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Research Report...Capital Flows and Loan Losses in Commercial Banking

by Bruce G. Stevenson

What causes loan losses in the banking industry? Some analysts point to specific types of lending, such as loans to less-developed countries or real estate. However, the author of this article suggests that periods of high loan losses in the banking industry are the result of overcapacity. He postulates that during periods of industrywide increases in loan volume, credit is given to uncreditworthy borrowers and the result is overleveraging. When the credit flows stop, the result is loan default and loss.

Despite the historically high profits achieved in recent years, U.S. commercial banks are under increasing stress. The collapse of real estate markets in the late 1980s and early 1990s exacerbated a trend of losses that has been building for decades.

The pattern of loan losses is shown in Figure 1. Net charge-offs have grown exponentially over the past 40 years with the result that losses in 1991 (1.64% of total loans) were more than 25 times the level in 1950 (0.06%). Loss rates generally have doubled each decade, although by 1992, the rate had dropped slightly.

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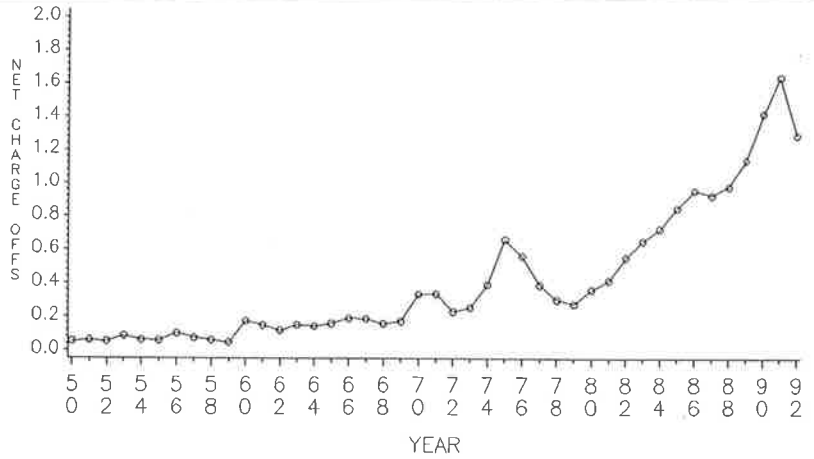
Figure 1. Loan Losses in the Commercial Banking Industry



Source: Federal Deposit Insurance Corporation.

A number of commentators have expressed alarm over this pattern, noting that dire consequences will befall the industry (and the Federal Deposit Insurance Corporation) if the upward trend in loan losses continues. Despite the concern, relatively few researchers have attempted to document the causal factors of the industry's losses. Explanations that have been proposed include lending crises, such as the collapse of the real estate markets in the mid-1970s, the oil and gas industry problems in the mid-1980s, less-developed country debt defaults in the 1980s, and the decline in real estate markets again in the late 1980s and early 1990s, and the overleveraging of businesses.[1]

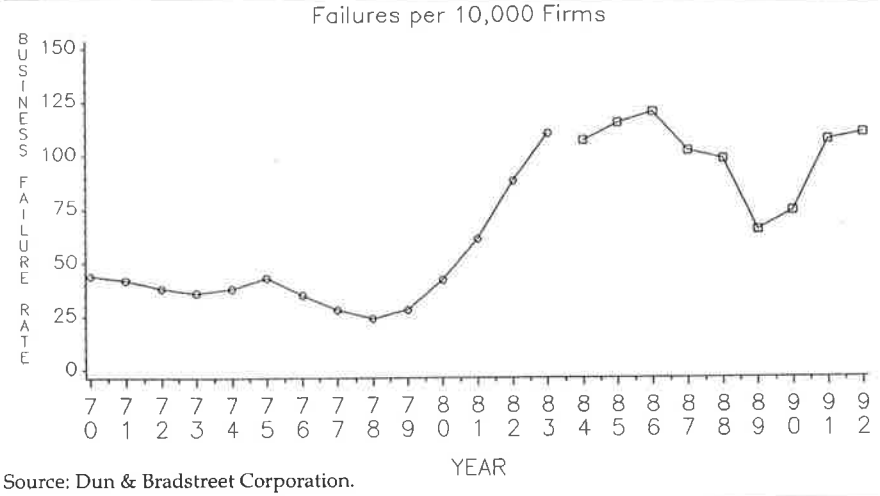
This article presents a different view. My research indicates that loan losses are a direct but lagged consequence of excess capital in bank lending markets and the leveraging of businesses that results from excess capital. In an overbanked market, capital flows to risky (more leveraged) borrowers who are more likely to fail, especially if capital is withdrawn from the market. Inevitably, loan losses follow the failure of these borrowers.

