Crunching the Recovery: Bank Capital and the Role of Bank Credit

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Other papers presented at this conference have documented the substantial recent decline in real estate prices and the impact of this decline on financial institutions. This paper will take the decline in bank capital as a result of exposure to real estate as given, and address how banks have responded to their deteriorated financial condition. The paper will show that real estate losses, combined with increased regulatory scrutiny of bank capital, have resulted in substantial shrinkage of bank assets. Thus, the conclusion will be that New England is suffering from a regulatory-induced capital crunch.

Complaints of reduced credit availability have been widespread during both the recession and the anemic recovery. As early as July 1990, Federal Reserve Chairman Greenspan attributed weak economic growth to problems with credit availability. Despite the statements by major policymakers and the public outcry concerning the credit crunch, its importance, both in macroeconomic fluctuations and in the transmission of monetary policy, continues to be hotly contested.

Questions about the importance of credit crunches remain unresolved for two reasons. First, the term is not well defined and thus is applied to a wide range of circumstances. Second, while much theoretical work has been done on credit rationing, definitive empirical tests for a credit crunch are lacking.

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The term "credit crunch" often serves as the description of any unexplained sluggishness in the economy. To make the term operational, it should be reserved for a situation of widespread nonprice rationing of credit. Thus, a credit crunch can be characterized as a period of extensive excess demand at the going "price" in the credit markets. As such, a credit crunch implies a nonrate "pricing" of credit supply rather than a disruption of demand.

But even with a precise definition, identification of a credit crunch episode remains difficult. Because weak loan demand is often associated with reduced aggregate demand, observed slow growth in credit cannot necessarily be attributed to a reduction in the supply of credit. The inability to completely disentangle supply and demand effects in empirical analyses prevents researchers from showing conclusively that credit crunches are a significant economic phenomenon.

Credit crunches have been the subject of much previous research. Historically, this research has had two focuses. One approach, the equilibrium credit rationing model (Stiglitz and Weiss 1981), tries to explain why prices (or interest rates) would not adjust to equate demand and supply in credit markets. The other, the disintermediation credit rationing model (Wojnilower 1980), examines institutional impediments that could disrupt credit markets. Unfortunately, neither of these areas of research is particularly applicable to the current situation.

The more recent capital crunch model tries to explain current problems with credit availability by emphasizing the importance of capital regulation (Syron 1991; Peek and Rosengren 1992b). Banks suffering large losses of capital are required by regulators to quickly restore capital ratios. With earnings reduced and investors resistant to purchasing new equity from a capital-depleted institution, banks satisfy capital-asset ratios by shrinking their assets. This shrinkage frequently requires the calling of loans and refusals to either extend credit or renew limits on existing lines of credit, as agreements mature.

The first section of this paper describes some of the problems that have generated the widespread complaints of a credit crunch. The second section briefly discusses past research. The third section describes the capital crunch hypothesis and summarizes recent research that has documented the widespread loss of bank capital and the subsequent shrinkage of bank assets. The fourth section extends this research by describing the clear regulatory link between low bank capital and shrinkage of bank assets. The final section offers some conclusions and policy recommendations.

Table 1
Real Growth in GDP after the Six Most Recent Recessions, Ordered by the Size of the GDP Gap at the Trough

Recession Trough	Real GDP Gap[a] (Percent)	Real GDP Growth Rate One Year from Recession Trough	Real GDP Growth Rate Two Years from Recession Trough
1982:IV	9.0	6.7	5.8
1975:I	6.1	6.4	5.0
1980:III	4.7	3.5	.3[b]
1991:II	4.6	1.5	2.1[c]
1961:I	3.6	6.4	4.9
1970:IV	2.5	3.6	5.3

[a]The Real GDP Gap is calculated as 100 * (full-employment real GDP – actual real GDP)/full-employment real GDP, using the DRI series for full-employment real GDP.

[b]The two-year growth rate following the 1980:III trough includes the decline associated with the subsequent recession and thus is not representative of a recovery period.

[c]1992:III-1993:II calculated using DRI (August 1992) forecast.

