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Bank Security Prices and Market Discipline

In recent years, policymakers and bank regulators have been warming up to the idea of leveraging market forces to enhance banking supervision. This is partly motivated by the growing complexity of large banking organizations and by concerns about limiting the cost of bank supervision as well as avoiding unduly extending the bank safety net (see Kwan 2002). In order for market discipline to work, the market prices of banking securities must contain accurate and timely information about bank risk. Researchers in banking have been studying this issue for quite some time. This *Economic Letter* reviews the empirical evidence on the informativeness of bank security prices, focusing on the two most obvious sources of market information—stock and bond prices.

The bond market

Data from the bond market, where bank debt is traded, can provide regulators with information about the risk profile of a bank because bank debts are subject to default risk. That is, at any given point in time, the price at which a bank bond is traded reflects the market's assessment of the default risk of the issuing bank. One can measure how risky a bond is by comparing its yield to the yield of comparable default-free bonds, such as Treasuries, since bond prices also move with changes in the general level of interest rates. The spread between the yields of risky and default-free bonds is known as a risk premium, which generally compensates the bondholder for bearing the bond's default risk and liquidity risk. Good news about the bank's future repayment prospects will push up its bond price, shrinking the yield spread over Treasuries, and bad news will have the opposite effect, indicating that the bank's repayment capability may be impaired. So the yield spread provides an ongoing market assessment of the bank's financial condition. This market signal could be useful to regulators for surveillance. At a minimum, it could be used to assist supervisors in managing supervisory resources, such as scheduling the time and frequency of bank examinations. A more ambitious goal is to use the market signal to forewarn supervisors about developing problems so they have time to nip them in the bud. In either case, the usefulness of market discipline rests on the accuracy of bond market prices.

In the literature on how well bond prices reflect banks' problems, most studies have looked at the relationship between risk premia on bank holding company debentures and other measures of the banking firm's default risk. In many cases, the results based on data before the early 1990s showed that such a relationship was weak to nonexistent (see Flannery 1998 for a survey of the literature).

One explanation for the weak or nonexistent relationship may be that, during that time, investors believed that federal bank regulators were implicitly following a "too-big-to-fail" policy—essentially a guarantee that regulators would make sure that very big banks would not default (Flannery and Sorescu 1996). But, by the late 1980s, this perception may have changed. The massive bank failures during the mid-1980s and the near depletion of the bank insurance fund made it clear that regulators had little room to practice a too-big-to-fail policy by then, and, indeed, many spoke publicly of its perils. Flannery and Sorescu (1996) reported that the magnitude of banking firms' debenture risk premia and their cross-sectional dispersion rose sharply after 1989. Furthermore, in regressing debenture spreads on accounting and market measures of bank risk, they found that bank risk had virtually no explanatory power for yield spreads in the early years, but that in later years, bondholders began to differentiate among individual banking firms' credit risk. They concluded that private investors can evaluate individual banks' credit qualities, but tend to do so only when they feel that their invested principal is at risk.

A more recent study by the Federal Reserve (1999) found that the expected yield on a bank's subordinated debt also has explanatory power for the bank's choice of whether to issue these debts or not, most prominently between 1988 and 1989, when the banking industry was in distress and the required return for holding bank debt was high. The results suggest that bank subordinated debt

exerts not only indirect market discipline, in that it provides information to banking supervisors about bank soundness, but also direct market discipline, in that it directly affects a banking firm's decisions about its capital structure.

As discussed in Kwan (2002), while the market disciplining effects of bank debt look promising, there are a couple of limiting issues to consider. Currently, a large fraction of the subordinated debt issued by banks is held by their holding companies and is not publicly traded. Therefore, such subordinated debt is a liability of the bank holding company rather than of the bank, and hence it reflects the holding company's risk rather than just the bank's risk. This is a problem because prudential supervision should focus narrowly on the bank and not on the holding company; otherwise, a "moral hazard" problem might arise—that is, the market might perceive that the safety net also extends to the holding company's nonbank subsidiaries.

The stock market

Compared to bond market data, stock market data offer some advantages in signaling bank risk, but they also pose certain limitations. One advantage is that the quality of stock data is better. For example, stock prices are more likely to incorporate up-to-the-minute information than are bond prices, because stocks are traded much more frequently than corporate bonds and because they tend to be followed by more professional analysts than are bonds. Indeed, empirical research has shown that stock prices are relatively more efficient in reflecting firm-specific information than are bond prices (see Kwan 1996).

Another advantage is the quantity of stock data over bond data. The number of banking firms that have publicly traded stocks exceeds those that have publicly traded bonds by a wide margin. Currently, about 350 banking firms have traded equity shares outstanding. Together, these publicly held banking companies control approximately 80% of all banking assets in the U.S. In contrast, only about 80 banking firms have traded debentures outstanding, and they control about 50% of all banking assets. So, on the bases of quality and quantity, stock market data are clearly preferred to bond market data for providing timely, market-based information to banking supervisors.

