

Economic Review

Federal Reserve Bank
of San Francisco

Summer 1991

Number 3

REMINDER

If you missed the August 15 deadline to continue your free subscription, please send us your address label (with corrections) by October 1.

John P. Judd
and Brian Motley

Nominal Feedback Rules for Monetary Policy

Randall J. Pozdena

Why Banks Need Commerce Powers

Frederick T. Furlong
and Michael C. Keeley

Can Bank Capital Regulation Work?

- Capital Regulation and Bank Risk-Taking
- A Reexamination of Mean-Variance Analysis of Bank Capital Regulation

Can Bank Capital Regulation Work? Research Revisited

Frederick T. Furlong

The following two articles are reprinted here because they provide important theoretical analysis on the effectiveness of capital regulation. Over the past several years, regulatory policy has placed an increasing emphasis on the adequacy of bank and thrift capital. The argument is that raising bank capital is an effective way to protect the insurance system and taxpayers, since capital represents a buffer for absorbing losses. With higher levels of capital, banks should be safer and pose less of a risk to the deposit insurance system. This view is reflected in *Modernizing the Financial System* (U.S. Treasury 1991). That study states that "The single most powerful tool to make banks safe is capital."

However, the capital position of a bank is only one dimension of risk. The safety of a bank and the expected cost to the deposit insurance system also depend on a bank's portfolio risk, which reflects several factors such as credit risk, the degree of diversification, and interest rate risk. The controversy addressed in the following two articles is whether banks, when forced to hold more capital, can be expected to adjust their portfolio risk so as to offset, or even more than offset, the potential for higher levels of capital to reduce the risk exposure of the deposit insurance system.

The first article, "Capital Regulation and Bank Risk-Taking," concludes that when banks act to maximize their value, forcing them to hold more capital should reduce the risk exposure of the deposit insurance system. This is the case even though banks have an incentive to increase portfolio risk with subsidized deposit insurance. As shown in the article, a solvent bank's incentives to increase portfolio risk to exploit the insurance subsidy decline as its capital-to-asset ratio increases. Therefore, as long as the rise in the bank's capital ratio is not accompanied by a relaxation of regulatory efforts to constrain its portfolio risk, a higher level of capital at the bank should mean more protection for taxpayers.

This conclusion for risk-neutral, value-maximizing banks is at odds with the conclusions reached in earlier studies concerning the effectiveness of capital regulation on risk-averse, utility-maximizing banks. These earlier studies use a mean-variance framework and conclude that banks might react to more stringent capital standards by increasing portfolio risk to such an extent that the probability of failure increases. That is, these earlier studies argue that forcing banks to hold more capital could be counterproductive.

The second article, "A Reexamination of Mean-Variance Analysis of Bank Capital Regulation," demonstrates that the analyses in the earlier studies that rely on the mean-variance framework cannot be used to support the conclusion that capital regulation could be counterproductive.¹ These studies inappropriately apply the Markowitz two-period portfolio model, which assumes that the probability of failure is always zero, to address the question of how capital regulation affects the probability of failure. More specifically, the analyses in these studies leave out the option value of deposit insurance and use an inappropriate measure of risk, and, thus, misrepresent the return frontiers facing banks.

The two theoretical articles on capital regulation in this *Review* support the view that capital regulation can be effective. That is, banks operating with higher levels of capital should reduce the exposure of the deposit insurance system to losses. Moreover, the authors are not aware of any other theoretical or empirical studies that show that banks forced to hold higher levels of capital would adjust portfolio risk so as to actually increase the probability of failure.²

NOTES

1. Keeton (1988) considers the effects of capital regulation on risk-averse banks in a more general framework. That study finds that for poorly capitalized banks, increases in capital ratios would be effective. For banks with relatively high capital ratios, further increases in capital could induce a bank to substitute asset risk for capital risk. However, the analysis does not indicate that the substitution would be such that capital regulation would be counterproductive.

2. Empirical work by the authors supports the proposition that capital regulation is not counterproductive. Furlong (1988) finds that for bank holding companies in the 1980s whether an institution was required to increase capital in order to meet minimum regulatory requirements did not have a bearing on its change in asset risk. Keeley (1990) finds that for bank holding companies risk is negatively related to the charter value of the holding company. This is consistent with the view that banks with more at stake tend to be less risky.

REFERENCES

- Furlong, Frederick T. 1988. "Changes in Bank Risk-Taking." Federal Reserve Bank of San Francisco *Economic Review* (Spring) pp. 45-56.
- Keeley, Michael C. 1990. "Deposit Insurance, Risk, and Market Power in Banking." *American Economic Review* (December) pp. 1183-1200.
- Keeton, William R. 1988. "Substitutes and Complements in Bank Risk-Taking and the Effectiveness of Regulation." Unpublished paper. Federal Reserve Bank of Kansas City.