Source: Data Resources, Inc.

Are We Experiencing a Credit Crunch?

The renewed interest in credit crunches has been inspired, in part, by the widespread and vocal complaints of small and medium-sized businesses unable to obtain credit. The outcry has been particularly noticeable in New England, where such complaints have attracted the attention of the press and politicians. Despite the anecdotal evidence produced by a series of congressional hearings and press reports, many observers have remained skeptical. However, concerns with credit availability have been buttressed by the perception that recent economic patterns have been unusual. Before describing past and current research on credit crunches, it is useful to review the atypical economic patterns that have been cited as evidence that we are experiencing a credit crunch.

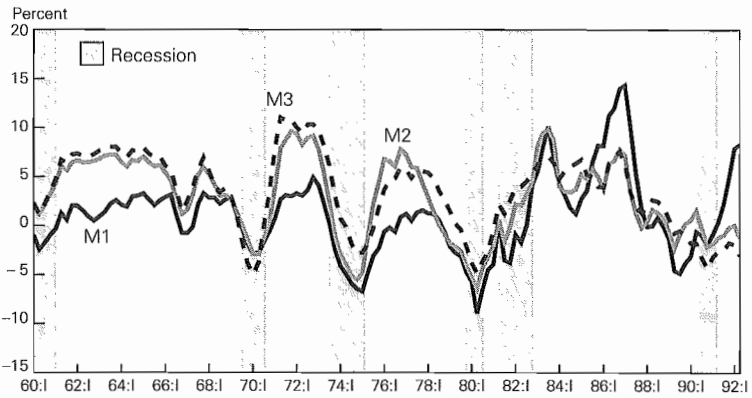
Weak Economic Growth

Economic growth has been unusually weak during this recovery. Table 1 provides growth rates of real gross domestic product (GDP) for the one-year and two-year periods immediately following the six recession troughs since 1960, ordered by the size of the real GDP gap at the trough. Even though the GDP gap for the 1991:II trough is in the middle of the range for the six recessions, the growth rate for the first year of this recovery has been only 1.5 percent, less than half the rate of the next slowest recovery. If the growth rate for the two-year period following 1991:II is projected by combining the actual growth rate for the first year

Figure 1

Growth in the Real Money Stock

1960:I to 1992:II
Four-Quarter Moving Average



Source: Data Resources, Inc.

and the DRI forecast for the 1992:III to 1993:II period, that growth rate is anticipated to be less than one-half the fairly uniform rates of the four other recoveries not distorted by a subsequent recession.

This recovery is clearly an outlier, and its slow speed cannot be attributed to a particularly shallow recession as measured by the GDP gap. Furthermore, of the six recessions since 1960, only this most recent one had a larger real GDP gap one year after the trough than it had at the trough. That is, not only has the recovery been atypically slow, but the first year was not truly a recovery: the economy continued to lose ground relative to the full-employment level of real GDP and thus continued to suffer from a growth recession.

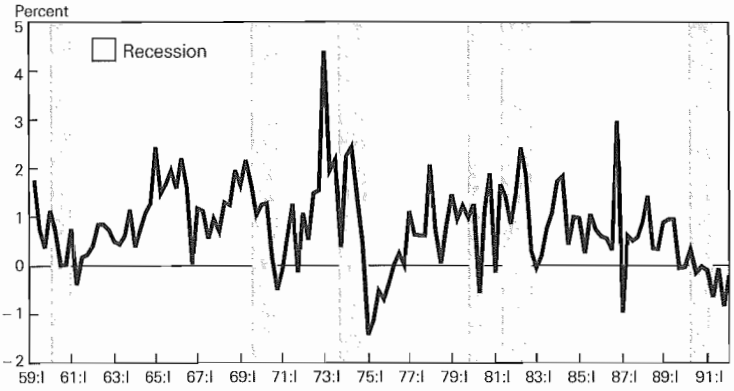
Behavior of the Monetary Aggregates

The monetary aggregates have been following an unusual pattern. Figure 1 shows the growth rates of three measures of the real money stock for the period since 1960. Recession periods have been shaded. During previous recoveries, all three monetary aggregates have shown robust growth in the initial stages of recovery. The broader aggregates have picked up before M1 and generally have grown much faster than M1 during the recovery period. The recent recovery period has been an exception, however. Neither M2 nor M3 has rebounded. Both continue

