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Comment

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Financial development and economic growth are empirically closely linked across countries. The strong link between financial development and economic growth is not only valid cross-sectionally but is also observed through time for a specific country. The contribution of the financial sector to output and employment is higher in richer (more developed) countries. Measures of financial activity like actives to GNP ratio, total deposits to GNP ratio, and total credits to GNP ratio all tend to be higher in more developed countries. However, the causality between this strong relationship is not clear. Although financial and economic development must be mutually reinforcing each other, whether in this mutually-reinforcing relationship one side dominates the other is a matter of debate.

In an otherwise frictionless neoclassical world economy, globalization in financial markets is likely to benefit the poorest and the richest countries the most. However, in this interesting paper, Mendoza, Quadrini, and Rìos-Rull (MQR) show that financial globalization without financial development may have adverse effects on social welfare and the distribution of wealth in the poor country.

In my discussion, I will argue that the welfare and distributional results of the paper crucially depend on the bottleneck reason of underdevelopment of the financial sector in the poor country. If the bottleneck is on the credit side as in MQR, the results in the paper will prevail. However, if the bottleneck is on the savings side, as I show in the following simple model, the main results of the paper will totally change.

The critical question to be asked here seems to be, *where is the bottleneck in financial development in poor countries?* For our purpose here, financial sector inefficiencies can be classified into two:

1. The bottleneck may be on the credit side due to the inefficiencies in lending by the banks, possibly because of informational, or law and enforcement, problems. In this case, people will not be able to borrow from the banks as much as they would like. They will need to self-insure against idiosyncratic shocks and aggregate savings will be more than it otherwise would be.

2. The bottleneck may be on the savings side so that savings may not be totally channeled to the financial sector. Investment under the mattress—investing in assets outside of the financial sector—may be examples of that.

In practice, for financially less developed countries both of these inefficiencies exist. The behavior of prices and quantities after financial globalization depends on which of these bottlenecks dominates.

In the following model, I incorporate this second savings-side inefficiency to an otherwise MQR model. In the model, only an exogenous fraction of an individual's savings is directed to the productive financial sector, and the rest stays unproductive. Many types of similar inefficiencies on the savings side can be observed among countries where financial sector is not well developed and agents' financial human capital is lacking. Using this simple extension of the MQR model, it can be shown that in autarky in the initially financially less developed country (poor) where this saving-side inefficiency is stronger the interest rate is higher. After financial globalization welfare of all countries increase, capital flows from initially financially more developed countries to initially financially less developed ones.

A Model Where Savings Are Not Totally Directed Toward the Financial Sector

Consider a world economy composed of I countries. In all aspects let the model economy be similar to the MQR model. Financial development is captured by the couple $(\underline{a}^i, \lambda^i)$, whereas in MQR, a^i represents a minimum liability constraint requiring each agent's net worth not to be smaller than this minimum level. The higher $\underline{a}^i$ is the less developed the financial sector in the particular economy will be. In addition to the friction $\underline{a}^i$, on the borrowing side, only an exogenous fraction λ^i, $0 \leq \lambda^i \leq 1$, of savings of an individual in this economy is directed toward the efficient financial sector and earns market return. The remaining $(1 - \lambda^i)$ fraction of the indi-

vidual's savings is directed towards inefficient means, representing *savings under the mattress.*

Agent's optimization problem is given by

$$V_t^i(\varepsilon_t, a_t) = \max_{c_t, b_{t+1}, k_{t+1}, l_{t+1}} \left\{ U(c_t) + \beta \sum_{\varepsilon_{t+1}} V_{t+1}^i(\varepsilon_{t+1}, a_{t+1}) g(\varepsilon_t, \varepsilon_{t+1}) \right\}$$

subject to

$$\varepsilon_t w_t + F(k_t, l_t) - l_t w_t + \underbrace{(1+r_t)\lambda^i b_t + (1-\lambda^i) b_t}_{(1+r_t\lambda^i)b^t} = c_t + \varphi(K_t, k_{t+1}) + k_{t+1} + b_{t+1},$$

$$a_{t+1} = \varepsilon_{t+1} w_{t+1} + F(k_{t+1}, l_{t+1}) - l_{t+1} w_{t+1} + b_{t+1},$$

$$a_{t+1} \geq \underline{a}^i.$$

Financial market clearing condition

$$\lambda^i \int_{(\varepsilon, a) \in B(\varepsilon, a)^+} b_t^i(\varepsilon, a) M_t^i(\varepsilon, a) + \int_{(\varepsilon, a) \in B(\varepsilon, a)^-} b_t^i(\varepsilon, a) M_t^i(\varepsilon, a) = 0,$$

where $M_t^i(\varepsilon, a)$ denotes the distribution of agents over ε and a. Let $B(\varepsilon, a)^+$ denote the set of all (ε, a) such that $b_t^i(\varepsilon, a) \geq 0$ and similarly, let $B(\varepsilon, a)^-$ denote the set of all (ε, a) such that $b_t^i(\varepsilon, a) < 0$. Hence, the first term in the above equation denotes total savings in the economy directed to the financial sector and the second term denotes the total credit extended to borrowers through the financial sector in this economy.

In order to see how this saving-side inefficiency effects the prices in the economy more clearly, let us ignore the minimum liability constraint for a moment. Consider the first-order condition for the consumption-saving decision. It reads,

$$U'(c) = [(1 + r)\lambda^i + (1 - \lambda^i)]\beta U'(c').$$

For every unit of savings, only λ^i fraction is exogenously directed toward the financial sector, yielding $(1 + r)\lambda^i$ next period. The remaining $(1 - \lambda^i)$ fraction is allocated to unproductive means, yielding zero return.

Again ignoring the minimum liability constraint, autarky equilibrium interest rate yields,

$$r = \frac{1}{\lambda^i}\left(\frac{1}{\beta} - 1\right).$$

The saving-side inefficiency increases the autarky equilibrium interest rate in a country. In autarky, financially less developed (lower λ) countries will have higher interest rates. After financial globalization,

interest rates across countries will be equalized and capital will flow from initially more developed countries to initially less developed ones. Notice that the qualitative results of this economy do not depend on whether the markets are complete or not.

The following lemma can be proved for this economy.

LEMMA. *Consider two economies with* $1 > \lambda^1 > \lambda^2 > 0$. *In the steady state, equilibrium with financial integration* $r = 1/\lambda^1[(1/\beta) - 1]$ *and country one accumulates a positive net foreign asset position. After moving from autarky to financial integration, both countries' welfare improves.*

To conclude, how financial globalization will affect a financially less developed country depends on the dominating reason of underdevelopment of the financial sector in that country. If the credit side inefficiencies (like in the MQR model) dominate, after financial globalization capital may flow from financially less developed countries to more developed ones, possibly resulting with adverse welfare effects for some. However, if the saving-side inefficiencies (like in my extension of the model) dominate, after financial globalization capital will flow from more developed countries to the less developed ones, resulting with positive welfare effects for all.