



Shahid Chamran  
University of Ahvaz

## Quarterly Journal of Quantitative Economics

Journal Homepage:

[www.jqe.scu.ac.ir](http://www.jqe.scu.ac.ir)

Print ISSN: 2008-5850

Online ISSN: 2717-4271



### The Impact of Currency Fluctuations on the Effect of Monetary Policies on Iran's non-oil Trade Balance with an Emphasis on Regime Changes

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#### ARTICLE HISTORY

Received: 15 February 2021

Revision: 10 October 2021

Acceptance: 19 October 2021

#### JEL

#### CLASSIFICATION

C24, E42, F31

#### KEYWORDS

Real exchange rate, non-oil trade balance, monetary policies, currency fluctuations

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**Acknowledgments:** Acknowledgments may be made to individuals or institutions that have made an important contribution.

**Conflict of Interest:** The authors declare no conflict of interest.

**Funding:** The authors received no financial support for the research, authorship, and publication of this article.

### How to Cite:

Argha, Leila., Mehnatfar, Yousef & Radpour, Maysam. (2024). The Impact of Currency Fluctuations on the Effect of Monetary Policies on Iran's non-oil Trade Balance with an e Emphasis on Regime Changes Emphasis on Regime Changes. *Quarterly Journal of Quantitative Economics (QJE)*, 20(4), 111-145.



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## EXTENDED ABSTRACT

### INTRODUCTION

One of the most important challenges of Iran's economy in recent decades is its excessive reliance on oil revenues. According to the time series of the central bank, during the years after the Islamic revolution and especially the years after the imposed war, on average 80 to 90 percent of the export income, 40 to 50 percent of the government's annual budget and 20 percent of the country's total gross domestic product It is provided from the place of oil export. Based on this, the development of the export of non-oil products with a relative advantage in the world markets is considered an inevitable requirement for the country of Iran. In other words, due to the strong dependence of the country's economy on oil on the one hand and the instability and extreme fluctuations of oil prices in the world markets, as well as due to the dominance of a multilateral monopoly market on it on the other hand, many anomalies that rule this market It is transferred inside and causes economic activities to fluctuate according to the exchange rate (Maghdisi and Ali-Shahi, 2016). According to economic planners and policy makers; The only way to free the country from the single-product economy and dependence on foreign exchange income from the sale of oil, as well as to meet the country's ever-increasing foreign exchange needs, is to develop non-oil exports and access global markets. If the foreign currency demand for imports is met from the foreign exchange earnings of non-oil exports, the country's economy will not need oil export earnings and the direct injection of these oil foreign exchange resources into the domestic economy in the current form. For this reason, the economic policy makers in Iran have paid special attention to the improvement of the non-oil trade

balance in the medium-term (economic and social development programs) and long-term (Perspective Document of Iran 1404) programs of the country and mainly emphasized on The monetary and banking sector has been supported by granting facilities with lower interest than non-oil producers and exporters.

Due to the importance of this issue, in this study, the role of currency fluctuations in the impact of monetary policies on Iran's non-oil trade balance has been analyzed seasonally, with an emphasis on regime changes during the period of 1352-1396. In this regard, EGARCH regression has been used to model currency fluctuations and STAR regression has been used to investigate the role of these fluctuations in the impact of monetary policy on the non-oil trade balance.

## METHODOLOGY

Following the empirical studies, the following model has been considered to achieve the goals of this study:

$$lxtm_t = c + \alpha(lxtm_{t-1}) + \beta(lrexch_t) + \gamma(lmtgdp_t) + \delta(vrexch_t * lmtgdp_t) + \mu(loilx_t) + \theta(lopeness_t) + \varepsilon_t \quad (1)$$

where in,

$lxtm_t$ : natural logarithm of the ratio of non-oil exports to total imports in year  $t$ ;

$lrexch_t$ : the natural logarithm of the real exchange rate (the product of the free market exchange rate by the global producer price index divided by the producer price index in Iran) in year  $t$ ;

$vrexch_t$ : currency volatility index (conditional variance of variable  $lrexch_t$ ) in year  $t$ ;

$lmtgdp_t$ : the natural logarithm of the ratio of total liquidity to Iran's nominal GDP in year  $t$ ;

$vrexch_t * lmtgdp_t$ : the natural logarithm of the ratio of total liquidity to Iran's nominal GDP in the currency volatility index

loilx<sub>t</sub>: natural logarithm of revenues from oil and gas exports in million dollars in year t;

lopeness<sub>t</sub>: natural logarithm of trade openness index (ratio of total trade to nominal GDP) in year t;

$\varepsilon_t$ : is the residual of the model in year t.

After estimating exchange rate fluctuations by EGARCH regression in the period of 1352-1996 on a seasonal basis, the STAR model was used to investigate the role of exchange rate fluctuations in the impact of monetary policies on Iran's non-oil trade balance, emphasizing regime changes in the period. The study is estimated. Also, all the data were obtained from the database of the Central Bank of the Islamic Republic of Iran and the World Bank.