Figure 2

Flow of Bank Loans Relative to Tangible Bank Assets

1959:II to 1992:I



Source: Board of Governors of the Federal Reserve System, *Flow of Funds Accounts.*

to experience negative growth rates, and the most recent data show that their growth rates have begun to decline again. In contrast, M1 has rebounded sharply. And, atypically, its rebound has both preceded and exceeded that of the broader aggregates.

Limited Availability of Bank Credit

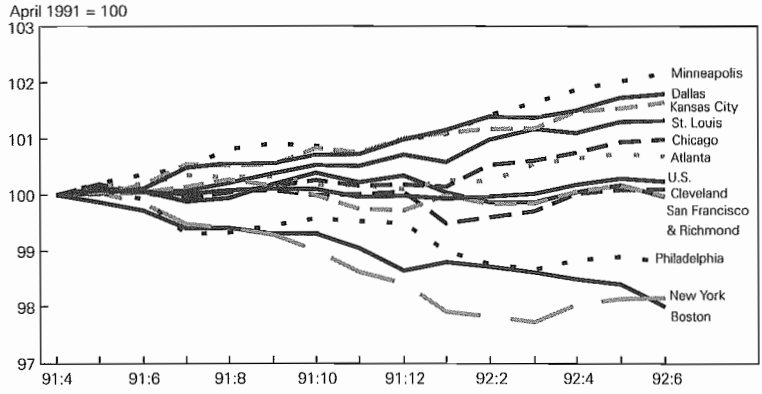
Bank credit has been unusually weak during the recovery. Figure 2 shows the flow of total bank loans to nonfinancial corporations, scaled by nonfinancial corporations' tangible assets. Recession periods have been shaded. In earlier recessions, bank loans declined sharply but then began to grow soon after the recovery was under way. While the most recent recession appears to have ended in the spring of 1991, bank lending continues to decline and still shows no evidence of a turnaround more than a year later.

Varying Regional Conditions

Economic problems are not uniform across geographic regions. The most recent economic downturn has been particularly concentrated in New England and the Mid Atlantic states, regions that also have been experiencing a slump in real estate prices. Figure 3 presents indexes for

Figure 3

Index of Total Nonagricultural Employment, by Federal Reserve District



Source: Federal Reserve Bank of Dallas.

total nonagricultural employment since April 1991 for the nation and for each Federal Reserve District. Three Districts stand out: Boston, New York, and Philadelphia. They represent the Northeastern portion of the country and are the regions exhibiting the most noticeable declines. In fact, without these three Districts, the horizontal national index instead would have an upward slope, albeit a rise at a much slower pace than is typical of a recovery. While several regions of the country experienced regional recessions during the 1980s, the Northeastern slump became a national recession and, unlike previous regional recessions, has been associated with a credit crunch.

Past Research on the Credit Crunch

Previous research into credit crunches has focused on two major themes. Equilibrium credit rationing describes why nonprice credit rationing can exist in a world of flexible interest rates. Thus, it shows that even without institutional impediments, credit rationing can persist. The disintermediation model describes how credit markets can be particularly dysfunctional if institutional impediments prevent the free flow of credit.

Equilibrium Credit Rationing

Equilibrium credit rationing models such as the one presented in Stiglitz and Weiss (1981) show that excess demand for loans may persist because of the high cost to the lender of obtaining information. These models show that the interest rate charged by a bank can affect both the composition of the pool of borrowers seeking loans and the incentives that borrowers have to undertake risky projects.

Bank profits depend on the riskiness of the loans they make (the probability of repayment) as well as the interest rate charged on the loans. Borrowers have different probabilities of repayment, but banks may have difficulty distinguishing those likely to pay from those who are not. This leads to an adverse selection problem, which causes banks to behave differently than might be expected in models that assume costless information.

