The Investigation of Oil Price Shocks by Using a Dynamic Stochastic General Equilibrium: The Case of Iran

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Abstract : The aim of this paper is to investigate the role of oil price shocks in explaining business cycles in Iran using a dynamic stochastic general equilibrium approach. This model incorporates both productivity and oil revenue shocks. The results indicate that productivity shocks are relatively more important to business cycles than oil shocks. The model with two shocks produces different values for volatility, but these values have the same ranking as that of the actual data for most variables. In addition, the actual data are close to the ratio of standard deviations to the output obtained from the model with two shocks. The results indicate that productivity shocks are relatively more important to business cycles than the oil shocks. The model with only a productivity shock produces the most similar figures in term of volatility magnitude to that of the actual data. Next, we use the Impulse Response Functions (IRF) to evaluate the capability of the model. The IRF shows no effect of an oil shock on the capital stocks and on labor hours, which is a feature of the model. When the log-linearized system of equations is solved numerically, investment and labor hours were not found to be functions of the oil shock. This research recommends using different techniques to compare the model's robustness. One method by which to do this is to have all decision variables as a function of the oil shock by inducing the stationary to the model differently. Another method is to impose a bond adjustment cost. This study intends to fill that gap. To achieve this objective, we derive a DSGE model that allows for the world oil price and productivity shocks. Second, we calibrate the model to the Iran economy. Next, we compare the moments from the theoretical model with both single and multiple shocks with that obtained from the actual data to see the extent to which business cycles in Iran can be explained by total oil revenue shock. Then, we use an impulse response function to evaluate the role of world oil price shocks. Finally, I present implications of the findings and interpretations in accordance with economic theory.