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Optimal regulation of deposit taking financial intermediaries: A correction

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Abstract

This paper corrects a paper of David Miles, published in the European Economic Review in 1995, reversing some of the conclusions he draws. Solving his model correctly it turns out that, because depositors are unable to monitor the default risk of individual banks, moral hazard gives banks an incentive to increase risky lending. Prudential capital requirements reduce incentives to hold risky loans.

JEL classification: G28

Keywords: Bank regulation; Moral hazard

1. Introduction

Miles (1995), in the European Economic Review, offers a model of bank intermediation with the following distinguishing features:[1]

- Banks are monopoly suppliers of loans to their own customers. The quantity of their lending L has no impact on the loan business of other banks. Banks hold no assets other than loans.

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[1] Taggart and Greenbaum (1978) analyse a model of bank behaviour with a similar structure to Miles (1995), but without the assumption of asymmetric information.

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- Lending is financed out of deposits and shareholder equity. The deposits of different banks are perfect substitutes so all banks offer a common expected return on their deposits of R. Bank deposits and other forms of savings are however imperfect substitutes, so the aggregate level of bank deposits $\bar{D}$ is an increasing function of R.
- There is no deposit insurance or other form of bank safety net.
- Depositors are unable to monitor the default risk of individual banks and base their expectations about the probability of individual bank default on the probability of default by all deposit taking banks (asymmetric information about bank risk taking).

Miles draws three main conclusions from his analysis: (i) because depositors are unable to monitor default risk banks offer an inefficiently low volume of loans relative to the case where depositors are able to monitor default risk; (ii) introducing bank capital requirements can, contrary to the conclusion of many other theoretical analyses of bank capital, increase the volume of bank lending (iii) the optimal capital requirement for each bank asset should be based on a calculation taking account of the returns to that asset in states of the world when all the return on all assets are poor.

In this paper I show, in Section 2, that the interior solution investigated by Miles (1995) in which banks choose an optimal mix of deposits and equity to finance their lending, does not satisfy a necessary second-order condition. The equilibrium is instead a corner solution, with banks either maximising or minimising their use of deposit finance. The standard analysis of moral hazard in banking then applies, with banks which maximise their use of deposit finance investing excessively in riskly loans relative to the cost of their finance.

Contrary to Miles (1995), I show that the inability of depositors to monitor individual bank default probabilities increases aggregate deposits, the expected return on deposits, and aggregate lending. I also discuss the impact of prudential bank capital requirements on aggregate bank lending and deposits and the optimum level of regulatory bank capital.

2. The model of the individual bank

2.1. Assumptions

I first restate the model of Miles (1995). There is one period. There are N banks. Shareholders and depositors are risk-neutral.

L is the volume of loans made by an individual bank offering a return at the end of the period, if none default, of $G(L) = (1 + r(L))L$, with $G(0) = 0$, $G'(L) > 0$, and $G''(L) < 0$. The loan market is assumed to be fragmented, so that the return on the lending of one bank is unaffected by the lending decisions of other banks.