

A CGE Analysis of Welfare and Sectoral Impacts of Removing Interest Rate Subsidies: A Model Based on Financial SAM and Flow of Fund Accounts

Topic: CGE and Econometric Input-Output Modeling

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INTRODUCTION

What are the sectoral impacts of removing interest rate subsidies? Which sectors may benefit from the policy and which sectors may not? How changes in interest rate in financial sector may affect real sectors? To answer these questions, this paper empirically investigates the way interest rate affect real sector of the economy. We also measure the sectoral impacts of interest rate changes.

DATA

This paper develops an integrated financial Social Accounting Matrix (SAM) of the Iranian economy taking into account the Flow of Fund accounts. The extension of the SAM on financial side and inclusion of information on Flow of Funds is an important contribution of this study. The integrated financial SAM provides an accounting record for the financial and real economy. Financial part includes central bank, financial institutions, and different kinds of loans, deposits, equity, and bonds. Furthermore, the implicit subsidies in financial sector are estimated

METHOD

We introduce FCGE-IR, a small open economy Computable General Equilibrium (CGE) model for Iran, to capture the general equilibrium effects of the policy. To identify sectoral vulnerabilities and strengths for the economy with respect to the interest rate shocks, we introduce markets for financial assets. The demand and supply in markets are derived from optimization of utility, production costs, portfolio, and capital financing. We assume imperfect factor mobility across sectors, as well as imperfect substitution between domestic and imported commodities.

RESULTS

Findings indicate that this policy leads to net welfare gain for Iranian economy. The welfare index rises between 0.8% and 1.7% and the production level rises for all sectors in different scenarios. The results exhibit that the agriculture and construction sectors have significant linkages to the interest rate shocks and hence, their gains are lower with respect to other sectors. On the other hand, the manufacturing, mining, and services sectors have relatively weak linkages with the interest rate shocks of the Iranian economy. In addition, our results suggest that the capital moves out from agriculture and construction sectors into the manufacturing, mining, and services sectors.

APPENDIX 1: TRANSMISSION MECHANISM

Removing interest subsidies affects economy in several ways. There are two ways in which increasing interest rate may affect real sectors and households. First, rise in costs of production causes decline in production, price increase, and fall in welfare. Second, it may promote saving and income of depositors which generates a positive welfare impact. Although the economic theory suggests a net welfare gain after removing subsidies, the overall effect on welfare must be calculated empirically.

In a CGE framework, the financial sector affects producers and household directly. In other words, changes in financial sectors would change income and costs of households and also cost of production and activity levels. Then, these changes influence demand for goods and services by households and producers. They also affect supply of goods and services.

Interest rate may affect imports and exports. Export is a function of exchange rate, activity level, domestic and foreign price of commodities. If change in interest rate influences these factors, then

export will change, too. Import is also a function of income, exchange rate, domestic price and the price of product in foreign world. Thus, changes in interest rate influence import too.

APPENDIX 2: FCGE-IR MODEL

FCGE-IR model is used to analyze interactions between production, consumption, foreign trade, financial markets, and public sector. Interaction of demand and supply determines production level. Theoretically, the supply of each commodity is a function of activity level, input prices, output price, and foreign prices. The demand is also a function of income, own price, price of substitute goods and foreign prices.

Production is modeled through Nested Constant Elasticity of Substitution (NCES) functions. Producers combine labor and capital with other intermediate inputs in order to produce products. Output of each sector is produced using capital (K), labor (L), and intermediate goods (M). Intermediate goods and services are either tradable or non-tradable goods. Produced goods are also supplied into domestic supply and exports using a Constant Elasticity of Transformation (CET) function.

Households devote their income to consumption and investment goods. Investment goods are mainly construction, machinery and equipment, and jewelry. Thus, they can be tradable or non-tradable.

In this model, saving level of institutions is determined based on income level and saving rate. Institution's investment has three forms: financial portfolio, inventory formation, and fixed capital formation. Using portfolio optimization, demand and supply of financial assets will be defined.