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Monetary Policy and Exchange rate Pass-through Degree in Iran

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Abstract

The present study examines the effect of different degrees of pass-through under terms of trade and export productivity shocks on the Iranian economy. An analysis of the effect of different degrees of exchange rate pass-through on the Iranian economy shows that: the higher the degree of pass-through is, the lower the effect of exchange rate volatility on imported inflation and CPI inflation will be. Under these conditions, the effect of the monetary policy of the exchange rate channel on the economic variables is also reduced. In addition, the incomplete exchange rate pass-through will reduce the impact of shocks on the economy. In other words, the exchange rate absorbs some of the effects of shocks with incomplete pass-through.

Keywords: Incomplete exchange-rate pass-through, Monetary policy, Dynamic Stochastic General Equilibrium, Terms of trade shock, Export productivity shock.

JEL Classification: F41, F31, F59, E52, E17.

1. Introduction

Investigating the effect of the exchange rate on economy and the responses of monetary policy to shocks under incomplete exchange-rate pass-through (ERPT) is one of the main issues in the Iranian economy. The exchange rate has a significant effect on inflation and terms of trade, and it transfers the effects of different shocks through import prices and the consumer price index to the whole economy. The exchange rate has an absorber or amplifier effect on shocks, playing an important role in implementation of monetary policies. However, the important thing is that the rate of absorbing or raising depends on the exchange rate pass-through. Therefore, the exchange rate pass-through is significant in terms of monetary policy performance.

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Several studies have examined exchange rate pass-through effect empirically. Abtahi (2016), Tayebi et al. (2015) examined the effect of exchange rate pass-through on the inflation. Asgharpur et al. (2011) analyzed the effect of Exchange Rate Pass-Through on non-oil export Price of Iran. Bahrami & Ghoreishi, (2011), Komijani & Tavakolian (2012) have contributed to the literature on modelling the monetary policy in an open economy with the assumption of complete exchange rate pass-through in Iran. Using a New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model with the assumption of incomplete exchange rate pass-through, Manzoor & Taghipour (2015), investigated the dynamic effects of various shocks. It seems to be necessary to analyze the effect of incomplete exchange rate pass-through on the economy and thereby its implications on the monetary policy in the case of Iran.

In the present study, a multi-sector DSGE set-up has been developed for the economy of Iran based on Hove et al. (2015), Monacelli (2005) and Cashin et al. (2004) to examine the incomplete exchange rate pass-through effect on Iran's economy and its implication on monetary policy under the framework of a Dynamic Stochastic General Equilibrium model, and then it analyzes the effect of different degrees of pass-through under terms of trade and export productivity shocks on Iranian economy.

2. Literature Review

Exchange rate shock is transmitted into the economy via two channels, via the direct channel through changes in import price and the indirect channel through changes in exports (Buyandelger, 2015). In addition, exchange rate provides an additional channel for monetary policy transmission. As monetary authorities change the nominal interest rate, the economy is influenced through two channels, via real interest rate and exchange rate. These two channels influence the aggregate demand and, then, affect inflation indirectly. However, exchange rate influences inflation through import price directly. Therefore, the effect of monetary policy transmitted through exchange rate channel depends on the degree of exchange rate pass-through (Adolfson, 2001).

2-1. Small open economy model

In this study, the model was developed based on Hove et al. (2015), Monacelli (2005) and Cashin et al. (2004) for the economy of Iran. This theoretical framework characterizes a small open oil exporting economy by two domestic sectors: traded sector and non-traded sector. In the non-traded sector, prices are sticky according to Calvo`s (1983). There is one external sector which is the rest of the world. Based on empirical evidence such as Shajari et al (2015), pass-through is assumed to be incomplete in model. Incomplete exchange rate pass-through is introduced via nominal rigidities on imports. Following Monacelli (2005), under the assumption of incomplete pass-through, the Law of One Price (LOP) does not hold. This means that the price of any of the imported goods in the market of small open economy is not equal to price of the identical good in

the world market in terms of domestic currency. In other words, the economy is identified by deviation of the world price from the domestic currency price of imports. Monetary policy is conducted with a family of generalized Taylor rules that target CPI inflation and output growth deviation from steady- state values:

$$R_t = R_{t-1}^{\rho_r}\left\{\left(\frac{Y_t}{\overline{Y}}\right)^{\omega_1}\left(\frac{\Pi_t}{\overline{\Pi}}\right)^{\omega_2}\right\}^{1-\rho_r}$$

where ω_1 and ω_2 are the policy responses to deviations of the output and CPI inflation from their steady state level, respectively.