Faced with an excess demand for loans, banks may not increase the interest rate they charge sufficiently to clear the loan market. If banks were to eliminate the excess demand for credit by raising the interest rate enough to shrink the pool of potential borrowers to the available supply, primarily low-risk borrowers would be driven out of the market. Those left in the pool would tend to have riskier projects with a higher probability of default. That is, given the well-known trade-off between risk and return, only those investing in high-risk projects with high expected returns (or, alternatively, those not intending to repay the loan) would be able to afford the higher interest costs of the loan. If the decreased probability of loan repayment from the remaining lending opportunities more than offsets the gains from the higher interest rate on the loans that do not default, banks' expected profits from making loans to this smaller pool of potential borrowers would fall.

Similarly, the terms of the loan contract can alter the behavior of borrowers (the moral hazard problem). Borrowers who pay high interest rates have an incentive to invest in projects with high expected payoffs and, thus, high risks and high default probabilities. Because of the moral hazard and incentive problems associated with lending, bank profits may be maximized at an interest rate that reduces the average risk of default but leaves some borrowers who are willing to pay higher interest rates still unable to obtain credit.

The equilibrium credit rationing model is one explanation of why credit rationing might occur. However, it is of limited use in explaining the current situation. The key insight of the equilibrium credit rationing model is that the high cost of information may result in excess demand for loans, as banks have difficulty differentiating risky from less risky borrowers. While the problems of adverse selection and moral hazard are likely to be more severe in any economic downturn, there is no reason to believe that credit information has become unusually costly or

that borrowers have become unusually risky in this recession as compared to previous recessions.

The equilibrium credit rationing model also does not explain the larger than normal declines in bank credit. Furthermore, to address the geographic disparities in economic performance, it must explain why information is dramatically more costly or borrowers dramatically more risky in the Northeast relative to the remainder of the country. For example, could the behavior of real estate values in the Northeast account for enough additional uncertainty to make the equilibrium credit rationing model consistent with the geographic differences in economic performance? While this model does explain why credit rationing might occur and persist, it does not describe the unusual conditions of the current period.

Disintermediation

The disintermediation model of credit crunches emphasizes institutional impediments that prevent banks from satisfying credit demands (Wojnilower 1980, 1985). Usually, crises in the banking system have been relatively brief, triggered by monetary restraint and a sharp rise in market interest rates. As market rates rose, interest rate ceilings prevented banks from raising deposit rates commensurately. Depositors reacted to the higher market interest rates by removing deposits from the banking system and placing them in other assets paying market rates; that is, disintermediation occurred. As their liabilities were drained, banks had to shrink their assets. Because of longer-term loans currently outstanding and commitments to provide lines of credit, banks continued to provide credit to many of their customers, although demand loans might be called and maturing loans might not be renewed. Furthermore, borrowers without insurance against a credit crunch via their banking relationship were unable to obtain credit, even at sharply higher interest rates.

While the disintermediation model is an attractive explanation of previous credit crunches, it does not appear to explain current problems. The interest rate patterns and regulatory impediments that made the model so cogent in the past do not fit current circumstances. Furthermore, the credit crunch problem has persisted, rather than being a brief disruption to credit flows as in past episodes. Finally, the degree of severity has differed markedly across geographic regions, unlike the more general nationwide phenomenon that might be expected in a liquidity squeeze associated with disintermediation.

The Capital Crunch Model

While the disintermediation hypothesis was predicated on a liquidity squeeze, the capital crunch hypothesis is based on a capital squeeze. A reduction in bank capital lowers a bank's capital-asset ratio. If the reduction is large enough to push the capital-asset ratio below that required by capital regulations and those regulations are enforced, the bank must increase its capital-asset ratio. Banks with low or no earnings have only two options: raise new capital or reduce assets and liabilities. Accurate assessments of troubled banks are virtually impossible without an in-depth appraisal of the loan portfolio, and so banks that have recently lost capital have difficulty convincing investors that prospects for the future, rather than problems of the past, motivate their attempts to raise new equity. When such incentive problems make it impossible for viable banks to raise new equity quickly and at a "fair" price in order to replenish their capital, they are forced to shrink.