Capital Flows and Business Cycles

Economic growth, as measured by a positive change in gross domestic product (GDP), is, in part, driven by the availability of capital. A correlation between the growth of debt and equity markets and expanding econo-

[1] Paul Ross, "Rising Indebtedness of the Corporate Sector," *Journal of Commercial Lending*, September 1989, pp. 37-47.

Figure 2. Business Failure Rates



Source: Dun & Bradstreet Corporation.

mies has been recognized for some time.

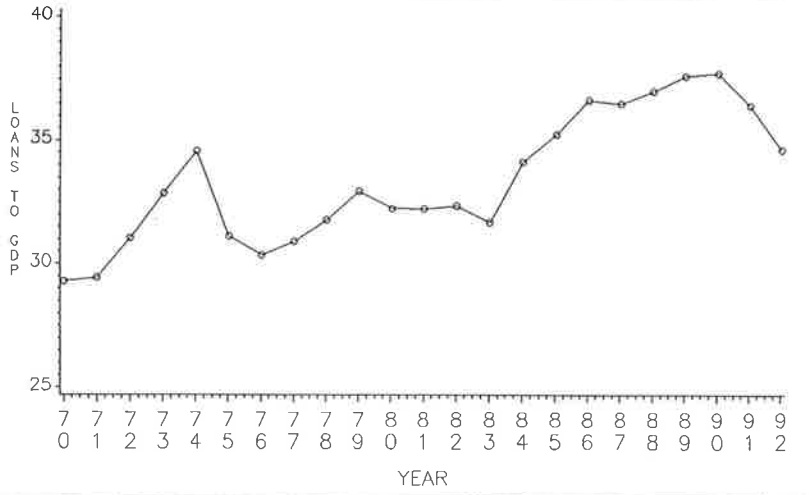
However, the two are not perfectly correlated, and it is possible to differentiate ebbs and flows in bank-supplied capital from business cycles (economic expansions and recessions). As shown in Figure 1, loan losses increased in four of the past eight recessions. Loan losses increased in 1970-71, 1974-75, 1981-82, and 1990-91. In the other recessions, losses declined (1953-54, 1957-58, and 1960-61) or remained steady (1980). It can be surmised that loan losses are not a direct consequence of declining economic activity.

Note that two of the four increases in loan losses during recessions occurred in the last 15 years, and during these 15 years, which included both economic recessions and expansions, loan losses increased dramatically. In fact, an article in the Federal Reserve Bank of Boston's *New England Economic Review* demonstrates that the relationship between economic downturns and increasing rates of business failures in the U.S. is positive but weak.[2]

The highest levels of business failures occurred in the mid-1980s—a period of economic expansion—and were because of significant declines in commodity prices, such as agricultural products and crude oil. See Figure 2 for data on business failures. Both business failures and loan losses are loosely related to economic activity but do not appear to be directly caused by economic contractions.

[2] J.W. Meehan, J. Peek, and E.S. Rosengren, "Business Failures in New England," *New England Economic Review*, November/December 1993, pp. 33-44.

Figure 3. Ratio of Loans Outstanding to GDP



Capital Flows

Capital flows in bank markets have their own cyclicality. For this article, loan volume is defined as the ratio of bank loans to the GDP. When loan volume increases faster than the GDP, this variable increases. It decreases when loans are made at a slower rate than economic growth as a whole.

The ratio of loan volume to the GDP is shown in Figure 3. One of the striking features of the 1970s and 1980s was the rapid increase in loans relative to GDP. In general, the period was one of economic growth, and bank loans were made at a rapid pace.

The few periods of slight or no loan growth during the 1970s and 1980s were out of sync with economic recessions. For example, the recessions of 1970-71 and 1981-82 both saw flat loan volume (even though there was a negative change in the GDP). Of course, a negative change in the GDP is the primary tool for defining a recession.

