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## Why Were Banks Better Off in the 2001 Recession?

*Til Schuermann*

*In a sharp turnaround from their fortunes in the 1990-91 recession, banks came through the 2001 recession reasonably well. A look at industry and economy-wide developments in the intervening years suggests that banks fared better largely because of more effective risk management. In addition, they benefited from a decline in short-term interest rates and the relative mildness of the 2001 downturn.*

The 1990-91 recession weighed heavily on banks. As the institutions entered the downturn, they were still recovering from the Latin American debt crisis of the mid-1980s, and they faced new difficulties with the declining quality of their real estate loans. Low profits, poor capitalization, and a high incidence of non-performing loans during this period made it especially hard for banks to weather the economic setbacks and continue lending. In the 2001 recession, by contrast, banks were in a much stronger position. Profits were among the highest in the past thirty years (Chart 1), and capitalization and loan quality were more robust than in 1990-91.<sup>1</sup>

This edition of *Current Issues* examines why banks fared better in the most recent recession. Specifically, we consider how much of their success stems from skill on the part of bank managers and how much stems from simple luck. Banks play a vital role in the economy, matching the supply of capital with demand, so knowing how a downturn affects these organizations is important to understanding business cycle dynamics.

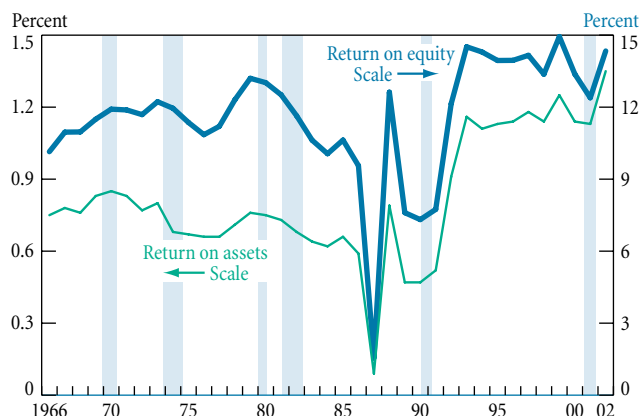
We find that banks' improved performance in the 2001 recession is attributable in large part to the skill shown by

bank managers. Nevertheless, good fortune also played a role by creating a more favorable banking environment.

Although we cannot test the relative importance of skill and luck directly, we look at a range of suggestive evidence. To analyze the effect of skill on bank performance, we consider two key tools of bank managers: risk management and the strategic pursuit of new markets and new sources of revenue. We present evidence that banks are now managing their risks more effectively by adopting risk-based pricing in several markets. As a result, the institutions are providing broader access to credit while being compensated for the additional risk they are assuming. We also show that banks today are using credit derivatives to shift some portion of their credit exposure to insurers and asset managers.

The effectiveness of the second tool used by bank managers—the pursuit of new markets and new revenue sources—is less clear. Gains from geographic diversification have become harder for certain banks to realize over the years, and some preliminary research (Stiroh forthcoming) suggests that risk-adjusted returns from revenue diversification have not been forthcoming.<sup>2</sup>

Chart 1  
Returns of All FDIC-Insured Commercial Banks, 1966-2002



Source: Federal Deposit Insurance Corporation (FDIC), Historical Statistics on Banking.

Note: Shaded areas indicate periods designated national recessions by the National Bureau of Economic Research.

The evidence that luck contributed to the strong performance of banks in 2001 rests on two developments, both beyond the control of bank managers. First, banks benefited from an environment of rapidly declining short-term interest rates. Such an environment enabled the institutions to borrow at a lower cost, which in turn increased their interest margins for a time when they made loans. Second, the 2001 recession—measured by its effect on most major components of GDP—was less severe than both the 1990-91 recession and the average postwar recession.