Banks can shrink by selling securities, selling assets, or reducing loans. Because of potential liquidity problems, many troubled banks prefer to increase rather than reduce their securities holdings. Banks frequently can sell assets, although it may require shedding their most profitable lines of business. Outstanding loans can be reduced by making no additional loans and either calling or refusing to renew existing loans. Any of these forms of asset shrinkage can help satisfy capital ratios, but a reduction in the loan portfolio can seriously impair not only the long-run viability of the bank but also the operations of local business community members dependent on the lending relationship.

While reducing loans to satisfy a capital ratio at one particular bank can disrupt historical lending relationships, the disruptions should be short-lived so long as some well-capitalized banks are available as lending alternatives. If, however, all banks in a region experience large losses simultaneously, no immediate alternative source of funds may be available. This is particularly true for small and medium-sized businesses that are not large enough to be customers either of large banks outside the region or of nonbank lenders such as insurance companies or pension funds, and not large enough to access capital markets directly. For bank-dependent borrowers, this situation can cause financial distress and even financial collapse associated with the problems of the lender rather than problems of the borrower. Binding capital regulations on capital-impaired banks might be salutary (at least for the Federal Deposit Insurance Corporation) as long as financial difficulties are isolated, but they can worsen macroeconomic performance if banking problems are widespread.

Recent Research on the Capital Crunch Hypothesis

Recent research has focused on two of the links in the capital crunch hypothesis. The first is the widespread loss of bank capital that resulted from declines in real estate prices, documented in Peek and Rosengren (1992a). The second is the shrinkage in bank assets, which has been most concentrated in poorly capitalized institutions; this has been investigated by Bernanke and Lown (1991), Hancock and Wilcox (1992), and Peek and Rosengren (1992b, 1992c). The next section briefly describes the evidence to date with particular reference to New England, where the problem is most acute.

Real Estate and the Decline in Bank Capital

New England real estate, like the New England economy, boomed during the early 1980s. Increases in defense spending and strong sales for computers and other high technology items manufactured in New England resulted in sharp declines in unemployment. Between 1986 and 1988 the unemployment rate averaged less than 3.5 percent, significantly below that of the nation.

Tight labor markets were soon followed by tight housing markets. House prices accelerated rapidly, with the median sales price of a house in Boston doubling between 1984 and 1988. As house prices rose, the incentive for new construction also rose. From 1980 to 1988, the population of New England increased by only 5 percent, yet employment in the construction sector grew by 76 percent.

The boom in construction was possible only with substantial new financing, much of which came from commercial and savings banks. The first column of Table 2 highlights the rapid growth in real estate loans by commercial banks in New England. While real estate loans grew rapidly in the nation (97.8 percent), they grew much faster in New England (269.9 percent). The growth was particularly rapid in construction loans, the most speculative of real estate loans, which increased more than three times faster in New England than they did in the rest of the country. This rapid expansion caused New England banks to be more highly exposed to any downturn in the real estate sector. In 1984 New England commercial banks had a slightly greater share of their total assets in real estate loans than banks nationwide (16.6 percent versus 14.6 percent). But by 1989 New England banks had nearly doubled that share, raising it to 31.4 percent compared to only 21.9 percent for commercial banks nationwide.

When the bubble burst, little could be done to save many of the lending institutions that were overly concentrated in real estate. The ratio of nonperforming loans (defined here as the sum of loans 90 days past due and nonaccruing loans) to total loans outstanding in New

Table 2
Percentage Change in the Assets and Liabilities of FDIC-Insured Commercial Banks, New England and the United States

	New England Growth Rates			United States Growth Rates		
Item	1989 1984	1991:I 1990:I	1992:I 1991:I	1989 1984	1991:I 1990:I	1992:I 1991:I
Assets	95.1	−8.3	−5.3	31.9	1.2	2.4
Loans	136.8	−13.9	−11.1	49.9	1.8	−2.8
C&I	95.2	−17.7	−12.9	24.0	−2.5	−9.9
Consumer	62.0	−16.7	−8.6	55.3	−.6	−3.7
Real Estate	269.9	−9.6	−9.3	97.8	7.5	2.4
Construction	332.1	−35.2	−47.1	89.3	−10.4	−21.0
Liabilities	95.1	−8.3	−5.3	31.9	1.2	2.4
Total Deposits	87.9	−4.6	−6.1	30.9	2.7	2.4
Capital	114.4	−7.2	2.7	37.2	5.7	7.0

Source: Call Reports.

