Studying the Simultaneous Effects of Economic Sanctions Shocks on Iran's Economic Sectors

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Abstract

Basically, quantitative specification of the effects of sanctions on economic sectors has undeniable importance for increasing the buffering the country's economy against their negative effects. On the other hand, majority of the estimated models in this field have been carried out through entering the dummy variables and studying part of the economy. Therefore, in the present study, the effects of economic sanctions was studied on Iran's productive economic sectors using 4 criteria: 1. Oil export revenues shock, 2. Non-oil export shock, 3. Importing raw materials, capital and intermediate goods shock and 4. Exchange rate shock. For this purpose, data related to the period 1988-2017 was gathered from Central Bank of Iran. Also, for data analysis, Structural Vector Auto-Regressive (SVAR) model and Impulse Response Functions (IRF) were applied. The results proved that economic sanctions reduced the value added of the considered productive sectors. But the effect of the studied economic sanction criteria on the productive sectors under study were diverse so that among the four studied economic sanction criteria: exchange rate shock, importing raw materials, capital and intermediate goods shock, non-oil export shock and Oil export revenues shock had the most negative effect on value added of considered sectors, respectively. In addition, value added of the agricultural sector, value added of construction sector and value added of the industrial and mining sector, had the the least effect, respectively.

Keywords: Economic sanctions, economic productive sectors, SVAR model, IRF.

JEL Classification :C32, F51, O17.

1. Introduction

Generally, sanctions have affected Iran's economic situations through three channels:

a. Oil sanction, which caused extreme decrease in oil export and oil exporting revenues;

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b. Trade barriers, which put majority of marginal and intermediate goods in the sanctions list and make banking transactions difficult.

c. Extreme increase in foreign exchange rate, which caused an increase in importing goods, importing intermediate materials for firms and households.

   Although, it is possible that Iran could alleviate the negative effects of sanctions in some fields with emphasis on internal capabilities and changing main trade partners, but undoubtedly sanctions have had negative effects on national economic performance. Assessing the different dimensions of these effects on the Iranian economy requires various studies. On the other hand, majority of the studies carried out in this field, only considered one economic or financial sector and these effects have not been studied comprehensively and simultaneously. Accordingly, the present study attempts to answer the key question whether economic sanctions shocks including 1. Oil export revenues shock, 2. Non-oil export shock, 3. Importing raw materials, capital and intermediate goods shock and 4. Exchange rate shock) have had a significant effect on value added of Iran's production sectors (industry and mining, agriculture and construction).

2. Background

Dizaji (2018) examined how trade openness (due to lifting the sanctions on trade) could affect the political institutions and military expenditure in Iran based on the available dataset for the period 1960–2011. Using impulse response functions (IRF) and a variance decomposition analysis (VDC) on the basis of a vector autoregressive (VAR) model, the results suggested that the response of political institutions to an improvement in international trade is negative and statistically significant, whereas that of military spending is positive and significant. Moreover, the shocks to trade openness influences military spending more than non-military spending over all the years after the initial shocks.

Yelna and Faryal (2016) analyzed the dynamic relationship between oil price shocks, economic sanctions, and leading macroeconomic indicators in Russia. They applied vector autoregression (VAR) to quantify the effects of oil price shocks as well as western economic sanctions on real GDP, real effective exchange rate, inflation, real fiscal expenditures, real consumption expenditures, and external trade using quarterly data from 1999:1 to 2015:1. The results of their study showed the significant impact of oil prices on the Russian economy. They predicted that Russia's economic outlook is not very optimistic. If sanctions remain until the end of 2017, the quarter-to-quarter real GDP will contract on average by 19% over the next two years.

   Neuenkircha and Neumeierb (2015) empirically assessed how economic sanctions imposed by the United Nations and the United States affect the target states' GDP growth. Their sample included 160 countries out of which 67 experienced economic sanctions over the period 1976–2012. They found, first, that UN sanctions have a statistically and economically significant influence on

the target state's economic growth. On average, the imposition of UN sanctions decreases the target state's annual real per capita GDP growth rate by more than 2% . These adverse effects last for a period of 10 years and lead to an aggregate decline in the target country's GDP per capita by 25.5%. Comprehensive UN economic sanctions, that is, embargoes affecting nearly all economic activity, trigger a reduction in GDP growth by more than 5%. Second, the effect of US sanctions is much smaller and less distinct. The imposition of US sanctions decreases the targetted states' GDP growth by 0.75–1 pp. This detrimental impact on growth persists for seven years and accounts for an aggregate 13.4% decline in GDP. Moret (2014) analysed semi-structured interviews, official discourse and case studies to explore early reports of negative impacts on the health of ordinary citizens in Iran and Syria and examined associated policy responses, particularly in the EU context. The author outlined why a shift towards broader-based sanctions could be problematic for the EU and outlined the constraints currently preventing more efficient risk mitigation. This paper suggests ways that sanctions, representing an increasingly vital, albeit contested, tool of EU foreign and security policy, could be used in a more prudent manner if a worsening humanitarian situation is to be avoided.

3. Method

In the present study, Structural Vector Auto-Regressive (SVAR) model and Impulse Response Functions (IRF) were applied were used for data analysis according to the study by Chatziantoniou et al. (2013) as follows:

$$A_0 Y_t = C_0 + \sum_{i=1}^{p} A_i Y_{t-i} + \varepsilon_t$$

where Y_t is 7*1 vector of endogenous variables:

$$Y_t = \begin{bmatrix} Loil & LNX & LIM & LEXR & LYIND & LYAGR & LYRST \end{bmatrix}$$

where Loil is log of oil export revenues, LNX: represents log of non-oil export, LIM denotes log of importing raw materials, capital and intermediate, LEXR shows log of exchange rate, LYIND is value added of industry sector, LYAGR denotes value added of agriculture sector and LYRST is value added of construction sector.

4. Results and discussion

The results indicated that all variables are static in 1st level, optimum lag is 1 and there is no co-integration between the considered variables. Also the results of SVAR model IRF showed that economic sanctions reduce the value added of the considered productive sectors. But the effect of the studied economic sanctions criteria on the considered productive sectors were different so that among the four studied economic sanction criteria: exchange rate shock, Importing raw

materials, capital and intermediate goods shock, non-oil export shock and Oil export revenues shock had the most negative effect on value added of considered sectors, respectively. In addition, value added of the agriculture sector, value added of construction sector and value added of industry and mine sector, were least affected from the studied economic sanction criteria, respectively.

5. Conclusions and recommendations

The results of the present study showed that economic sanctions reduce the value added of considered productive sectors in Iran (i.e., industry and mine, agriculture and construction). Therefore, considering the effect of economic sanctions on Iran's economic sectors (especially the industry and mine sector) it is recommended to policy makers in the industry sector to implement the whole policies of resistive economy because outcomes of this policy could insure the Iran's environment economy against the shocks of economic sanctions.

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