3. Results

This section analyzes the dynamic properties of the models when the economy is exposed to the commodity terms of trade shocks and productivity shocks in the export sector under three alternative degrees of exchange rate pass-through.

3-1. Commodity terms of trade shock

Figure 1 presents impulse responses of selected macroeconomic variables to the commodity terms of trade shock. The Increasing degree of exchange rate pass- through has decreased volatility of total production. Also it has led to a decrease in volatility of import inflation, CPI inflation and inflation in non-traded sector. Thus, the exchange rate with incomplete pass-through absorbs some of the effects of the commodity terms of trade shocks. In reaction to inflation and production, the nominal interest rate increases as contractive monetary policy. With increasing degree of exchange rate pass-through the nominal interest rate has increasingly reduced.

3-2. Export productivity shock

Figure 2 presents impulse responses of key macro-economic variables to export productivity shock in three different degrees of pass-through. The Increasing degree of exchange rate pass-through leads to a decrease in volatility of total production, import inflation, CPI inflation and inflation in non-traded sector. In other words, the impact of export productivity shock tends to be reduced by the exchange rate channel and its reducing effect is larger under the higher-degree pass-through. In reaction to inflation and production, the nominal interest rate decreases as expansionary monetary policy. With increasing degree of exchange rate pass-through, the fluctuations of nominal interest rate have increasingly reduced.

Figure 1: Impulse responses to a commodity terms of trade shock

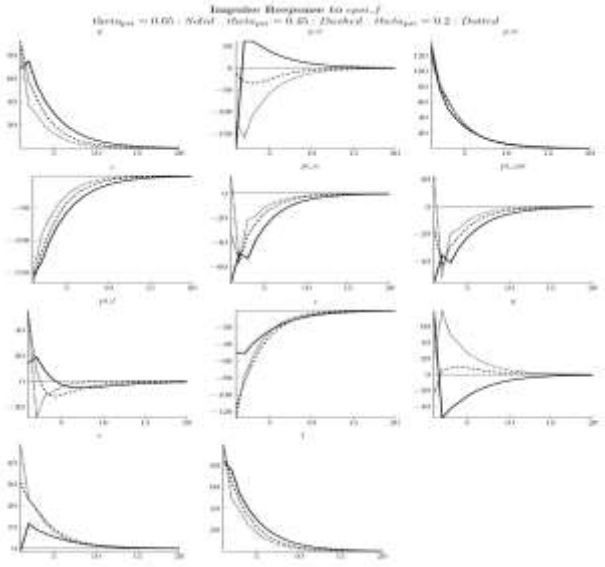
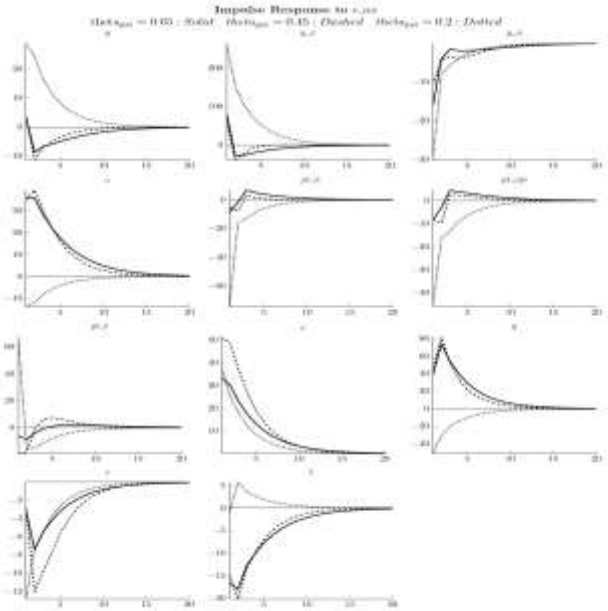


Figure 2: Impulse responses to an export sector productivity shock



4. Conclusion

This study examined the impact of incomplete exchange rate pass-through on the Iranian economy and its implication for monetary policy under the different shocks. Based on the results, under the commodity terms of trade shocks and

productivity shocks in the export sector, the increasing degrees of exchange rate pass-through lead to less volatilities in the variables. Thus, exchange rate channel absorbs some of the effects of these shocks. Therefore, it is important to take incomplete pass-through into account in carrying monetary policies to improve the effectiveness of these policies for the Central Bank of Iran.

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