## FINDINGS

The results of STAR model estimation showed that there are two regimes including high and low regime with a threshold value of -4.055 for the trade balance variable in the studied time period. The results related to the low regime (trade balance less than -4.055) show that the variables of trade balance with one break, real exchange rate, currency volatility index with monetary policy, liquidity and trade openness index are respectively 980/13, -1.299, -0.462, -1.404 and -2.484 have an effect on the trade balance. In the above regime (trade balance more than 4.055), variables of trade balance with one break, real exchange rate, currency volatility index with monetary policy, liquidity and trade openness index are 25.601, 1.604, 562 respectively. 0.0, 2.177 and 3.158 have an effect on the trade balance. Therefore, in the low regime, the exchange rate fluctuation has a negative effect on the trade balance, and in the low regime, it has a positive effect. This result can be due to the severe exchange rate fluctuations in the post-revolution period, which caused domestic goods to become cheaper compared to foreign goods and increased non-oil exports due to the decrease in the value of the national currency. Although the increase in non-oil exports in the country is mainly in the form of raw materials and agricultural products, and industrial products have a very small share in the country's exports. The dependent variable coefficient with one break in both regimes has a positive effect on the trade balance in the current period, which is

consistent with empirical studies. Other variables have negative coefficients in the low regime and positive coefficients in the high regime, which shows that the real exchange rate, liquidity and trade openness had a negative effect on the trade balance in the period before and at the beginning of the revolution until the fourth quarter of 2012. But after 2012, the mentioned variables have had a positive effect on the trade balance. The reason for this can be due to the decreasing trend of the trade balance during the period of the low regime, which could not have a positive role on the trade balance due to the excess of imports and the lack of non-oil exports, the variable of trade openness, as well as the exchange rate and liquidity. But in the above regime, which lasts from the first quarter of 2013 to the fourth quarter of 2016, the trend of the trade balance is increasing in these years. Therefore, the aforementioned factors have also played a positive role in increasing the trade balance, although as it was said, most of the country's non-oil exports are from the raw materials of industrial production and agricultural products, and it cannot be said that the improvement of the trade balance during the high regime period is due to It has been an increase in the export of industrial products. The results obtained from this research are consistent with the results of the studies of Wong and Chong (2016), Gomez and Alvarez (2006). Also, the results of the research of Agbola (2005) and Gilfasan and Risagar (1984) are in accordance with the results of this study in the low regime. From the point of view of the effect of liquidity on the trade balance, the results obtained are consistent with the research of Fitras et al. (2014).

## CONCLUSION

The results of STAR model estimation showed that there are two regimes including high and low regime with a threshold value of -4.055 for the trade balance variable in the studied time period. The results related to the low regime (trade balance less than -4.055) show that the variables of trade balance with one break, real exchange rate, currency volatility index with monetary policy, liquidity and trade openness index are respectively 980/13, -1.299, -0.462, -1.404 and -2.484 have an effect on the trade balance. In the above regime (trade balance more than 4.055), variables of trade balance with one break, real exchange rate, currency volatility index with monetary policy, liquidity and trade openness index are 25.601, 1.604, 562 respectively. 0.0, 2.177 and 3.158 have an effect on the trade balance. Therefore, in the low regime, the exchange rate fluctuation has a negative

effect on the trade balance, and in the low regime, it has a positive effect. This result can be due to the severe exchange rate fluctuations in the post-revolution period, which caused domestic goods to become cheaper compared to foreign goods and increased non-oil exports due to the decrease in the value of the national currency. Although the increase in non-oil exports in the country is mainly in the form of raw materials and agricultural products, and industrial products have a very small share in the country's exports. The dependent variable coefficient with one break in both regimes has a positive effect on the trade balance in the current period, which is consistent with empirical studies. Other variables have negative coefficients in the low regime and positive coefficients in the high regime, which shows that the real exchange rate, liquidity and trade openness had a negative effect on the trade balance in the period before and at the beginning of the revolution until the fourth quarter of 2012. But after 2012, the mentioned variables have had a positive effect on the trade balance. The reason for this can be due to the decreasing trend of the trade balance during the period of the low regime, which could not have a positive role on the trade balance due to the excess of imports and the lack of non-oil exports, the variable of trade openness, as well as the exchange rate and liquidity. But in the above regime, which lasts from the first quarter of 2013 to the fourth quarter of 2016, the trend of the trade balance according to figure (2) is increasing in these years. Therefore, the aforementioned factors have also played a positive role in increasing the trade balance, although as it was said, most of the country's non-oil exports are from the raw materials of industrial production and agricultural products, and it cannot be said that the improvement of the trade balance during the high regime period is due to It has been an increase in the export of industrial products. The results obtained from this research are consistent with the results of the studies of Wong and Chong (2016), Gomez and Alvarez (2006). Also, the results of the research of Agbola (2005) and Gilfason and Risagar (1984) are in accordance with the results of this study in the low regime. From the point of view of the effect of liquidity on the trade balance, the results obtained are consistent with the research of Fitras et al. (2014)

Based on the above results, it is recommended that the monetary policy makers take into account the currency fluctuations in order to improve the non-oil trade balance through monetary policies. In other words, monetary policies should be used to improve the non-oil trade balance when the currency market is less volatile. Or at least, appropriate currency policies to reduce currency fluctuations along with monetary policy should be considered simultaneously in improving the trade balance. Based on this, if there are severe currency fluctuations, monetary policies in the country cannot improve the non-oil trade balance. This shows that the growth of liquidity in the country regardless of its origin, if the currency market in the country does not reach the necessary stability, it cannot be considered a powerful tool in improving the country's non-oil trade balance. Also, the export of the country should be shifted from the export of raw materials to the export of finished goods and industrial products. Because as the trend of the country's trade balance showed, the trade balance with non-oil exports has been negative in the entire time period studied, and for the trade balance with non-oil exports to be positive, industrial production must increase, which will ultimately bring economic growth and development.

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