### The Case for Skill: Risk Management

Risk management emerged as a distinct banking discipline in the 1990s, following the Latin American debt crisis, the stock market crash, and the onset of turmoil in real estate lending.<sup>3</sup> New tools and techniques to manage market risk and credit risk were developed, and the banking industry saw a dramatic increase in the volume and variety of derivative instruments. With a 1996 amendment to the Basel Accord, market risk models became part of the regulatory process. In addition, proposed revisions to the Basel Accord have been designed to align regulatory capital more closely with the underlying risks by encouraging more systematic risk management practices.<sup>4</sup> Federal Reserve Chairman Alan Greenspan recently affirmed the value of these initiatives: “The use of a growing array of derivatives and the related application of more sophisticated methods for measuring and managing risk are key factors underpinning the enhanced resilience of our largest financial intermediaries.”<sup>5</sup>

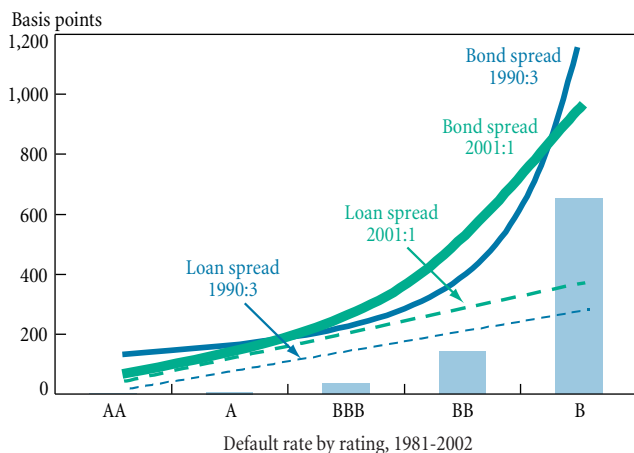
Broadly, effective risk management has the potential to increase the stability of the economy. More specifically, the use of risk management tools and techniques can lead to better risk-based pricing, which in turn can lead to more efficient risk sharing and capital allocation. Accordingly, to assess the effect of skill on bank performance, we examine how the institutions have used risk-based pricing in the syndicated, retail, and small-business lending markets. We also consider banks’ use of credit derivatives as a risk mitigation instrument. Our findings suggest that banks have improved their performance between the 1990-91 and 2001 downturns in large part by integrating risk management tools in their operations more skillfully.

### Risk-Based Pricing in Syndicated Lending

One can argue that risk in the syndicated loan market—where bank loans to large corporations are syndicated out to multiple lenders—is not priced as accurately as it is in the corporate bond market.<sup>6</sup> There are several reasons for this phenomenon. For one, corporate bonds are fairly homogeneous instruments, with standard covenants, contracts, and features. Syndicated loans, by contrast, tend to be more heterogeneous, and consequently may be subject to pricing complications that do not arise with corporate bonds. In addition, bank lending relationships give banks greater control rights over the borrowing firm, a degree of flexibility that is especially valuable when a borrower is in distress. These control rights are an option that has value to banks, enabling them to offer a lower price on loans than the price offered on bonds, all things—such as borrower risk characteristics—being equal. Thus, the menu-price of a spread above, say, the Treasury rate often does not capture all of the relevant aspects that govern a contractual lender-debtor agreement. Still, these reasons cannot fully account for the difference in pricing between corporate bond and syndicated loans.

By comparing the difference in spreads for the 1990-91 and 2001 recessions, we can determine if risk-based pricing has penetrated the market more systematically over the 1990s. Specifically, we compare by credit rating (our measure of risk) the spreads paid on syndicated loans with those paid on bonds in the first quarter of each recession, 1990:3 and 2001:1 (Chart 2). For loan spreads, we use data for the all-in spread for loans rated either by Moody’s or by Standard & Poor’s. The syndicated lending data are provided by Loan Pricing Corporation; for bond spreads, we use the above-Treasury spreads of the Merrill Lynch one-to-three-year corporate bond index. Because most loans and commitments have relatively short-term (less than one year) or medium-term (three to five years) maturities, it seems appropriate to use this bond index.

Chart 2  
Relationship between Default Rates and Bond and Loan Spreads



Sources: Author's calculations, using data from Standard & Poor's (default rates); Loan Pricing Corporation (loan spreads); Merrill Lynch (bond spreads).

