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# The mechanics of commercial banking liberalization and growth

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## ABSTRACT

This paper formalizes the effects of liberalization across the border of deposit-taking and lending activities on the regime of competition in the banking market and on the rate of growth of the economy. We extend two economy based Deidda (2006)'s banking model in which originally each economy hosts at least one operating bank. We introduce two GATS-defined modes of commercial banking liberalization – namely the Commercial Presence mode and the Cross-Border mode. Additionally, we introduce the possibility of strategic behavior by competing banks in equilibrium. The extended model provides a causal link between the cost structure of the banking industry, the regime of competition in the liberalized banking sector and the rate of growth of the economy under alternative modes of liberalization. In particular, we show a threshold effect in terms of economic development: above certain economic development the banking sector operates competitively and supports an accelerating rate of growth, generating a bidirectional, self-reinforcing link between commercial banking liberalization and growth. The pace of growth is further increased, with respect to a scenario where such behavior is not present, by the presence of strategic behavior by competing banks in equilibrium.

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## 1. Introduction

The literature on the relationship between financial liberalization and economic growth is quite wide and differentiated.<sup>1</sup> Economics scholars and policy makers alike have offered discontinuous support to financial liberalization as an engine of growth. The era after the Second World War started with calls for restrictive interventions in the financial sector.<sup>2</sup> By the early 1970s, this “financial repression” policy came under severe criticism and in the Eighties, the so-called “Washington Consensus” called for liberalization of capital flows and deregulation in the recipient financial systems, as this would stimulate a sizeable flow of investments from rich countries to poor ones and could accelerate development in the latter countries. A new bout of crises in the Nineties<sup>3</sup> gave support to critics of the Washington Consensus, among whom Krugman (1993), who maintained that as capital was not accountable for cross-country differences in economic growth rates and no historical

evidence suggested that liberalizing policies were followed by large flows of capital from rich to poor countries, therefore financial liberalization was not to be considered as an engine of growth. By the end of the Nineties financial liberalization was recommended again as a policy to enhance the functioning of domestic financial systems through its positive effects on productivity.

Even on the more specific field of commercial banking liberalization – that is the opening to international trade of deposit taking and loan granting activities – policy literature is almost equally divided. Some conclude that Cross-Border banking, i.e. the supply of financial services from abroad, supports the development of an efficient and stable financial system that offers a wide access to quality financial services at low cost for the host country, as reviewed by Claessens (2006). Beck et al. (2014) in a report on banking in Africa underline the benefits of Cross-Border banking, however tempered by a wide-ranging array of policy recommendations in the fields of national and supranational regulation and supervision. Levine (2001) reviews literature in favor of foreign bank establishment in the host country whereas Detragiache et al. (2006) express criticism of foreign banks presence especially in low-income countries mainly because of to the possible credit shrinkage and increased operating costs. Tamirisa et al. (2000) express reservations on the liberalization of banking activities both under the Cross-Border banking – because of the consequences on

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<sup>1</sup> Tornell et al. (2004) and Baltagi et al. (2009), together with their contribution to the debate, offer very updated reviews of the literature both on the theoretical and on the empirical side.

<sup>2</sup> For a comprehensive review see Andersen and Tarp (2003).

<sup>3</sup> Caprio and Hohohan (1999) report that the average cost of 59 banking crashes in developing countries during the period 1976–96 was 9% of GDP.

the stability of single domestic financial systems – and under the establishment of foreign banks, because of the possibility of cherry-picking lenders by foreign intermediaries.

The original question on how commercial banking liberalization does increase economic growth is hence still unresolved and this paper will present a dynamic model whose aim is to offer an analytical framework to identify the contribution of commercial banking liberalization to competition in the banking sector and hence to economic growth.

The model in this paper takes its general setting from Deidda (2006). The model in fact keeps the overlapping generation framework where individuals share their income between consumption and savings which they deposit with banks. The latter hence borrow from savers and lend to – which produce according to a constant return technology only if externally funded – through a technology involving economies of scale and of specialization.

The main additions to the setting of Deidda (2006) are three-fold. First, the model is assumed to work in an economy which is at least as developed as to supply enough resources to make one bank working. It is hence a scenario involving no storage technology to make up for the lack of financial intermediation; therefore a setting suitable to study economies at a later stage of development than those targeted by Deidda (2006). Second, the model is set in an international framework involving two regions of a federal state instead of a single country. Under Domestic Banking (DB from now on) resident savers in each of the two regions of the federal state fund, through domestic banks, loans exclusively to resident firms. Following banking liberalization, in the federal state investments may be financed by the whole (in the Commercial Presence mode of financial liberalization) or segregated (in the Cross-Border mode) pool of savings of the formerly Domestic Bank-only regions. Costs of banking activity change depending on which mode of liberalization is implemented. And finally the possibility of competing agents enacting strategic behavior in equilibrium is introduced.