The limitation of bank stock prices is that they are not straightforward to interpret because movements in bank stock prices can be driven not only by changes in bank asset value but also by changes in bank asset risk. To see the latter, because stockholders have claims on all of the firm's cash flow after paying off bondholders, increasing a bank's asset risk would benefit the stockholders at the expense of bondholders, since the stockholders would get all the upside risk, while bondholders would bear only the downside risk. Moreover, stockholders' incentive to take excessive risk grows as the bank's capital situation worsens, which is especially problematic for bank supervision: at the very moment when the surveillance of weak banking institutions becomes crucial, the stock market signal may be most susceptible to conveying conflicting information.

The latest effort in extracting information from bank stock data looks beyond the price level data and focuses on the volatility of stock prices. Because stocks are residual claims on the bank's assets, the volatility in stock price contains information about the banking firm's asset risk. Basically, increases in asset risk would raise stock price volatility. Together with the level of bank equity, stock price volatility provides information about the banking firm's probability of insolvency. While the theoretical underpinning of this method has been well-understood for some time, its implementation in finance and banking is still quite new. Recent research using this methodology by Krainer and Lopez (2002) suggests that equity information could be a useful indicator of banks' financial condition.

An even more fundamental question about the information content of bank stock prices is how efficient they are at reflecting the banking firm's financial condition. Two concerns are at issue here. First, banking theory suggests that bank loans, which are privately negotiated contracts, may be difficult for outside investors to evaluate: Does this "information opacity" make bank stock prices relatively "noisier" than nonbank stock prices? Second is contagion: Does news about one bank lead investors to infer—perhaps incorrectly—the condition of other banks?

Flannery, Kwan, and Nimalendran (2002) address the first question by assessing both the microstructure properties and analyst earnings forecast errors of banking firms' equity to investigate whether bank stocks exhibit more or less evidence of asset opaqueness than similar-sized nonbanking firms. Their evidence indicates that large, exchange-traded banks exhibit trading activity, return volatility, and bid-ask spreads that are comparable to similar nonfinancial firms. Furthermore, analyst earnings forecast errors

for these large banking firms are statistically indistinguishable from their nonbanking control sample, leading them to conclude that investors can evaluate large banking firms as readily as nonfinancial firms. On the other hand, the smaller, Nasdaq-traded banks are found to be quite different from nonfinancial firms. These smaller banks' stocks are traded much less frequently despite having very similar bid-ask spreads. Moreover, stock analysts can forecast these small banks' earnings more accurately than their nonfinancial control counterparts. Thus, asset opacity does not seem to be a prominent feature of these smaller banking firms. Together, these results suggest that bank stock price data are at least as good, and in the case of smaller banking firms, perhaps even better, than those of nonfinancial firms in reflecting firm-specific information.

On the contagion of bank stock prices, past studies focused on the reactions of bank stock prices to bank specific news events, such as announcements about loan portfolio quality and the failure of large banking firms. Docking, Hirschey, and Jones (1997) (DHJ) examined bank loan loss reserve (LLR) announcements and found that regional banks' unexpected addition to their LLR induced a negative effect on nonannouncing banks' stock prices, and these spillover effects were stronger for banks located nearer the announcing bank. DHJ concluded that the spillover effects reflect investors' rational revisions of estimated loan values and not general contagion. Moreover, as part of their study, the absence of finding such a spillover effect among money center banks seemed to confirm that bank stock prices are efficient in distinguishing bank-specific information. This is because information availability is generally better for money center banks than for regional banks, and money center banks tend to be more closely followed by stock analysts. Other equity studies that examined bank stock reactions to financial crises, including the debt moratoria to less developed countries and large bank failures, showed that investors can discriminate fairly accurately between troubled banks and healthy institutions. Overall, the research findings suggest that bank stock prices are informative and that investors respond rationally to bank-specific news.

Conclusions

With the growing complexity of banking organizations, policymakers have advocated leveraging market forces to enhance the safety and soundness of the banking system. Research into the subordinated notes and debentures issued by bank holding companies shows that not only do the prices of these debt securities reflect the underlying risk of the banking organization, their yields also have significant effects on the holding company's issuance decision. Research also finds that bank stock prices are at least as good, and perhaps even better, at reflecting the underlying condition of the firm than nonfinancial firms' stock prices, suggesting that banking assets may not be as opaque as had been thought. Given the relative efficiency of stock prices, and the fact that there are more banking firms that have publicly traded stocks than bonds, stock market data provide a potentially useful source of information for banking supervision. Further efforts to improve the signal extraction from bank stock prices could be very fruitful.

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