Chart 2 displays the pricing schedule for loans and bonds in the two quarters, as well as the average annual default rate for U.S. issuers computed from 1981-2002 ratings data from Standard & Poor's. We see that the pricing schedule is indeed flatter in the syndicated loan market: loan spreads do not follow default rates as closely as bond spreads do.<sup>7</sup> However, loan prices appear to have steepened a little, while bond prices, curiously, have flattened. We note that the relative price of risk—the premium for, say, A-rated as opposed to B-rated debt—need not always be the same. It depends on the risk appetite of investors active in the market at a point in time. This relative price of risk is assumed to be reflected in the bond market. Thus, it is not so much the absolute change in the pricing schedule that matters, but the *relative* change.

Next, we define a credit slope much as one might define a yield curve slope: the mean credit spread of B-rated less A-rated debt, value-weighted (Table 1).<sup>8</sup> In 1990:3, the loan pricing schedule was only 19 percent as steep as the bond pricing schedule, while by 2001:1, it had become 26 percent as steep—for a total increase of 37 percent. Thus, the pricing schedule in the syndicated loan market was about one-third more risk-sensitive in the 2001 recession than in the previous downturn, suggesting that banks are doing a better job of incorporating risk in their pricing schedules.

### Risk-Based Pricing in Retail and Small-Business Lending

At first glance, banks' performance in consumer lending might seem poor, especially when it comes to their credit card operations. Indeed, the consumer net charge-off ratio—net charge-offs as a percentage of average loans—was higher in the 2001 recession than it had been in the pre-

Table 1  
Defining a Credit Slope

Mean Credit Spread of B-Rated less A-Rated Debt, Value-Weighted

| Quarter | Loan Slope (Basis Points) | Bond Slope (Basis Points) | Loan-to-Bond Slope (Percent) |
|---------|---------------------------|---------------------------|------------------------------|
| 1990:3  | 206.6                     | 1,072.6                   | 19                           |
| 2001:1  | 233.0                     | 883.0                     | 26                           |

Sources: Loan Pricing Corporation; Merrill Lynch.

vious one, rising from 1.83 percent in 1990:3 to 2.45 percent in 2001:1, with a peak of 4.12 percent in 2002:1. If we narrow our focus to credit card lending, the picture is even starker: the ratio was 3.56 percent in 1990:3, rose to 4.84 percent in 2001:1, and hit a high of 8.84 percent in 2002:1.

Despite these trends, for the past six to eight quarters, banks have consistently made positive earnings announcements for their retail operations in general and their retail lending in particular (Rieker 2002).<sup>9</sup> These earnings results, in light of the high net charge-off ratios, suggest that banks are being properly compensated for the additional risk they are assuming; hence, they have likely been managing risk more effectively between the past two recessions.

This appears to be the case. The literature on consumer and small-business lending views 1995 as a turning point. Edelberg (2003) notes that before 1995, credit card rates were relatively undifferentiated, with banks typically posting just one "house rate." After 1995, however, banks' pricing schedules steepened, especially for first and second mortgages and credit cards.<sup>10</sup> Banks were indeed making more loans to riskier borrowers, but at higher interest rates. The institutions thus entered the 2001 downturn demonstrating greater risk sensitivity in their retail loan pricing.

A similar pattern emerges in small-business lending. Berger (forthcoming), for one, concludes that 1995 was also a watershed in this market. The year saw the emergence and rapid adoption of a small-business credit score, analogous to the credit scores used in consumer lending.<sup>11</sup> The credit score resulted in more differentiated interest rates (a steeper pricing curve) and made possible more lending to "marginal applicants." By factoring this score into their risk pricing, banks were compensated for the risk they assumed while expanding their extension of credit. This risk mitigation trend likewise continued into the 2001 downturn.

