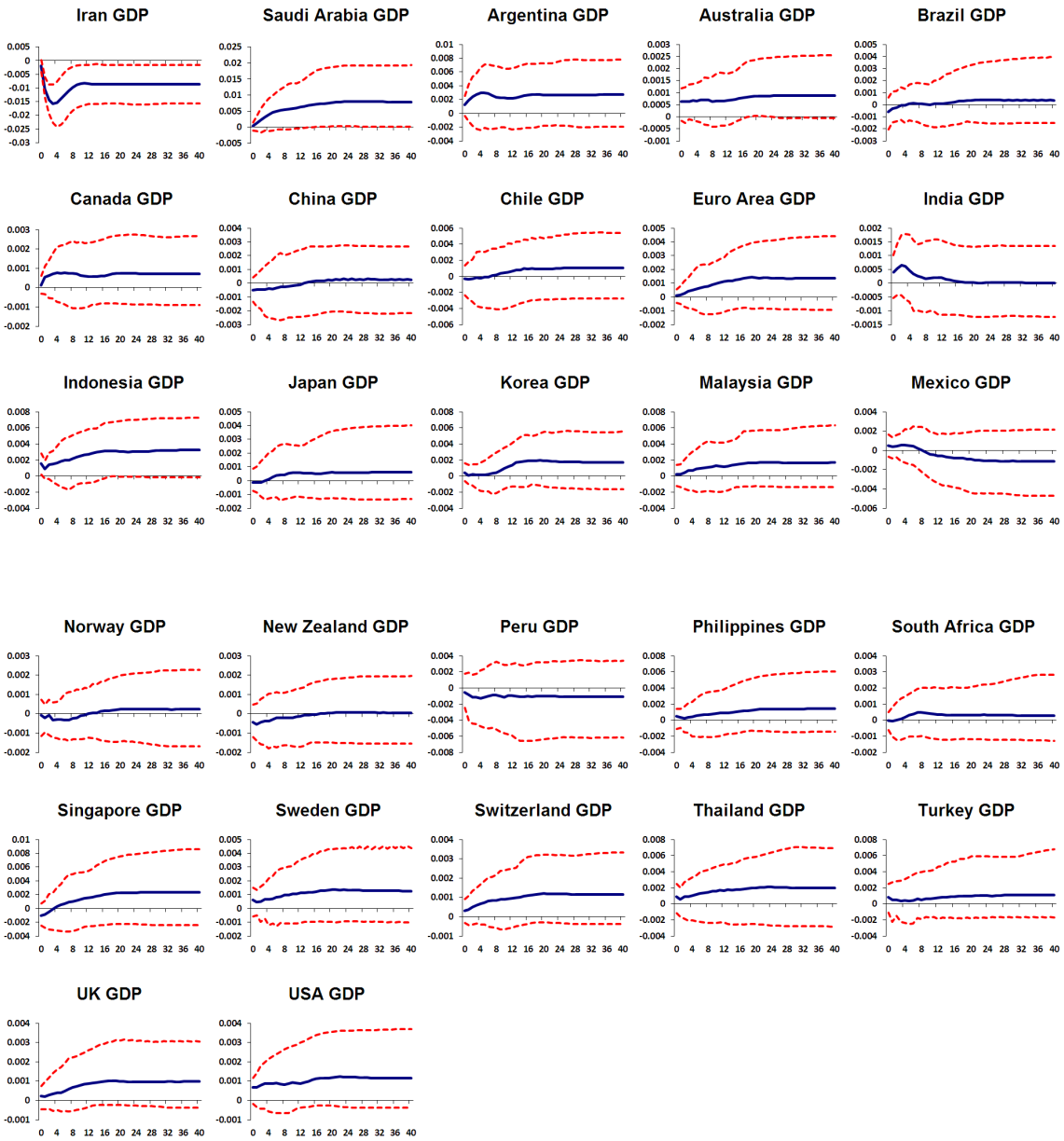
Sanctions: A Counterfactual Exercise



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Iran needs a much more Diversified and Efficient Economy

شکل ۲-۴- سهم درآمدهای مالیاتی و درآمد نفتی از کل درآمدهای دولت (درصد)

منبع: بانک مرکزی جمهوری اسلامی ایران

توضیحات: در این شکل درآمد مربوط به مالیات عملکرد نفت جزء درآمدهای مالیاتی محسوب شده است. این نکته در مقایسه درآمدهای مالیاتی و نفتی دولت می‌تواند باعث ایجاد خطا شود. با حذف این جزء، سهم درآمدهای مالیاتی در سال‌های ۱۳۸۶ و ۱۳۸۷ نیز کمتر از درآمدهای نفتی خواهد بود.