A second interesting feature of the data shown in Figures 1 and 3 is the parallel between loan volume and loan losses, albeit loan losses lagged behind loan volume. In particular, note the rapid increase in loan volume from 1971 to 1974, followed by a drop that lasted from 1975 to 1977. This pattern led a similar increase (1973 to 1975) and drop (1976 to 1979) in loan losses. Similarly, the drop in loan losses starting in 1991 was preceded by a decline in loan volume beginning in 1990.

One interesting difference is the absence of significant levels of loan losses from 1980 to 1982, which might have been expected following the increase in loan volume from 1978 to 1980. However, this period was characterized by historically high interest

rates and inflation, a relationship that will be discussed later in this article.

Excess Capital in Bank Markets

I believe that the relationship between loan volume and loan losses is more than happenstance: When lending occurs at a rate in excess of economic growth, loans are made to borrowers who would not receive loans in periods of normal lending activity. This overlending tends to mask poor credit characteristics, such as weak profitability, of individual borrowers. When lending contracts, such borrowers tend to have few other sources of capital to supplement internal cash flow. The result is default and loss on loans to these borrowers. This argument is based on five assumptions:

1. In any market at any given time, there are a finite number of creditworthy borrowers.
2. In periods of normal capital flows, banks lend to the most creditworthy borrowers.
3. As banks compete for borrowers and markets become more liquid, capital flows to increasingly risky borrowers. Leverage increases for these borrowers (especially wholesaling and retailing firms) with a concomitant increase in the risk of default and loss.
4. As markets return to more stable levels of liquidity, loans to the most risky borrowers are not renewed, which, in turn, causes a liquidity crunch.
5. Illiquidity contributes further to default and loss.

Capital contraction can also be a significant factor contributing to increasing rates of business failures. For example, Meehan demonstrates that capital contraction in New England was partially responsible for the rapid increase in business failures in the region in the late 1980s and early 1990s.[3]

Capital contraction in New England took two forms: reductions in lending because of bank failures and slow loan growth at solvent banks. The solvent banks were necessarily contending with the regional decline in asset values, primarily real estate.

However, defaults on loans backed by real property assets may be forestalled during periods of high inflation that are correlated with appreciation in the value of real property, because loans are bought and sold more readily or the assets are sold to repay the loans. As can be seen in Figures 1 and 3, loan losses in the early 1980s are not higher than surrounding periods even though loan volume grew in the late 1970s.

Modeling Loan Losses

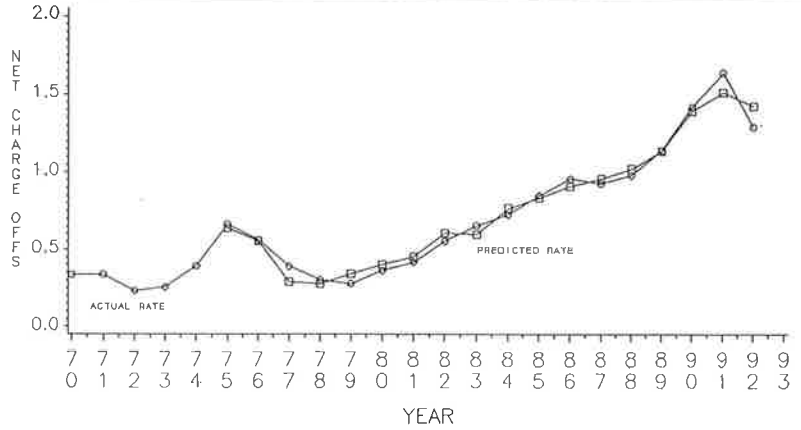
To test the theory that loan losses are a function of overcapacity, loan losses were modeled as a function of three predictor variables: values for loan volume (capital flows), the 10-year bond rate (inflation expectations), and the prior period value for loan losses (trend variable). Least squares regression techniques produced a model with very good statistical properties that conformed to the following expectations:

1. Loan losses are highest two to four years following a peak in loan volume.
2. The pattern of loan losses is modified in periods of high inflation expectation (such as the early 1980s). During these periods, rising prices for real property allow loans or underlying assets to be sold before default—even if the debt service coverage on the loan is weak or inadequate.