### Risk Mitigation through Credit Derivatives

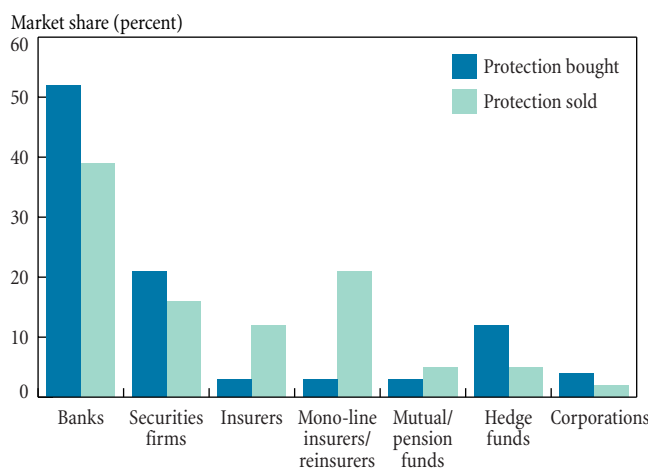
Because banks make loans, credit risk is the chief type of risk they face. Only recently, however, have risk management tools been designed specifically for this kind of risk. Although

these sometimes complex “credit derivatives” take many forms, most can be thought of as credit insurance: when a bank buys such a derivative, another party takes on the credit risk of the loan or set of loans for a fee. In this way, the bank purchases credit protection and trims its credit risk.

The credit derivatives market has enjoyed extraordinary growth over the past five to six years. The most recent biannual survey by the British Bankers’ Association (2002) reports that the notional volume of these instruments worldwide increased from \$180 billion in 1997 to \$1.95 trillion in 2002. Because of the nature of credit risk, we would expect banks to be net buyers of protection (net sellers of credit risk). We would also expect other financial institutions that assume relatively little credit risk as part of their operations—such as asset managers, either in the form of insurance companies or mutual or pension funds—to be net sellers of protection (net buyers of credit risk).

The British Bankers’ Association survey (2002) confirms these expectations (Chart 3). The chart presents the shares of credit protection bought and sold in the credit derivatives market by type of financial institution. It reveals that banks are indeed the biggest participants as well as the largest net buyers of credit protection. The chart also shows that insurance companies, especially mono-line insurers<sup>12</sup> and reinsurers, are the largest net sellers of credit insurance. Mutual and pension funds are also net sellers, although on a smaller scale. In 2001, commercial banks and securities firms together transferred out about \$350 billion of credit assets, while insurers assumed more than \$500 billion.

Chart 3  
Buyers and Sellers of Credit Derivatives, 2001



Source: British Bankers’ Association (2002).

Note: The data exclude asset swaps.

The survey findings suggest that there has been a net outflow of credit risk from banks to insurers and asset managers. Fitch Ratings (2003) broadly confirms these results; the agency also reports that U.S. commercial banks are net exporters of credit risk abroad. Overall, it appears that banks in recent years have been relying increasingly on credit derivatives to manage their credit risk more effectively.<sup>13</sup>

### The Case for Skill: Strategic Management

Entry into new markets and the pursuit of untapped revenue sources—two forms of *strategic management*—represent a second tool through which skill might shape bank performance.

By seeking new business opportunities, banks aim to increase revenues and returns. New ventures, however, bring new risks, so the returns must be sufficient to compensate banks for that risk. Geographic diversification may shrink risk as banks broaden their exposure beyond just a few state economies, while revenue diversification may actually increase risk as managers engage in less familiar business activities. Accordingly, returns and risk cannot be considered independently in evaluating the success of strategic management efforts; *the risk-adjusted return*—the return divided by the volatility of the return—is also critical.

By the standard of risk-adjusted returns, we find only some evidence that strategic management efforts have improved bank performance between the past two recessions. Despite greater geographic diversification among larger banks, factors such as higher correlations between state-level business cycles are making bank gains from such diversification harder to attain. In addition, diversification of revenue sources does not appear to be contributing in a meaningful way to bank performance.