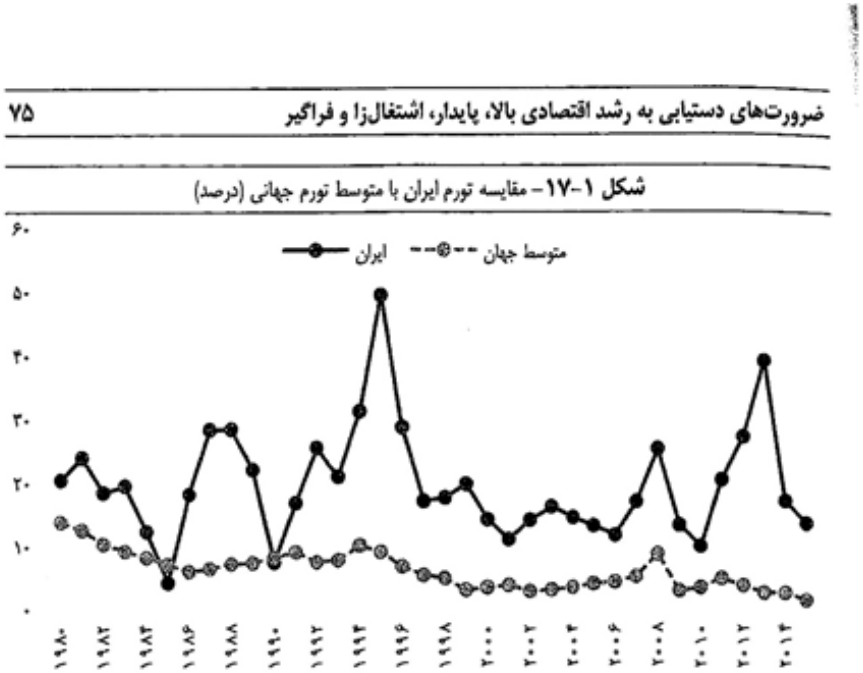
Fiscal Policy

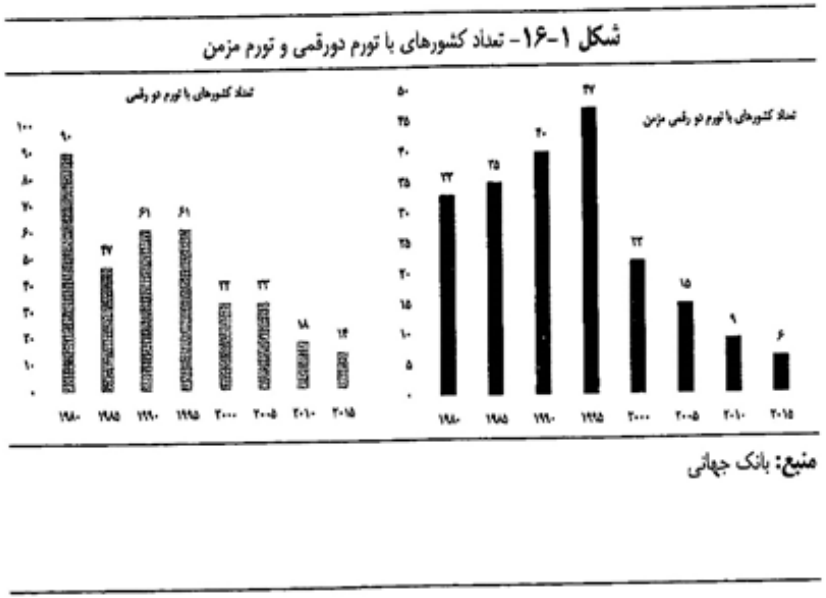
- **Revenue re-balancing:** raising non-distortionary taxes, such as consumption tax (VAT) and reducing the dependence on oil revenue;
- **Improved tax administration**;
- **Spending side**: better targeting of subsidies (electricity, water, petrol). Urgent reforms are needed in the area of energy subsidy, which results in waste, economic distortions and air pollution.
- Reducing **fiscal dominance**.
- **Transparency**: on public sector balance sheet (not just the central government)
  - "publication of debt and asset data would enhance transparency and provide investors greater assurance about the government's capacity to repay debt and ultimately lower borrowing costs.
  - The Debt Management Office: "The on-going audit of arrears has revealed government arrears of about 30 percent of GDP which brought the debt-to-GDP ratio to near 50 percent in 2016/17. The audit shows that the central government's (CG) arrears are owed to banks, private contractors, and social security institutions."