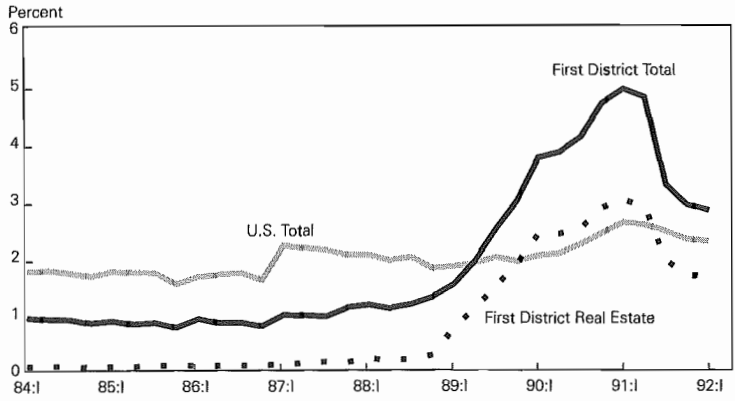
England rose sharply in 1989, primarily because of real estate lending (Figure 4). As banks and examiners realized that loan losses would be substantially greater than anticipated, they increased loan loss reserves dramatically. This, in turn, seriously depleted bank capital.

Banks quickly tried to reduce their exposure and rebuild their capital-asset ratios. As the second and third columns in Table 2 show, the decline in commercial bank lending in New England has been substantial over the past two years. Although loans by commercial banks nationwide grew by 1.8 percent between the first quarter of 1990 and the first quarter of 1991, and declined by 2.8 percent between the first quarter of 1991 and the first quarter of 1992 (columns 5 and 6), commercial bank lending declined by 13.9 percent and 11.1 percent respectively in New England during the corresponding periods. Bank capital in New England declined significantly in 1990, in contrast to the nationwide experience; however, it increased by 2.7 percent between the first quarter of 1991 and the first quarter of 1992. This improvement in bank capital levels and the decline in nonperforming loans are hopeful signs of a mitigation of the capital crunch in New England.

Any effective attempt to relate capital to risk during the construction boom would have required a significant buildup of capital while banks were increasing their exposure to real estate. The capital ratios of banks did improve somewhat during the boom, but the gains were quickly depleted once real estate prices declined. Unfortunately, instead of enforcing more stringent capital ratios during the boom, regulators adopted them during the bust. The result has been weakened banks attempting to satisfy capital ratios by shrinking. If the increased expo-

Figure 4

Nonperforming Loans as a Percentage of Total Bank Assets



Source: Call Reports for FDIC-insured institutions. Changes in a data series also reflect changes in the number of FDIC-insured institutions.

sure to real estate lending had been isolated among a few banks, the problem would have had little impact on the regional economy. Borrowers unable to find financing from capital-depleted institutions would have been able to turn to their better-capitalized competitors. However, because most banks significantly increased their exposure to real estate, virtually all the large lenders in New England suffered large losses of capital.

Bank Capital and Bank Shrinkage

Once banks had experienced large losses, capital regulations became binding on many of New England's largest banks. Unable to raise new equity and expecting only a gradual improvement in earnings, some banks were forced to shrink both their assets and their liabilities. While such shrinkage could be the result of weakened loan demand associated with the recession, the capital crunch hypothesis predicts that poorly capitalized institutions would shrink their assets and liabilities more than their better-capitalized competitors. This hypothesis can be tested by estimating the following equation, with a positive predicted sign for a_1:

$$(1) \qquad Dep_i = a_0 + a_1 \frac{K_i}{A_i} + a_2 \log(A_i) + a_3 FEE_i + a_4 \frac{CI_i}{A_i} + a_5 \frac{RE_i}{A_i} + \epsilon_i.$$

The dependent variable is the percentage change in total deposits (DEP) from the first quarter of 1990 to the first quarter of 1991. While this study focuses on total deposits, similar results were obtained using disaggregated assets and liabilities. The beginning-of-period capital-asset ratio is calculated using first-quarter 1990 data for total equity and assets.

