

Dynamics of fiscal financing in a small open economy

Yen-Chen Wu^{a*}, Shikuan Chen^b, and Ming-Jen Chang^c

August, 21 2017

Abstract

In order to combat the recession and global financial crisis of 2007–2009, countries around the world have taken aggressive fiscal actions to stimulate demand through lower taxes and higher government spending, raising government fiscal deficits and debt accumulation. A marked rise in government debt has aroused the concern of scholars and policy makers. Rational expectations argue that how government debt are financed by fiscal instruments play a critical role in determining the resulting equilibrium and evolution of endogenous variables. Moreover, it is necessary to understand which fiscal instruments have historically responded to debt and how quickly they have done so when researchers try to predict the impacts of fiscal policy accurately.

Although theoretical studies have proposed many conclusions about the effects of debt financing, empirical research that estimates how debt-financing policies affect the economy is scarce. Several recent papers employed Bayesian methods to estimate fiscal policy rules and focused on modeling exogenous fiscal policy, where deficits are financed by lump-sum transfer adjustments (Forni et al., 2009; Kamps, 2007; Ratto et al., 2009; Zubairy, 2014). However, Leeper and Yang (2008) claimed that it can be seriously misleading to set aside debt dynamics and to ignore distortionary fiscal financing. Therefore, Leeper et al. (2010) constructed an estimated dynamic stochastic general equilibrium (DSGE) model which incorporates detailed specification of fiscal policy instruments and dynamic adjustments of fiscal instruments in response to the level of economic activity and to the state of government debt. They estimated their

^a Department of International Business, National Taiwan University, d99724011@ntu.edu.tw

^b Department of International Business, National Taiwan University, skchen@ntu.edu.tw

^c Department of Economics, National Dong Hwa University, mjchang@gms.ndhu.edu.tw

* Corresponding author

structure parameters with US data and found that all fiscal instruments except labor taxes react strongly to debt in the short run but long-run intertemporal financing comes from all components of the government's budget constraint. They also found that debt-financed fiscal shocks trigger long-lasting dynamics; short-run and long-run multipliers can differ markedly.

In this paper, we are interest in the effects of debt financing in a small open economy. First, we extend the basic model developed by Ghironi and Melits (2005) into a small open economy DSGE model with heterogeneous firms. Second, we incorporate four fiscal instruments - government spending, lump-sum transfers, and capital and labor taxes - adjust to stabilize debt in our model, following Leeper et al. (2010). Third, we use Bayesian methods to estimate the structural parameters with Taiwan quarterly data. Final, we solve for the dynamic responses to a temporary one standard deviation exogenous increase in each fiscal instrument. According to the Impulse responses, we find that the qualitative and quantitative effects of fiscal shocks depend on how government debt is financed in a small open economy. We also find that fiscal multipliers for output change dramatically in the small open economy.

Keyword: Fiscal policy, Debt financing, Heterogeneous firms, Small open economy, Bayesian estimation

References

- Forni, L., Monteforte, L., Sessa, L., 2009. The general equilibrium effects of fiscal policy: Estimates for the euro area. *Journal of Public Economics* 93, 559-585.
- Ghironi, F., Melits, M.J., 2005. International trade and macroeconomic dynamics with heterogeneous firms. *The Quarterly Journal of Economics* 120, 865-915.
- Kamps, C., 2007. Dynamic scoring in an estimated DSGE model of the US economy. Manuscript, European Central Bank.
- Leeper, E.M., Plante, M., Traum, N., 2010. Dynamics of fiscal financing in the United States. *Journal of Econometrics* 156, 304-321.
- Leeper, E.M., Yang, S.-C.S., 2008. Dynamic scoring: Alternative financing schemes. *Journal of Public Economics* 92, 159-182.
- Ratto, M., Roeger, W., in't Veld, J., 2009. QUEST III: An estimated open-economy DSGE model of the euro area with fiscal and monetary policy. *Economic Modelling* 26, 222-233.
- Zubairy, S., 2014. On fiscal multipliers: Estimates from a medium scale DSGE model. *International Economic Review* 55, 169-195.