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Credit quantity and credit quality: Bank competition and capital accumulation

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Abstract

In this paper we show that bank competition has an intrinsically ambiguous impact on capital accumulation. We further show that it is also responsible for the emergence of development traps in economies that otherwise would be characterized by unique equilibria. These results explain the conflicting evidence emerging from the recent empirical studies of the effects of bank competition on economic growth. We obtain them developing a dynamic, general equilibrium model of capital accumulation where banks operate in a Cournot oligopoly. More banks lead to a higher quantity of credit available to entrepreneurs, but also to diminished incentives to offer relationship services that improve the likelihood of success of investment projects. We also show that conditioning on one key parameter resolves the theoretical ambiguity: in economies where intrinsic market uncertainty is high (low), less (more) competition leads to higher capital accumulation.
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1. Introduction

Recent empirical work has documented multiple, conflicting effects of bank competition on the real economy. Some contributions find evidence that bank competition leads to more credit availability, more firm entry and more growth (e.g., Black and Strahan [11], Beck, Demirguc-Kunt, and Maksimovic [5], Cetorelli and Gambera [18], Cetorelli and Strahan [19], Bertrand, Schoar and Thesmar [9]). Others find instead that credit quality and availability may be higher in less competitive environments (e.g., Petersen and Rajan [42], Shaffer [45], Cetorelli and Gambera [18], Bonaccorsi and Dell'Ariccia [12], Zarutskie [48]). The evidence thus seems to indicate that bank competition matters for capital accumulation and growth, but also that there is ambiguity about the sign of the relationship.

To the best of our knowledge, the literature still lacks a theoretical model of economic growth with a fully specified banking sector able to generate the contrasting predictions that the evidence suggests. In this paper, we attempt to do just that. We develop a dynamic general equilibrium model with oligopolistic banks that yields innovative insights on the effect of banking market structure on capital accumulation and economic growth, and important refinements to the associated normative prescriptions.

In our model banks compete both in gathering savings from households and in lending to entrepreneurs. Entrepreneurs are ex-ante identical but subject to idiosyncratic risk that could lead them to default. In this environment, banks can extend *arm's length* loans, that is, outright loans that simply specify the amount, the interest rate and the repayment date. A bank that does so provides savers an insurance service — holding a large portfolio of loans, it diversifies away idiosyncratic risk and thus offers a safe return — but leaves unchanged the probability of default of individual entrepreneurs. Alternatively, the bank can extend a loan and, at a cost, provide additional services that increase the likelihood of entrepreneurial success. We define these more sophisticated loans as *relationship* loans. Banks that extend them do not simply diversify idiosyncratic risk away, they also reduce it at the source by making entrepreneurs better.

Our main assumption is that the benefit of the relationship services is not fully appropriable: since the services provided improve the performance of the entrepreneur as a whole, banks that extend to the same entrepreneur simple arm's length loans would earn the higher risk-adjusted return on his projects without sustaining the cost of providing the services. There is thus a free-riding problem that affects the banks' incentives to provide relationship services. Our model studies how such incentives regulate the equilibrium provision of such services, and how the equilibrium depends on structural parameters.[3]

We show that the degree of competition among banks plays a fundamental role in determining the provision of relationship services, with more intense competition diminishing banks' incentives to provide them. The model, therefore, identifies two channels through which competition affects the *quantity* and *quality* of credit, that is, the aggregate volume of credit and the efficiency with which the economy transforms such credit into capital. The first channel features a complementarity relationship between the provision of the relationship services and the quantity of credit offered to a client: since the services make the borrower more likely to succeed, banks are

[3] We are certainly not the first to stress the problem of appropriability in models of banking. This issue is central, for instance in Campbell and Kracaw [16] and is also explicitly mentioned in Thakor [47, p. 303]. Both models are based on banks resolving an ex-ante problem of private information, while we deal with an ex-post contribution that eliminates the project's risk. The difference however is not substantial. As shown in Petersen and Rajan [42], the problem of free riding and potential under-provision of relationship loans does not hinge on the ex-ante resolution of informational frictions.

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