Limiting the sample to New England banks greatly reduces (though it may not eliminate) the variations in loan demand shocks across banks in the sample. It is still possible that banks specializing in particular types of loans experience different demand shocks. Consequently, the regression includes four control variables in an attempt to capture potential differences in demand across New England banks: the logarithm of assets (A), as of the first quarter of 1990; and calendar year 1989 average values for the remaining three variables, the ratio of fee income to the sum of total interest and fee income (FEE), the ratio of commercial and industrial loans (CI) to total assets, and the ratio of real estate loans (RE) to total assets. These control variables are intended to capture changes in demand across banks that otherwise might be attributed incorrectly to the capital-asset ratio.

In order to further control for demand shocks, institutions are categorized by whether they had a commercial or a savings bank charter, since New England savings banks generally have been less active in lending to businesses. The sample is further split into large bank and small bank categories. (Large is defined as any institution with at least $300 million in assets, consistent with the classification used in call reports.)

Table 3 reproduces the results from Peek and Rosengren (1992c) of estimating equation (1) for all FDIC-insured banks in New England and for the four subcategories: large commercial banks, large savings banks, small commercial banks, and small savings banks. The results provide substantial support for the capital crunch hypothesis. Capital ratios are a statistically significant determinant of deposit growth in four of the five regressions, with the estimated capital ratio coefficient significant at the 1 percent confidence level in the large savings bank and the all banks samples. A 1 percentage point decrease in a bank's capital-asset ratio corresponds to a decline of more than 1 percent in its deposit growth rate for the small savings bank and all banks samples, and an even more dramatic 1.47 percent drop for the large commercial bank sample.

Asset size has a statistically significant negative estimated coefficient in all five regressions, with coefficients significant at the 1 percent confidence level for the all banks regression and the two savings bank regressions. Fee income has a positive effect in four of the five regressions, although none of the coefficients are statistically significant. This is consistent with the hypothesis that banks that relied heavily on fee income were more insulated from the recent demand shocks. Differential demand shocks, as measured by bank portfolio shares of commercial

Table 3
Determinants of the Percentage Change in Total Bank Deposits[a,b] at FDIC-Insured Banks in New England 1990:I to 1991:I

Institution	Constant	K/A	Assets	FEE	C&I	RE	n	$\bar{R}^2$	SEE
Large Commercial Banks	.21 (.19)	1.47* (.72)	−.03* (.01)	.29 (.17)	.04 (.14)	−.10 (.08)	49	.15	.080
Small Commercial Banks	.31 (.20)	.81 (.53)	−.03* (.01)	.17 (.25)	.03 (.13)	.04 (.12)	146	.01	.120
Large Savings Banks	.58** (.16)	.93** (.22)	−.05** (.01)	−.35 (.24)	−.10 (.12)	.01 (.07)	81	.44	.056
Small Savings Banks	.50** (.13)	1.08* (.47)	−.04** (.01)	.45 (.58)	−.04 (.15)	−.18* (.08)	143	.15	.084
All Banks	.38** (.06)	1.03** (.24)	−.03** (.00)	.11 (.14)	−.03 (.07)	−.07 (.05)	419	.23	.093

[a]Total bank deposits are defined here as total bank liabilities less bank capital.
[b]Estimated with a White correction for heteroskedasticity; standard errors in parentheses.
*Significant at 5% confidence level.
**Significant at 1% confidence level.
Source: Peek and Rosengren (1992c, Table 3).

and industrial loans and real estate loans, generally do not have significant effects, with real estate loans having a statistically significant effect only in the small savings bank sample.