To test the predictive capabilities of the model, the regression equation was tested on data from 1970 to 1992 (see Figure 4). Loan losses for 1993 were predicted and compared with actual losses. Table 1 shows the actual data for 1988 through 1993. The results suggest that this model predicts loan losses accurately.

[3] Ibid.

Figure 4. Net Charge-offs as a Percent of Loans Outstanding Actual Rates and Rates Predicted from Regression Model



Source: Federal Deposit Insurance Corporation and regression model.

A second test of this idea is a demonstration that during periods of excess capital and highly liquid loan markets, capital flows to the weakest borrowers and, upon contraction of that capital, lenders tend to finance only borrowers who are considered average or good credit risks.

Historic Patterns of Leverage and Profitability

An investigation of historical patterns of leverage and profitability for commercial and industrial firms in the U.S. was undertaken using data from *The Annual Statement Studies* published by Robert Morris Associates. Patterns of leverage (debt divided by total net worth) and profitability (profits before taxes divided by total assets) were examined for each of the Standard Industrial Classification (SIC) codes of manufacturing, wholesaling, retailing, and services. The dy-

Table 1. Commercial Bank Loan Losses as a Percent of Total Loans

Year	Actual Loss Rate %	Predicted Loss Rate %
1988	0.98	1.02
1989	1.14	1.14
1990	1.42	1.39
1991	1.64	1.51
1992	1.29	1.43
1993	0.81	0.75

Source: Federal Deposit Insurance Corporation and regression model.

namics of the bottom quartile of companies in each SIC code, especially as contrasted with the median, were of particular interest.

The majority of SIC codes exhibited the expected pattern of increased leverage during the 1980s. Leverage increased slightly for the median companies and more substantially for the bottom quartile companies. See Figure 5 for examples of leverage ratios and profitability ratios for manufacturers, wholesalers, and retailers.

Profitability declined during the 1980s, and the most significant decline occurred for companies in the bottom quartile. Conversely, in the 1990s, leverage declined, and profitability improved. Again, the most significant changes occurred for the bottom quartile companies.

These results demonstrate that the weakest companies received incremental debt capital in the 1980s, even as their profitability declined. In the 1990s, as bank-supplied capital left the market, these companies delevered (with an associated improvement in profitability).

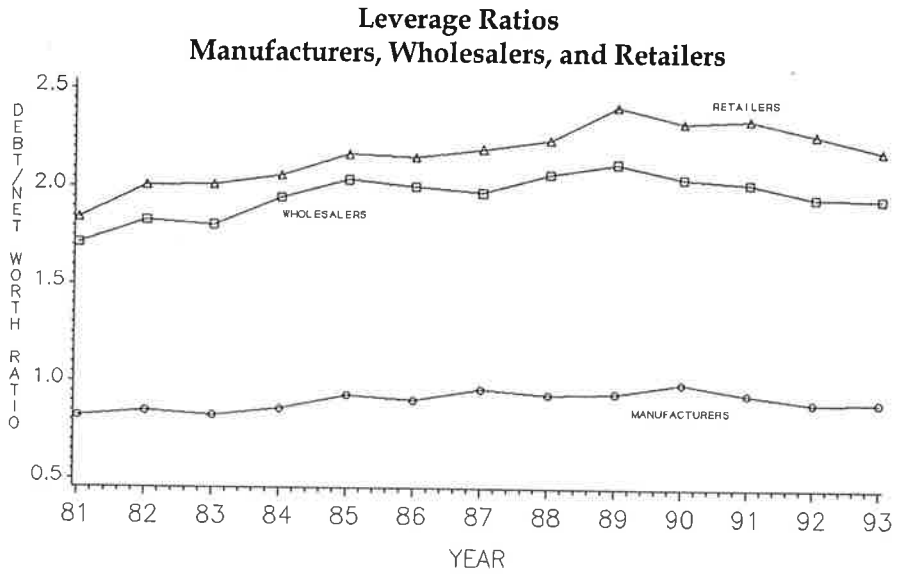
Conclusion

The research described in the article supports the assertion that there appears to be a direct but lagged relationship between excess capital in bank lending markets and loan losses experienced by U.S. commercial banks. The research suggests that excess capital flows to increasingly risky borrowers who fail and default on their loans, especially when capital withdraws from the market.