### Geographic Diversification

The Riegle-Neal Act of 1994, by relaxing interstate branching restrictions, has enabled banks to widen their geographic reach. Morgan and Samolyk (2003) find that the average number of markets in which banks took deposits through branches grew by 22 percent from 1994 to 2001.<sup>14</sup> The authors develop an index showing that this phenomenon was particularly pronounced for large banks: the geographic diversification of banks with more than \$50 billion in assets increased by 74 percent from 1994 to 2001.

Morgan and Samolyk find evidence that diversification has increased lending capacity, and that banks have taken advantage of it. Loan-to-asset ratios have increased as banks have expanded geographically. The authors contend that there is no evidence, however, that diversification has led to better loan



Table 2

### Personal Income Growth Volatility Prior to the Two Most Recent Recessions

| Category                                     | 1981:1- 1990:3 | 1990:4- 2001:1 | Change |
|--|----------------|----------------|--------|
| Average volatility (quarterly)               | 1.18           | 0.98           | -17    |
| Average correlation                          | 37             | 46             | 24     |
| Residual volatility (time and state effects) | 0.98           | 0.73           | -26    |
| R <sup>2</sup> (time and state effects)      | 33.5           | 58.0           | 73     |
| R <sup>2</sup> (time effects)                | 29.4           | 54.0           | 84     |

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

performance or better returns on assets or equity. This last conclusion raises a key question: Why hasn't diversification brought gains for banks?

In order for banks to realize gains from diversification, diversification across regions has to be matched by diversification in economic returns. Specifically, the extent to which geographic diversification translates into gains depends on two factors: correlation and volatility in bank income streams. For example, if bank income streams from two different regions are relatively uncorrelated, then one region's poor performance will be partly offset by the other's good performance. Similarly, if a bank operates in a region with high income volatility and adds business from a low-volatility region, overall income volatility should decline. Unfortunately, we cannot directly evaluate bank income from specific regions, so we proxy by using state-level personal income growth.<sup>15</sup> We measure changes in correlation and volatility between the two most recent recessions and infer what the changes signify for the benefits of diversification.

Table 2 presents personal income volatility over the ten-year period prior to the first quarter of the past two recessions: 1981:1 to 1990:3 and 1990:4 to 2001:1. It shows that the average quarterly volatility of personal income growth decreased from 1.18 percent in the ten years preceding 1990:3 to 0.98 percent in the ten years before 2001:1. This result suggests that economic volatility, or risk, is down. Yet the table also shows that the average correlation in income growth volatility between states has risen over time, from 37 percent to 46 percent. Thus, although overall fluctuations are lower, state economies seem to be moving more in tandem.

Once we control for time and state effects—where the time effect can be viewed as absorbing a national trend in personal income growth volatility—we find that residual volatility (that is, state-specific shocks) declines by 26 percent, from 0.98 percent to 0.73 percent (Table 2). In addition, the R<sup>2</sup> of

those calculations—the proportion of variance explained by the time and state effects—increases by 73 percent, from 0.335 to 0.580. Most of the variation is absorbed by just the time (or “national”) effect, where the R<sup>2</sup> increases by 84 percent, from 0.294 to 0.540. Therefore, consistent with Morgan, Rime, and Strahan (2003), we find that while state business cycles are getting smaller, they are becoming more alike.

Overall, our findings suggest that if the goal of banks in expanding geographically is to diversify across state-level business cycles, they faced an uphill battle in the 1990s, at least in terms of personal income growth.<sup>16</sup> The macroeconomic setting in which banks' diversification strategies are executed has made success harder to achieve as state economies become more correlated with one another.

### Revenue Diversification

By relaxing business activity constraints, the Gramm-Leach-Bliley Act of 1999 helped pave the way for banks to diversify their revenue sources. Indeed, the share of banks' income from noninterest sources—such as service charges, fiduciary income, trading revenue, and fees—has been rising steadily, from about 20.3 percent in 1980 to 41.9 percent in 2002 (Stiroh forthcoming a).

