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## *Comment*

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This paper by Aoki, Benigno, and Kiyotaki (ABK) provides a useful sequel to their influential 2006 paper. Both papers rest on the observation that upon capital account liberalization, countries experience large swings both in the value of fixed assets and in the available amounts of foreign and domestic credits. The authors argue that although these changes are observed both by industrial and emerging market countries, they are ignored by the standard models. In particular, the authors would like to know how does the adjustment to capital account liberalization depend on the degree of development of domestic financial institutions and why the economies with underdeveloped financial systems are more vulnerable to these foreign and domestic credit shocks? To answer these questions, they develop a model of small open economy, where it is difficult to enforce debtors to repay their debt unless it is secured by a collateral. The fixed asset (land) acts as collateral and the borrower's credit limit is affected by the price of the fixed asset, and vice versa. The interaction between credit limits and the asset prices turns out to be a propagation mechanism, which may generate large swings in aggregate economics activities. The main result of both ABK (2006) and ABK (2007) is as follows. Capital account liberalization cause temporary recessions, but liberalization can also enhance long-run total factor productivity (TFP). The focus of the current paper is on the dynamics of asset prices—which leads to different short-run dynamics in TFP depending on the interaction between the value of the fixed assets, the credit limits, and the degree of the development of the domestic financial system.

I like this paper. I think linking capital account liberalization to the quality of the domestic financial markets and to broader institutional framework is the right way to proceed theoretically, given the evidence. There is an extensive empirical literature, which finds no effect of capi-

tal account liberalization on growth.<sup>1</sup> Some papers within this literature show that if there is any beneficial effect of foreign investment on growth it must be operating through the quality of domestic financial institutions.<sup>2</sup> Hence, to incorporate the role of financial markets in the analysis of the effects of capital account liberalization is essential. Another paper with a similar focus to the current paper is Mendoza (2006). The main difference between the two papers is that ABK allows for endogeneity in aggregate productivity based on differential effect of domestic financial development as opposed to exogenous productivity shocks in Mendoza (2006).

My main comments will be about the specific mechanisms and the results of the model that are hard to justify given the data. In the model there are two types of entrepreneurs: high productivity and low productivity. It is optimal for low types to lend funds to high types. Upon liberalization, outside source of funds become available and low types keep lending to high types. The assumption that liberalization only brings additional source of funding is definitely not true in the data and becomes problematic in this entrepreneurial setup. Upon liberalization, one form of financing will involve foreign direct investment (FDI). In fact, FDI is a much bigger source of external finance for emerging market countries than private equity and private debt, which is what the authors are focusing on.<sup>3</sup> Foreign direct investment not only provides direct capital financing, but also creates positive externalities via the adoption of foreign technology and know-how. The adoption process operates through licensing agreements, imitation, employee training, the introduction of new processes and products by foreign firms, and the creation of linkages between foreign and domestic firms. Recent empirical literature finds evidence of such externalities and knowledge spillovers.<sup>4</sup> The authors assume that productivity of each agent is positively correlated so high and low types stay like that. It is not clear why low types cannot benefit from knowledge spillovers and learn. The model does not allow the real-life situation, where low skilled workers are employed by the foreign company, they learn, and they start up a business. I understand that the authors' focus is on the change in TFP via the change in the resource allocation between high and low productivity producers even if the productivity of each producer stays constant. I think this is a simplifying assumption with not so simple repercussions. If shifting people from workers to entrepreneurs was allowed in the model, this will raise wages, pushing down investment demand and lowering the threshold at which unproductive entrepreneurs leave the

labor market, raising TFP at lower levels of financial development. This will alter the key results of the paper.

Another real-life benefit of capital account liberalization is the improvement in domestic financial markets through numerous channels.<sup>5</sup> In the model, financial market development is represented by a single given parameter  $\theta$ . In addition, since threshold level of financial market development is decreasing in the share of land, only in the range of  $\theta < \bar{\theta}$  does liberalization affect TFP. The authors try to deal with this indirectly by increasing  $\theta$  exogenously; however, in my view, the two-way relationship between capital account liberalization and financial development is too important and should not be only investigated exogenously by numerically changing the parameter  $\theta$ , especially given this rich framework of ABK model.

The main results of the paper also do not seem to fit the facts. To start with, it is not very clear which stylized facts the model is trying to match. Is this a model for industrial countries or emerging markets? Are the authors focusing on debt or equity liberalization? The authors claim they focus on private debt and private equity and ignore FDI and sovereign debt. This is a fine assumption, but the paper reads as more of a debt story. More importantly, we know that there is a big difference in terms of volatility and crisis when one considers debt versus equity liberalization, since debt is intermediated through banks with little oversight, as argued by Henry (2006). Besides, Durdu, Mendoza, and Terrones (2007) show that there is no evidence of systematic increases in volatility for sudden stop economies in the era of financial globalization. One of the key results of the paper, which is that countries with poor financial system receive inflows, does not hold in the data as shown by Alfaro, Kalemli-Ozcan, and Volosovych (2007b). More generally, this paper cannot fully explain the direction or the size of a country's capital flows under credit frictions as argued by the authors since they not only ignore the other determinants of capital flows but also they abstract from FDI and sovereign debt, the two most important components of capital flows.