Loan officers and managers who understand this relationship can use it to their advantage and avoid the costly consequences of steep loan losses. A bank must adopt focused loan portfolio management techniques consisting of the following integrated strategies:

- Banks should evaluate the risk of borrowers objectively, preferably with quantitative credit-scoring models. Objective and consistent use of such tools can permit banks

Figure 5. Ratio Trends



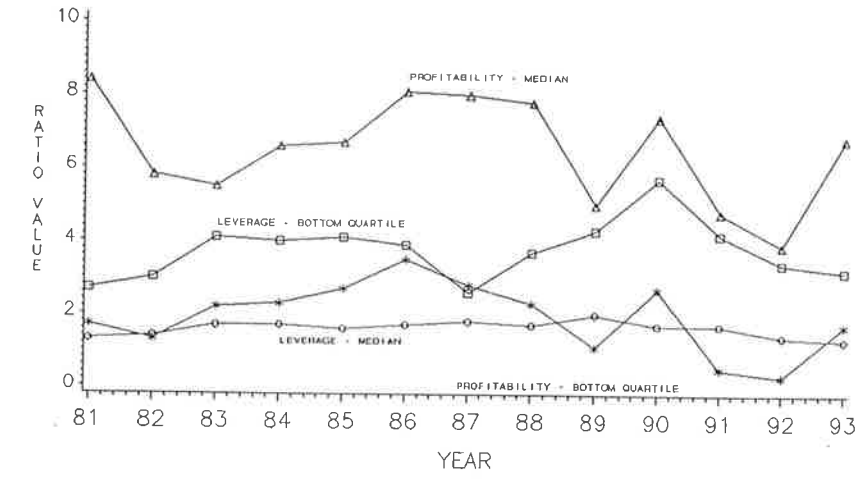
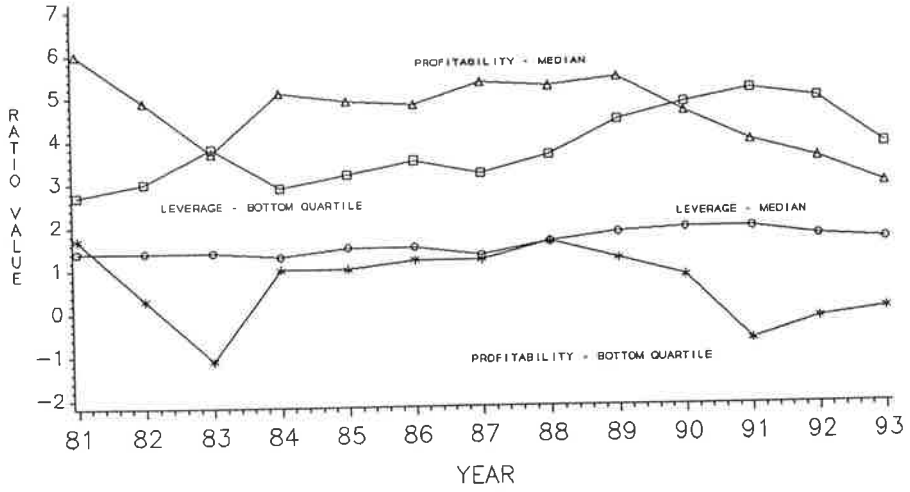


Figure 5. Ratio Trends (continued)

Hardware Retailers



Source: *Annual Statement Studies*, Robert Morris Associates

to identify poor credit risks in all markets but especially markets with excess capital flowing to weak borrowers. (It is not surprising that not lending to poor credit risks is an excellent way to avoid credit losses.)

- Loans should be structured and priced to be attractive in secondary markets. Borrowers with loans that are attractive only to their originating banks tend to be the most likely to default and cause losses. Loans for which credit risk and loan structure are understood by secondary market players, and for which returns are commensurate with credit risk, are less apt to pose the risk of loss. A variation to this approach is the application of credit derivatives now being pioneered by banks and other commercial lenders. In its most common form, a bank will swap some exposure of a noninvestment-grade loan for company bonds or equity, thereby reducing its risk of loss if the borrower defaults.
- A bank should manage credit concentrations explicitly. Since credit crises tend to move through industries, concentration management is an effective tool to limit risk of loss during industry downturns.[4] ■

[4] Janice M. Weiland, *Focusing on Loan Portfolio Concentrations* (Philadelphia: Robert Morris Associates, 1993).