“Time Series Analysis on Macroeonomy in Japan” : Editor’s Introduction

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Editor’s Introduction

Hiroshi Morita

I am pleased to introduce a special issue of the Journal of International Economic Studies, entitled “Time Series Analysis on Macroeonomy in Japan.” As an outcome of the research project “Analysis on Macroeconomic Structure in Japan” of the Institution of Comparative Economic Studies, this issue comprises three articles which tackle important macroeconomic problems using a sophisticated time-series empirical method. I believe that all the papers achieve the principal purpose of our project, which is to provide the readers with an understanding of empirical methods and insight into macroeconomic structure.

The first paper, entitled “Price and Wage Dynamics and Labor Market Conditions in Japan” written by Hiroshi Morita, examines the state-dependent relationship between labor market tightness and price-wage rigidities. In the phase of increasing inflationary pressure, it is often discussed whether the pass-through of such an increase in prices to nominal wages is sufficient and timely. Indeed, if this is case, real wages do not decline even in the inflationary phase and households should not suffer very much from inflation. However, amid the long-lasting deflation in Japan, the channel from prices to wages seems not to be functioning adequately, and thus real wages often decline in response to price increases stemming from external factors such as hikes in oil prices and commodity prices. The primary aim of this paper is to examine a transmission mechanism of structural shocks to prices and wages, and then reveal a source of insufficient pass-through between them. In the analysis, the Smooth Transition Vector Autoregressive (STVAR) model is employed to reveal the state-dependent effects of demand and supply shocks on prices and wages. The STVAR framework allows the dynamic responses of prices and wages to vary depending on the labor market tightness. Furthermore, this paper addresses the structural interpretation of the source of a state-dependency by conducting an impulse response matching technique based on the Dynamic Stochastic General Equilibrium (DSGE) model. From the methodological viewpoint, this paper combines two major methods in the macroeconomic analysis: the VAR model and the DSGE model, leading to a bridging of the gap between reduced-form analysis and structural interpretation. The results are summarized as follows. First, price and wage indexation in Japan is rather low. Second, as the labor market tightens, price becomes stickier, while wage becomes less sticky. Finally, the standard theoretical model can be used to sufficiently describe Japan’s economy at the period of labor market tightness. As the labor market loosens, however, the distance between the empirical and theoretical responses gradually grows.

The second paper, entitled “Macroeconomic Shocks and Firms’ Overseas Expansion: Evidence from the Factor-Augmented VAR Approach,” written by Shota Araki, Bin Ni, and Hiroshi Morita, analyzes the effects of macroeconomic variations, such as exchange rate and global GDP, on Japanese firms’ overseas expansion behaviors. Using a novel dataset of individual firm’s panel data, the authors examine how macroeconomic shocks affect the distribution of overseas subsidiaries of individual firms. The key technical contribution of this paper is to propose the Factor Augmented

VAR (FAVAR) model with Tobit specification. The FAVAR framework is utilized to capture the transmission effects of one macroeconomic shock to the activities of a group of firms in a single model, while Tobit specification can deal with a truncated number of oversea subsidiaries. Namely, the number of overseas subsidiaries for some firms might be zero in some period, but Tobit specification allows us to include such data samples in the analysis. By using the panel data of firms, the analysis can derive the implication of the effects of macroeconomic shock on the firms' distribution. The proposed method in this paper is a bridge connecting macro data and micro data. The results can be summarized as follows. First, the authors show that most firms increase overseas subsidiaries in response to the appreciation of the exchange rate. However, the results of forecast error variance decomposition show that, compared with the exchange rate, global GDP shocks play a more important role in the variation of Japanese firms' overseas expansion. Additionally, the results indicate that the variation of the exchange rate has only a temporary effect on overseas expansion behaviors.

The third paper, entitled "The NG-SVAR Model under the Pearson Family of Distributions: Implementation with R Packages" written by Tadashi Nakanishi, explains the pseudo-likelihood estimation method of the VAR model with structural shocks following a non-Gaussian distribution as well as a presentation of the R program for conducting the estimation. The paper applies independent component analysis, which is an unfamiliar method in the field of econometrics, being used mainly in engineering, to separate and estimate the structural error term of the structural VAR model from the inductive system error term. In the R software, the use of "fastICA" allows for estimation. The distribution of the separated and estimated structural error terms is then investigated using "PearsonMSC," which selects an approximate distribution of the estimated distribution from the Pearson family of distributions and estimates parameters that describe the shape of the distribution. Based on this information, a probability density function is constructed and estimated. In practice, this is not estimation but optimization and the optimization process can be implemented by using "optim." Although "optim" is used to obtain the contemporaneous matrix in the VAR model to be estimated by the pseudo-maximum likelihood method, initial values are needed to perform optimization. Therefore, the analysis uses the value obtained from the estimation method ("id.ngml"), which assumes the t-distribution and is a prior study of the pseudo-maximum likelihood method. The paper uses as initial values the values obtained from the value estimated by "id.ngml" plus a random number generated from a uniform distribution to set the initial value. By following these steps, a contemporaneous matrix can be estimated. The estimated matrix is used to draw the IRF and measure the policy effect of monetary policy.

Finally, I would like to express my deepest appreciation to the authors of this special issue for their cooperation. I am also very grateful to the members of my own research project.