However, as Stiroh (forthcoming a) and Stiroh and Rumble (2003) show, this revenue has migrated into high-volatility services, offsetting the diversification benefits that banks realized from the weak correlation between different income sources.<sup>17</sup> From 1997:1 to 2002:4, the annual volatility of banks' net interest income, 21 percent, was lower than the volatility of any component of their noninterest income (Table 3). Overall, these studies find that for the typical bank, risk-adjusted returns on equity fell as the share of noninterest income rose.<sup>18</sup> A heightened emphasis on the cross-selling of products and services to existing customers, which increased bank exposure to the economic setbacks of these customers, is a possible explanation for this occurrence.

Table 3

### Components and Volatility of Banks' Noninterest Income Sources, 1997:1-2002:4

| Source                | Share of Total Noninterest Income | Volatility (Annual) |
|-----------------------|-----------------------------------|---------------------|
| Service charges       | 14                                | 28                  |
| Fiduciary income      | 14                                | 34                  |
| Trading revenue       | 8                                 | 269                 |
| Fees and other income | 64                                | 54                  |

Source: Federal Reserve FR Y-9C Reports, from Stiroh and Rumble (2003).

### The Case for Luck

Two developments suggest that banks also benefited from a favorable operating environment as they entered the 2001 recession. First, interest rate changes aided banks. On average, bank assets tend to have longer maturities than bank liabilities. Therefore, a drop in short-term rates and the consequent steepening of the yield curve enable banks to increase their interest margins for a time by reducing borrowing costs. In the 2001 recession, the yield curve steepened early and quickly, benefiting banks. (The curve was actually inverted in the pre-recession quarter.) Overall, banks can hedge this interest rate risk through the use of interest rate derivatives, which, to be sure, can be costly.<sup>19</sup>

To put the 2001 recession in perspective, we examine the slope of the yield curve: the difference between yields on ten-year and three-month Treasury maturities. We find that the change in the slope was 1.40 percentage points in the first quarter of the 2001 recession, a 37 percent increase from the change of 1.02 percentage points in the first quarter of the 1990-91 recession. Therefore, the interest rate environment was more favorable for banks at the beginning of the 2001 downturn than it was at the start of the prior recession.

Second, general macroeconomic conditions in the 2001 recession worked to the advantage of banks. Because these institutions lend to firms across all industries, bank profitability is typically tied to the business cycle. Simply put, when firms do well, so do banks, and vice versa. In terms of real GDP levels, the 2001 recession was milder than both the 1990-91 downturn and the average postwar recession

(Chart 4). Although all major components of GDP did not experience a mild recession in 2001,<sup>20</sup> developments overall pointed to beneficial macroeconomic conditions for banks.<sup>21</sup>

### Conclusion

Banks entered the 2001 downturn with better profitability, more robust balance sheets, and significantly lower nonperforming loan ratios than they had shown at the start of the 1990-91 recession. We argue that this improved performance stems in large part from better risk management on the part of banks, although luck was a contributing factor.

We find that risk management tools are being integrated more effectively in bank decision making, suggesting that the efforts of banks (and regulators) to achieve this goal are paying off. For example, banks have improved their ability to price the risk they assume, as evidenced by the shrinking relative spreads of loans to corporate bonds in the syndicated loan market and the steeper pricing schedules in retail and small-business lending. Moreover, banks have used credit derivatives effectively to prune credit risk.

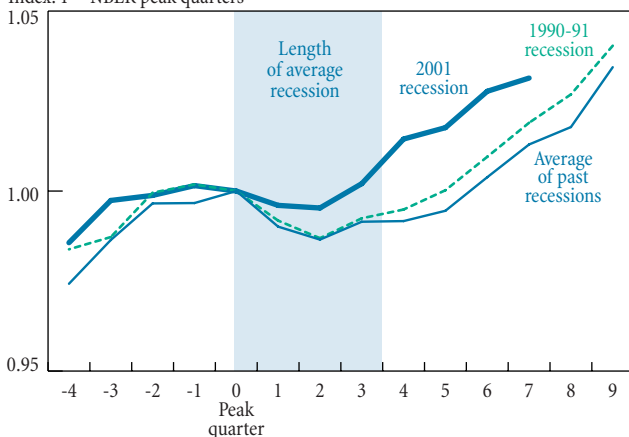
The evidence that strategic management efforts have improved bank performance is less persuasive. Although larger banks are becoming more diversified geographically, this has not translated into higher profitability. Moreover, state-level business cycles are becoming more alike, suggesting that the potential benefits of interstate diversification are declining. The gains from revenue diversification, meanwhile, appear thus far to be negligible. Although banks have steadily earned a larger share of their income from noninterest sources, it has come at the cost of increased return-on-equity volatility and decreased risk-adjusted returns.