The model predicts a U-shaped relationship between financial development and interest rates. Do we have solid evidence of this? A first look at the data shows that there is no relation between interest rates and financial development, proxied by the ratio of private credit to GDP (see fig. 4C2.1).

Even if we assume that the U-shape exists, what distinguishes this theory from others? It is hard to test this theory even at the firm level

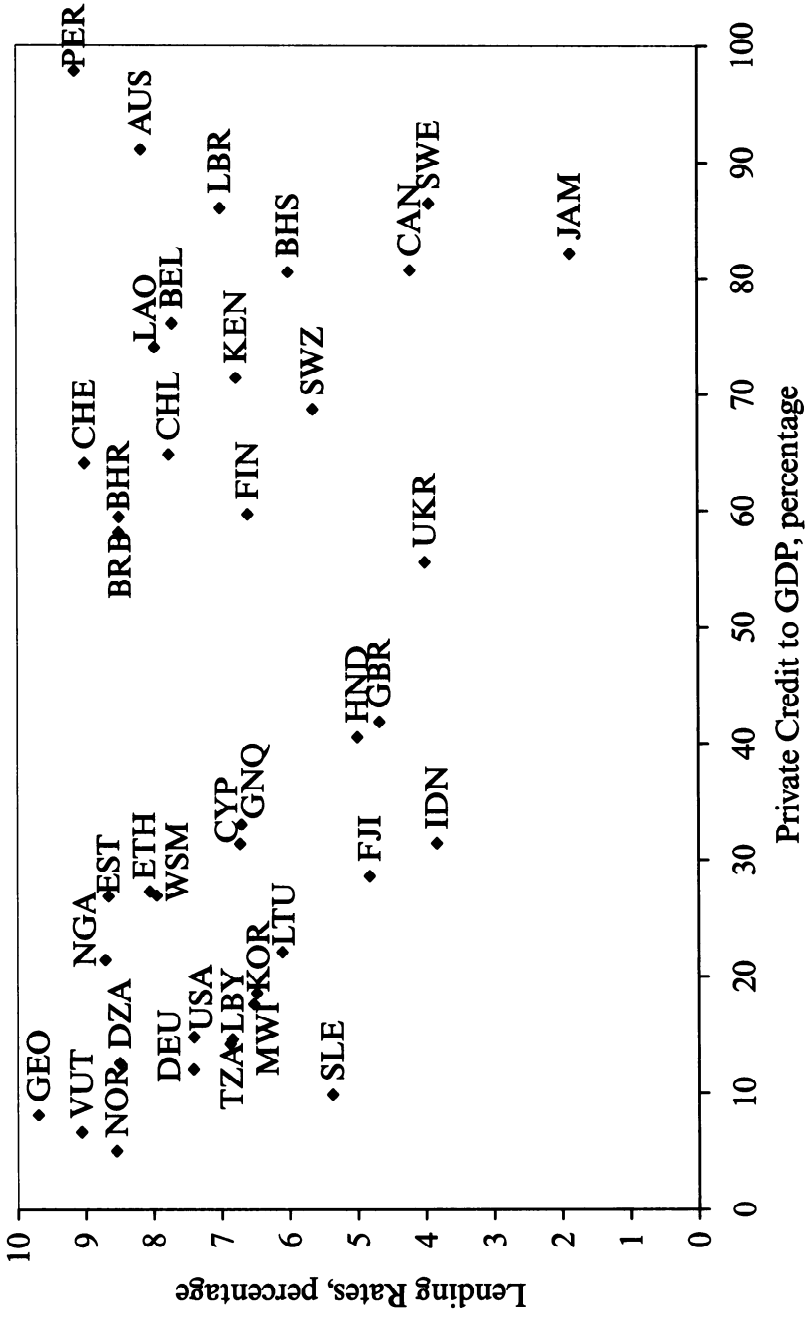


Figure 4C2.1  
Interest rates and financial development

since there are two critical issues that one must deal with: first, value of collateral is not observable due to the lack of active secondary markets for collateralizable assets, such as plants and machineries; and second, collateral is endogenous to investment. When firms invest they need to purchase machines and build plants, which expands their collateralizable assets.

To sum up, I think the authors developed a very rich model and I enjoyed reading it and learned a lot. However, due to the limited empirical validity of the assumptions of the model, an important policy question remains unanswered: what is the relative welfare gain from domestic financial improvement versus capital account liberalization? It seems like the model predicts that welfare improves more with further financial development, a powerful result that not only needs to be confirmed in the data, but also needs to be based on empirically sound assumptions.

## Notes

1. See the recent review by Kose et al. (2006).
2. See Alfaro et al. (2004), and Durham (2004).
3. See Alfaro, Kalemli-Ozcan, and Volosovych (2007a).
4. See Javorcik (2004), and Kugler (2006).
5. See Galindo, Schantarelli, and Reis (2007) for evidence on one such channel (i.e., allocative efficiency).

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