Monetary Policy

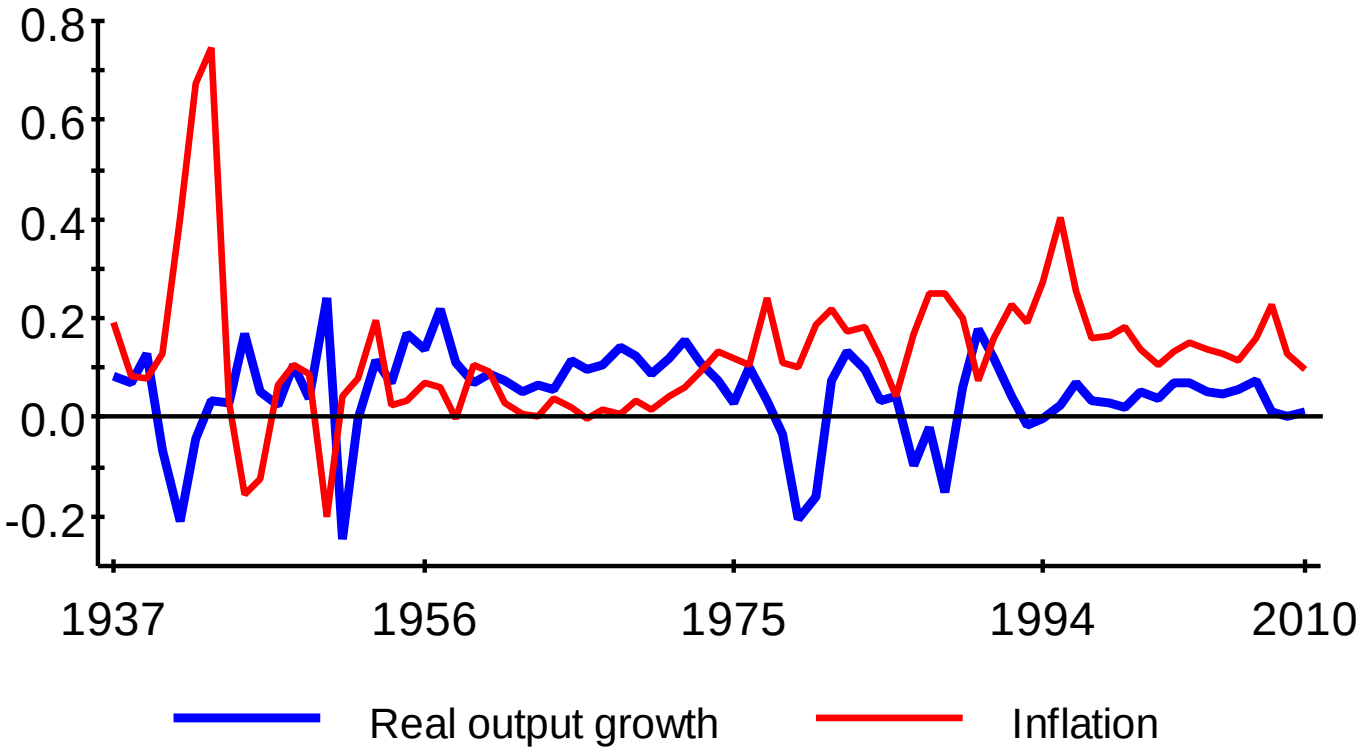
- **Keeping inflation in check**. This will require management of inflation expectations by building confidence in the government and the monetary authorities.
- A degree of **Central Bank Independence**.
- **Stability** of the financial system.
- **Orderly management** of foreign exchange markets!

High and Persistent Inflation, 1980-2015





Real Output Growth and Inflation, 1937–2010



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Real Output Growth and Inflation, 1937–2010

Sample Period	Real Output Growth (in percent)	Inflation (in percent)	Correlation
1937-2010	4.96	12.69	-0.39
1960-2010	4.64	13.08	-0.39
1960-1978	8.37	6.18	-0.42
1979-2010	2.42	17.18	-0.14
1988-2010	3.82	17.65	-0.40

Source: IMF *International Financial Statistics*, IMF *World Economic Outlook*, and Esfahani and Pesaran (2009).

Proximate Causes of High Inflation

- Clearly episodes of high inflation have been negatively associated with output growth in Iran.
- It is shown (see Esfahani et al., 2013) that high inflation in Iran has had **negative effects on both real output and investment**. Again this is indicative of certain **inefficiencies** in the Iranian economy.
- Episodes of high and persistent inflation in Iran are associated with **foreign exchange crises** (1990-92, 2004-2005, 2012-2013, 2017-2018).
- Foreign exchange crises and the subsequent large currency devaluation in turn accentuate the inflationary process.
- This initiates a **vicious cycle** which is politically difficult to stop and tends to be repeated in an episodic manner.