Bank efforts to manage risk were also complemented by the rapidly declining short-term interest rates associated with the 2001 recession. These rate declines made it easier for banks to increase their interest rate margins. In addition, the recession of 2001 was relatively mild when compared with the 1990-91 downturn and the average postwar recession.

Chart 4

#### A Comparison of Recessions by Real GDP Levels

Index: 1 = NBER peak quarters



Sources: U.S. Department of Commerce, Bureau of Economic Analysis; author's calculations.

Note: Data are indexed to peak quarters designated by the National Bureau of Economic Research.

### Notes

1. Comparing 1991 with 2002, we note that bank profits rose from 0.52 percent to 1.33 percent in terms of return on assets and nearly doubled, from 7.74 percent to 14.53 percent, as measured by return on equity. Bank capitalization—equity capital as a percentage of total assets—rose from 6.75 percent to 9.16 percent, and nonperforming loan ratios fell from 3.70 percent to 1.46 percent.

Regulatory activity no doubt played a role in some of these developments. The 1988 Basel Capital Accord required banks to maintain an 8 percent capital ratio. In addition, passage of the Federal Deposit Insurance Corporation Improvement Act in 1992 placed banks under closer supervisory scrutiny. We note, too, that bank balance sheets during the 2001 downturn were not weakened by a deterioration in commercial real estate loans.

2. On the impact of revenue diversification, see also Gary Silverman and Charles Pretzlik, "The Myth of the Mega-Bank: After the Failures of Diversification, Wary Lenders Scale Back Their Global Ambitions," *Financial Times*, January 6, 2004, p. 11.
3. See Jorion (2001, chapter 1) for a brief history of risk management.
4. See Joint Forum (2001) for more on the increased adaptation and use of risk management techniques by financial services firms.
5. The full remarks, delivered May 8, 2003, are available at <<http://www.federalreserve.gov/boarddocs/speeches/2003/20030508/default.htm>>.
6. Bankers Trust developed its RAROC (risk-adjusted return on capital) system in the 1970s specifically to address this issue (Jorion 2001).
7. Recoveries on defaulted bank loans tend to be somewhat higher than on corporate bonds, an observation that helps explain some of the difference.
8. We choose B- and A-rated debt because we have significantly more observations in these grades than in higher grades, such as AA.
9. Retail lending includes several other categories, most notably mortgage lending, another product that has been quite profitable for banks.
10. Several studies on this topic are collected in Durkin and Staten (2002).
11. Also see Berger, Frame, and Miller (2002).
12. Mono-line insurers write only one line of business, such as workers' compensation or credit insurance (for instance, mortgage guaranty underwriting).
13. Certainly, mostly large banks participate in this market, so any credit risk transfer by means of credit derivatives is likely limited to this segment.
14. Markets are defined as metropolitan statistical areas and rural areas.
15. We use state-level personal income growth rather than gross state product because of the former's higher reporting frequency: quarterly, as opposed to annual.
16. Our results are even more pronounced when we remove transfer payments.
17. Moreover, Stiroh and Rumble (2003) find that the correlation between interest and noninterest income actually increased during the 1990s.
18. Stiroh (forthcoming b) reports similar results for community banks.
19. The derivatives' overall effectiveness is hard to measure precisely.
20. For example, real investment in equipment and software fared worse than it did during the average recession.

21. There may also have been what economists call an endogenous effect: the 2001 recession may have been milder because better capitalized banks are more able to extend credit to firms facing weaker demand for products or services.

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