The core contribution of the paper is to underline how different modes of commercial banking liberalization impact on the cost structure of the industry, hence on its regime of competition and their effects on the rate of growth of the economy.

Secondly, the paper also identifies a threshold of economic development,<sup>4</sup> measured by capital per capita, above which the banking sector would operate in monopolistic competition sustaining an accelerating rate of growth. This is to say that below the threshold the dynamics of economic growth mainly sustain banking development, while above the threshold a bidirectional, self-reinforcing link between banking activity and economic growth is envisaged. Banking liberalization modifies the setting of the threshold in so far as it changes the cost structure in the banking industry. More specifically, the higher are the fixed costs of banking activity, the higher the level of development of the economy has to be in order to sustain monopolistic competition in the banking sector as an equilibrium outcome. The model also supplies formal conditions to the thesis of Pagano (1993) and Claessens (2006), stating that opening the financial sector usually brings more competition.

Finally, the model determines that strategic behavior by competing banks permanently raises the number of banks operating in equilibrium, hence it may push up the pace of growth with respect to a scenario where such behavior is not present, as is the case in Deidda (2006).

<sup>4</sup> Threshold effects are used in the most different ways in the literature. They can be deterministic, as in this model and in Deidda (2006), as well as stochastic, as in the sovereign debt default literature of Malik (2014) and Mueller et al. (2015) among others. However, they all share a common nature and role. They partition the set of possible values of a key variable in subsets determining a switching in the behavior of the model and, consequently, in equilibrium results.

Sections 2 and 3 will introduce the framework of Domestic Banking and describe its equilibrium. In Section 4 two different modes of financial liberalization will be sketched out, namely Commercial Presence and Cross-Border mode of liberalization and they will be subsequently embodied in formal models in Sections 5 and 6 respectively.

## 2. The model

Suppose a federal nation state exists and it is composed by two regions  $i = F, H$  each populated by a continuum of size  $i$  of households and a continuum of size  $i$  of infinitely-lived firms whose behavior is described in what follows.

### 2.1. Households

Individuals living in region  $i$  inelastically supply labor during the first period of life and receive a salary  $w_t^i$  which is partly saved and partly consumed according to

$$U(c_{1t}, c_{2t+1}) = \lg c_{1t} + \frac{1}{1+\rho} \lg c_{2t+1}$$

subject to

$$c_{1t} = w_t^i - d_t \text{ and } c_{2t+1} = R_t^{d,i} d_t$$

where  $c_{1t}$  is the consumption of the presently young generation,  $d_t$  is young people's saving that is entirely deposited,  $c_{2t+1}$  is the consumption of the same people when old at  $t+1$ ,  $\rho$  is the discount rate and  $R_t^{d,i}$  is the gross return on deposits from  $t$  to  $t+1$ . This framework results in optimal savings which are a constant fraction of wage as

$$d_t = (2 + \rho)^{-1} w_t^i = s w_t^i \quad (1)$$

### 2.2. Firms

Firms have no initial endowment. They operate if and only if they are externally funded. It is also assumed that they are price takers and demand loans at the lowest rate, being indifferent across banks for all other aspects of the lending contract. The production function for the representative firm operating in region  $i$  is

$$Y_t^i = \alpha (A_t^i) (K_t^i)^\beta (l_t^i)^{1-\beta} \quad (2)$$

where  $\alpha$  is the exogenous productivity coefficient,  $l_t^i$  is labor;  $K_t^i$  is capital,  $A_t^i = (k_t^i)^{1-\beta}$ , with  $k_t^i = \frac{K_t^i}{l_t^i}$ , and  $\frac{1}{2} < \beta < 1$  is an externality effect associated with capital accumulation.

The representative firm's demand for loans stems from the production function as

$$b_t^i \Big|_{R_t^i = \frac{\partial Y_t^i}{\partial K_t^i}} = \left( \frac{R_{t+1}^{i,i}}{\alpha \beta A_{t+1}^i} \right)^{\frac{1}{\beta-1}}$$

where  $R^{i,i}$  is the return on lending in region  $i$  when full capital depreciation is assumed. The equation makes explicit that for the borrowing firm the cost of finance  $R^{i,i}$  is the only choice variable *vis-à-vis* banks.

In equilibrium the price of the factors of production will be

$$w_t^i = (1 - \beta) \alpha (A_t^i) (K_t^i)^\beta (l_t^i)^{-\beta} = (1 - \beta) \alpha k_t^i \quad (3)$$

and

$$R_t^{i,i} = \beta \alpha (A_t^i) (K_t^i)^{\beta-1} = \beta \alpha \quad (4)$$

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