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# FRBSF WEEKLY LETTER

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## Risk-Based Capital Requirements and Loan Growth

When the new risk-based capital-to-asset ratio requirements for U.S. banks were announced in early 1989, some banks and bank holding companies (BHCs) found themselves undercapitalized. A number of these institutions met the new requirements by decreasing their risky assets, including loans. This has led some observers to argue that the new standards contributed to the slowdown in bank loan growth in the early 1990s. Furlong (1992) and others have found evidence to support this view.

But, slower loan growth is not the inevitable consequence of tighter capital standards: Banks *could* have met the new requirements by issuing additional new capital. The question is: Why didn't many of them? In this *Weekly Letter*, I consider the negative wealth effect of common stock issuance as one possible incentive for undercapitalized BHCs to choose to decrease loan growth rather than issue capital, and discuss whether this incentive was important enough to play a determining role in banks' lending behavior.

### Risk-based capital requirements

Risk-based capital requirements for banks and BHCs were announced in 1989 and phased in over a period ending in December 1992. The new *risk-weighted* asset portfolio was calculated by applying different weights to different types of assets, according to their perceived riskiness. For example, commercial loans received the highest weight and U.S. government securities the lowest.

The risk-based capital requirements specify that banks hold certain proportions of certain types of capital. Banks and BHCs now have to hold at least 4 percent of their risk-weighted assets in so-called Tier 1 capital and 8 percent of their risk-weighted assets in Tier 1 plus supplementary (Tier 2) capital. For BHCs, the bulk of Tier 1 capital must be common shareholders' equity plus retained earnings, while Tier 2 capital includes some types of preferred stock, mandatory con-

vertible debt, and subordinated debt. In addition to the new risk-based requirements, banks and BHCs must meet an effective new 4 percent minimum ratio of Tier 1 capital to unweighted assets (leverage ratio).

### Wealth effects of common stock issuance

The separate requirements for Tier 1 capital meant that some BHCs were potentially deficient in common shareholders' equity but not necessarily in other types of capital. It has been well-established that, for a variety of types of firms, an announcement of the intention to issue common stock tends to decrease a firm's stock value. However, the announcement of the issuance of most other types of securities does not tend to affect stock value, although a few studies also find such negative wealth effects for *convertible* debt, debt that can be converted into stock.

One explanation for these findings is that managers of firms have an incentive to issue equity (common stock) when the firm's stock is overvalued and straight debt (debt that cannot be converted into common stock) when its stock is undervalued. This is because when a firm issues equity, it sells a portion of its existing assets but acquires, for its existing stockholders, a share in the value of the new project to be undertaken with the funds raised. If the firm's existing assets are significantly undervalued by the market, the dilution suffered by existing stockholders can be greater than any gains they receive from undertaking the new project, in which case managers would opt to issue debt rather than equity. On the other hand, if a stock is overvalued, stock issuance rather than debt issuance begins to look more beneficial to stockholders. The market realizes that managers have these incentives. If managers have inside information regarding the value of the firm that market participants do not have, then the issuance of equity will impart new information to market participants. In particular, investors, knowing managers' incentives, will interpret the issuance of new equity as a signal that the stock is overvalued, and the price will fall.

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In contrast, investors will interpret the issuance of new debt as a signal that the stock is undervalued, and the price will rise.

This explanation, however, does not accord with the empirical findings indicating the general lack of any wealth effect, positive or negative, from the issuance of straight debt. One explanation is that market participants think that if a firm seeks external financing by issuing stock or debt, it must be expecting lower earnings. This is because, usually, financing through the retention of earnings is less expensive than financing through issuing securities. Thus, under this explanation, issuance of debt also might be a signal that a firm's stock price is "too high."

A synthesis of these two theories would say that an equity issuance announcement would have a negative effect, while a debt issuance announcement would have an ambiguous effect on stock returns.

## **Evidence for banks**

Several studies indicate that, in the past, banking organizations experienced negative wealth effects in connection with their common stock issuances. However, some have argued that this effect may have diminished or disappeared in the early 1990s, with the phasing in of risk-based capital requirements. The reason is that market participants who observe a bank issuing new equity in a tighter regulatory environment may not conclude that the bank's managers think the stock is overvalued. Instead, they may think that the bank simply is under regulatory pressure to raise capital.

But this reasoning overlooks a capital deficient bank's option to decrease asset growth relative to the growth in capital achieved through retained earnings. Thus, by issuing new equity instead of reducing asset growth, a bank may still signal that its stock is overvalued.