Vicious Circle of Excess Inflation and Devaluation

- Unless a comprehensive package of monetary and fiscal reforms are undertaken it is clear that in due time (6-8 years) cumulated excess inflation in Iran eventually will lead to a **currency crisis which in turn fuels the inflation**.
- The relationship between inflation and devaluation is bi-directional (non-causal).
- But experience from Latin American countries suggest that to prevent currency crises – it is essential that **domestic rate of inflation is brought in line with the level of prevailing foreign inflation**.
- In the words of Gustavo Franco (Governor of the Central Bank of Brazil, 1994-1999) inflation became endemic when "**People and their political representatives voted to give themselves things they could not afford**."
- **Fiscal responsibility** and **confidence** and **capacity building** became the corner stones of Brazilian fight against inflation.
- But to combat inflation, like Brazil, **a new social contract is needed** that recognizes to balance individual demands and the aggregate economic realities.

Oil Revenue Volatility & Excessive Exchange Rate Volatility

- It is important to note that the lack of an appropriate mechanism for the management of oil revenue volatility can also result in excessive exchange rate volatility, as witnessed in Iran particularly since the revolution.
- We have seen periods of relative stability in the rate of rial to US dollar punctuated with large devaluations of rial, generally reflecting the **differential levels of inflation in Iran relative to the rest of the world**.
- We have also seen that high inflation and excess oil revenue volatility both affect output growth negatively, which harms the competitiveness of the Iranian economy domestically (in the case of imports) and abroad (in the case of non-oil exports).
- But such losses in competitiveness do not show up in the rate of rial to dollar immediately, and their effects work gradually and are often triggered by some exogenous shock, such as major **domestic political developments**, **military treats**, or the **announcement of new sanctions**.
- The establishment of **an effective oil revenue stabilization fund can therefore also play a crucial role in the stabilization of the rial**, which is a worthy objective in its own right.

Badly Needed Structural Reforms

- It will be important to reform the economic structure, increasing transparency and openness to private sector initiatives and foreign investment and **improve the business environment in general**.
- This may be very **threatening to existing economic vested interests**. Removal of price controls and untargeted subsidies may also be **politically difficult**.
- **Reforms of the banking sector** (stricter supervision and increased capitalization).
- **Labour market reforms** should be in place to increase labour force participation (in particular female).
- Product and service market reforms.

The Role of Revolutionary Guard in the Economy

- **Scope of IRGC Activities:** It is estimated that IRGC control between 10-30% of the Iranian economy. There are few public details available about the Revolutionary Guards' business interests. Companies known to be affiliated to IRGC include Sadra Iran Maritime Industrial Company (oil and gas projects), Shahid Rajaee Professional Group (construction), Etemad Mobin Development Company (bought Telecom Company of Iran for $7.8bn in 2009), Ansar Bank and Sepanir Oil and Gas Engineering.

- The **economic reach of IRGC** is wide-ranging and cover many other sectors, such as health, agriculture and petrochemicals.

- Due to the semi-state nature of the companies affiliated to the IRGC, they have **distortionary effects** on the private sector, are **not adequately accountable**, and tend to **encourage cronyism**.

- With new US sanctions against IRGC, there is the additional concern that IRGC's economic involvement **might deter foreign investors** who fear they could inadvertently end up doing business with entities linked to IRGC.

Concluding Remarks

- Sanctions have, no doubt, harmed the Iranian economy – but one should not underestimate the damage done by years of economic mismanagement.

- **Iran needs a more resilient economy**, which implies:
  - strengthened institutions and policy mechanisms which act as shock absorbers in the face of high levels of oil revenue volatility
  - better conduct of fiscal and monetary policy
  - growth-friendly fiscal policies as well as structural reforms
  - private sector investment
  - diversification
  - regional development policies should be initiated that give priorities to remote regions that have been left behind
  - the role of semi-government agencies in initiating politically motivated expenses, and having priority over access to bank loans and credits must also be curtailed.

Concluding Remarks

- **In order to promote growth**, policies should be devised:
  - to control inflation;
  - to serve as shock absorbers negating the adverse effects of oil revenue volatility;
  - to reduce rent seeking activities; and
  - to prevent excessive dependence of government finances on oil income.

- Bottom line: Iran needs to adopt a comprehensive package of fiscal, monetary, financial and structural reforms aimed at addressing its inter-related challenges.

- **The policy choices are not easy**!

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