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State-contingent bank regulation with unobserved actions and unobserved characteristics

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Abstract

Optimal bank regulation is studied in a model where bank quality is private information and bank portfolio choice is subject to moral hazard. Regulators wish to control bank risk solely because high risk adversely affects a bank incentives to improve its mean return. Numerical methods are developed to study the model. Capital regulation alone has a limited ability to separate types. Including ex post fines achieve separation at lower cost, resulting in improved welfare. Low-quality banks are fined on high returns in order to control risk-taking. High-quality banks face fines on lower returns mainly to ensure truth-telling by low-quality banks. High-quality banks bear the full cost of regulation.

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1. Introduction

This paper studies bank regulation under deposit insurance in a model where a bank's quality is private information and its investment decisions are subject to moral hazard. The regulator can use three tools to control bank actions: First, it can set capital requirements. Second, it can impose return-contingent fines. Third, it can offer a menu of regulations to each bank where each item on the menu pairs a minimum capital requirement with a fine schedule.

There are two dimensions to the moral-hazard portion of the problem: the bank chooses both the mean and variance of its portfolio return, neither of which are observable to the regulator. Increasing the mean requires expenditure of costly effort. Since we think of this as effort required to screen out low-mean investments, we refer to this as 'screening effort'. These two dimensions interact because an increase in the portfolio variance induces banks to choose a portfolio with a lower mean. Thus, in contrast to the usual finance intuition, bank portfolio returns endogenously exhibit a 'reverse mean-variance trade-off'. Furthermore, by controlling risk the regulator can indirectly control the mean of bank portfolio.

This motivation for controlling bank risk differs from the usual justifications for ensuring the safety and soundness of the banking system. The usual motivations are to protect taxpayer liability, reduce failure resolution costs, and prevent systemic risk. We develop an alternative rationale for reducing bank risk that is complementary to, but distinct from, these standard rationales. In our paper, the cost to society of high failure risk is due to the way high risk distorts the *ex-ante incentives* of banks.

An example of this type of cost can be found in the United States Savings and Loan crises of the 1980s. White (1991) argues that the cost of this crises was not primarily from the deadweight societal cost of resolving the failed thrift institutions *ex post*. Rather, it was from the cost of *poor investment decisions* made by thrifts *before* the wave of thrift failures started in the mid-1980's. It is well known that many savings and loan institutions were technically insolvent in the early 1980s. During this period, mistaken attempts at deregulating the S&L's without proper supervisory safeguards gave these insolvent thrifts the opportunity to increase their portfolio risk in a 'gamble for resurrection'. In particular, White (1991) provides evidence that failed thrifts were more likely to have engaged in real estate lending and other new activities that were not in the traditional purview of thrifts.

In this paper, we argue that this sort of fall in the diligence with which banks construct their asset portfolio is associated with an increase in bank risk. More precisely, if banks were required (or induced) to reduce the *variance* of their portfolio, they would also tend to expend more effort increasing the *mean* of their portfolio return. Thus, the welfare-maximizing regulator ought to be concerned about reducing bank risk, but not because risk per se is costly. Rather, reduced risk leads banks to make better investments, thereby increasing the mean output of the economy and enhancing aggregate welfare.

In our model, the regulator cannot control bank risk directly because the distribution of banks' portfolio returns is private information. This difficulty in

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