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報告論題

Capital Allocation and Wealth Distribution in a Global Economy with Financial Frictions (with Been-Lon Chen and Kazuo Mino)

報告要旨

This paper constructs a two-country model in which firms with heterogeneous production efficiency are subject to financial constraints. In our setting, the total factor productivity (TFP) of the aggregate production function in each county depends on the cutoff level of production efficiency of firms. We first show that in the presence of international capital mobility, the production cutoff condition is affected by the wealth distribution between the two countries. We then examine the existence and stability of the steady-state equilibrium of the world economy as well as the long-run impacts of real and financial shocks. It is shown that, compared to global financial shocks, global real shocks tend to have larger impact on income and wealth in each country. The tractability of the model made it possible to analytically derive the main results.

This paper pays attention to the renewed concerns on the effects of financial frictions on macroeconomic activities, which are raised after the 2007-2008 global financial crisis and the subsequent worldwide recession. This topic has been actively explored in the field of international macroeconomics: many authors have examined behaviors of open economies in the presence of financial frictions. So far, research on this topic has analyzed two types of models: small open economy models and world economy models with two large countries. Most studies on small open economy models employed the standard neoclassical growth model with infinitely lived agents which is the basic analytical framework for studies on open economy macroeconomic models without financial frictions. Therefore, it is easy to understand the effects of financial frictions in the existing small open economy models by comparing them with the standard models without financial market imperfection. On the other hand, studies on two-country models have utilized various types of models. Some authors use two-period models, while others use overlapping generations framework. Infinite-horizon models have also been employed in the literature. Moreover, in general, the structure of the model economy is specified for discussing particular problems the researchers intend to address. This reflects the fact that two-country models are more complex than small open economy models, and hence, researchers should specify a model structure to derive

meaningful outcomes. Since the existing two-country models with financial frictions are not necessarily based on the prototype neoclassical growth model with infinitely-lived agents, it is often difficult to understand the effects of financial frictions by comparing them with the standard two-country models without financial frictions

Specifically, in our model economy, each country consists of workers and entrepreneurs. In the baseline model, it is assumed that workers do not save, so that their decisions do not play a substantial role in determining the behavior of the world economy. Each entrepreneur owns a firm, which may be hit by an idiosyncratic technological shock in every moment. Employment of physical capital by a firm is subject to financial constraints under which the level of physical capital employed is proportional to the net worth held by the entrepreneur who owns the firm. Combining this assumption of financial constraints with the heterogeneity in firms' productivity, there is an endogenously determined cutoff of capital efficiency: the firms whose productivity level exceeds the cutoff employ capital and produce. Otherwise, entrepreneurs act as rentiers. As a result, TFP of the aggregate technology in each country is affected by the efficiency cutoff, and the cutoff condition in turn depends on the aggregate wealth-capital ratio in each country.

We assume that the entrepreneurs in each country can lend to or borrow from the entrepreneurs in the other country by transacting international bonds. Hence, the rate of return to capital in each country equals the real interest rate on bonds, so that both countries hold the same rate of returns at each moment. Since the rate of return to capital is affected by the cutoff condition, the equalization of the rate of returns means that the aggregate wealth-capital ratios in both countries are related to each other. Consequently, TFP of the aggregate production function in one country depends not only on the wealth holdings of the domestic entrepreneurs but also on the stock of wealth held by the foreign entrepreneurs. Namely, the aggregate productivity in each country is affected by the aggregate wealth distribution between the two countries.

Given the setting mentioned above, we first investigate the existence and stability of the steady-state equilibrium of the world economy. We analytically confirm that the existence and stability of the steady-state equilibrium are generally established. Then, we conduct steady-state analyses. We inspect how a negative financial or technological shock in one country affects the other country's economic activities. We also examine the impacts of global financial or/and real shocks, that is, the shocks that simultaneously hit both countries. We find that compared to financial shocks, real shocks have larger impacts on the levels of income and wealth in both countries. This is particularly true if heterogeneity of production efficiency among the firms is low. This finding may give a simple answer in our model as to why the recent COVID-19 pandemic generated a larger scale worldwide recession than that caused by

the 2007-2008 global financial crisis.

There is a large body of literature on open economies with financial frictions. This paper is close to the standard two-country model without financial frictions. Differing from the standard setting, however, in the model economy we introduce stock-based borrowing constraints and heterogeneous firms. Since our model is based on the prototype neoclassical growth one, it is different from, at the same time much simpler than most of the related two-country financial frictions literature. Though simple models are not always better than complex ones: our model cannot address, such as the trade complementarity or foreign direct investment related issues, explored by Antras and Caballero (2009) and Wang et al. (2017). Our model, however, is useful for understanding how the liberalization of financial transactions affects resource allocation and wealth distribution of the world economy in the presence of financial frictions and firm heterogeneity. Moreover, the simplicity of our baseline model makes it much easier to extend it into various directions to discuss specific topics in international macroeconomics.