To investigate whether the negative wealth effect of common stock issuance may still have been at work among banks in the early 1990s, I looked at the stock market's response to BHCs' announcements of upcoming common stock issuances during the period. I found that, on average, a BHC's announcement of an impending issuance of new common stock decreases its common stock returns by about 1.6 percentage points (see Laderman 1994). The size of this effect is very similar to what others have found for other types

of firms and for BHCs in earlier periods. In contrast, I found that announcements concerning the issuance of other types of securities that are included in Tier 2 capital do not decrease stock returns.

## **Consequences for loan growth**

If BHCs witness a decrease in the value of their outstanding stock when they announce that they will issue new stock, then they may avoid issuing new stock unless they have sufficiently attractive lending opportunities. Therefore, BHCs trying to raise their risk-weighted Tier 1 capital ratios or leverage ratios to meet the regulatory minima may have strongly favored decreasing asset growth over issuing new common stock. On the other hand, if the stock price impact is a decisive factor, BHCs that could meet the requirements by issuing Tier 2 capital (given their asset size) might not have had as strong an incentive to decrease asset growth.

Of particular interest is the effect that the new risk-based capital requirements might have had on loan growth. Among all bank assets, commercial and consumer loans receive the highest risk weight. Therefore, a reduction in loan growth will decrease growth in risk-weighted assets more than will reductions in growth in other types of assets, like government securities. For this reason, we might expect loan growth to have been particularly affected by the new capital requirements. In addition, we want to examine loan growth because of its potential to affect economic growth generally.

To investigate whether the negative effect of common stock issuance might have resulted in reduced loan growth, I compared loan growth across three groups of BHCs (Laderman 1994). The first group, "unaffected" BHCs, included those with enough of the various types of capital in December 1990 that they already met all three capital ratio minima that were due to be fully phased in in December 1992. The second group, "Tier 2 deficient" BHCs, included those with the choice of issuing either Tier 1 capital (common stock) or Tier 2 capital or decreasing asset growth. The third group, "Tier 1 deficient" BHCs, either had to issue new common stock or decrease asset growth.

The difference in average loan growth rates between unaffected and Tier 2 deficient BHCs on the one hand and Tier 1 deficient BHCs on the other hand was striking. Unaffected and Tier 2

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deficient BHCs both showed positive average loan growth between December 1990 and December 1992, and the loan growth rates were similar: 10.3 percent for unaffected BHCs and 11.5 percent for Tier 2 deficient BHCs. In sharp contrast, on average, loans at Tier 1 deficient BHCs *shrank* by 12.6 percent over the same period.

I investigated the possibility that other factors affected relative loan growth rates at Tier 2 deficient and Tier 1 deficient BHCs. For example, Tier 1 deficient BHCs may all have faced unusually weak loan demand. Or, perhaps BHCs avoided issuance of any type of capital, and Tier 1 deficient BHCs' reduced loan growth was simply because they were more severely undercapitalized. However, even after controlling for loan demand and the size of the BHC's largest capital deficiency (taking into account all three types of capital ratios), the sharp difference in loan growth rates remained. Also, the size of the difference was found to be statistically significant.

### Conclusion

After the announcement of the new risk-based capital requirements in 1989, bank loan growth decreased for a period. Previous researchers have found some evidence to link the two events, essentially arguing that numerous banks and BHCs anticipated being undercapitalized and raised their capital-to-assets ratios by decreasing loan growth.

What has been missing from this story is an explanation of why banks should have avoided new capital issuance. In this *Weekly Letter*, we have seen that BHCs, as well as other types of firms, appear to experience a drop in their stock prices when they announce new issuances of common stock. Such an effect may help to explain a pref-

erence for decreasing loan growth rather than issuing new equity. BHCs with inadequate common shareholders' equity experienced a sharp drop in loans between year-end 1990 and year-end 1992. On the other hand, no negative stock price effects seem to follow from announcing issuances of non-common stock regulatory capital. And, indeed, capital deficient BHCs that were not short on common shareholders' equity in particular experienced loan growth comparable to that of BHCs that had no capital deficiency at all.

One interpretation of these results is that, had the risk-based capital rules not included a requirement for a certain level of common shareholders' equity, loan growth for the Tier 1 capital deficient BHCs would have been considerably higher. But, this does not necessarily mean that requirements for common shareholders' equity should be reduced or eliminated. This type of capital arguably provides the best protection to the deposit insurance fund in case of bank failure. However, it does mean that if we are concerned about the flow of bank credit to the economy, we might want to take these results into account in weighing the likely costs and benefits of the design and enforcement of capital regulations.


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