The results shown in Table 3 support the capital crunch hypothesis: institutions with lower capital ratios grew more slowly (or shrank more rapidly) trying to satisfy capital requirements. These findings are quite robust. In addition, Peek and Rosengren (1992b) found that banks have contracted deposits most in those categories that serve as their marginal source of funds. While in the regressions reported here the dependent variable is expressed as a percentage change, similar results have been obtained using changes in the absolute levels of both aggregated and disaggregated categories of liabilities (Peek and Rosengren 1992b). On the asset side, after correcting for charge-offs, loan sales, and changes in classification of assets, Peek and Rosengren (1992a) find that declines in real estate lending are highly correlated with banks' capital positions.

Bank Shrinkage and Bank Regulation

While recent research has shown that poorly capitalized banks have shrunk more than their better capitalized competitors, the link to regulators has been indirect. Bernanke and Lown (1991), Hancock and Wilcox (1992), Baer and McElravey (1992), and Peek and Rosengren

(1992b) have all associated bank shrinkage with the introduction of new bank capital regulations. By examining the formal agreements regulators have signed with banks, this study provides a more direct link to regulators.

Bank Capital Regulation

The recent losses in bank capital occurred at the same time that regulatory attention increasingly was focused on the adequacy of bank capital relative to assets. The Basle Accord provided international capital standards for commercial banks. Its purpose was twofold: (1) it standardized capital regulation across nations, preventing banks from achieving a competitive advantage by operating in less regulated countries; and (2) it encouraged regulators to consider the adequacy of bank capital in a bank's asset portfolio.

While the Basle Accord provided standardized treatment of credit risk, it made no attempt to quantify interest rate risk. U.S. regulators adopted a second capital ratio, the "leverage ratio," which required banks to maintain minimum capital-asset ratios with the assets not weighted by risk. Even banks holding only U.S. government securities, which receive a risk weight of zero under the Basle Accord, still must maintain sufficient capital to satisfy the leverage ratio because of the potential interest rate risk.

In their implementation of the leverage ratio, bank regulators have added a risk component. Instead of weighting the assets of the bank, as is done under the provisions of the Basle Accord, regulators have demanded higher minimum leverage ratios for banks with low CAMEL ratings, which are ratings that reflect the level of supervisory-determined risk that the bank will fail.[1]

Unfortunately, the implementation of the CAMEL-adjusted leverage ratio has several undesirable features. First, requiring higher leverage ratio targets for banks with low CAMEL ratings causes capital regulation to be procyclical. As banks experience losses that erode their capital, their CAMEL ratings are lowered and their target leverage ratios are raised. In this way, leverage ratio targets are raised when banks have lost bets, rather than when banks take bets (take on the risk).

Second, the higher capital requirement is applied on average rather than marginal assets. As a bank's situation deteriorates, all assets must be supported by a higher level of capital, regardless of their underlying risk. Also, any additional lending, even to low-risk borrowers, must be

[1] Banks are rated on five factors: Capital, Asset quality, Management, Earnings and Liquidity, giving rise to the acronym CAMEL. Each individual component, as well as the composite rating of all five factors, is assigned a score from 1 (strongest) to 5 (likely to fail).

supported by the higher capital base. This provides a perverse incentive, since additional loans that require a higher capital base will be undertaken only if they have a high expected return, and presumably a high risk of default. Thus, the higher capital requirement discourages banks from lending to low-risk borrowers.

Third, for many institutions, the leverage ratio, adjusted for bank CAMEL ratings, is the most binding ratio, making the risk-based ratios irrelevant for now. Hence, the risk of bank failure, rather than the riskiness of bank assets, has become the primary factor associated with higher capital requirements. Furthermore, because CAMEL-adjusted capital requirements become most binding when banks are experiencing severe financial distress, the constraint is not likely to be eased by new equity issues.

Application of the Leverage Ratio

The new capital regulations have not been tested by a major downturn in banking, except in New England. Thus, it was not apparent until recently how the leverage capital requirement would be applied. The regulations require a 3 percent minimum leverage capital ratio for the most highly rated banks, with a minimum capital requirement 100 to 200 basis points higher for riskier institutions. The regulations are not specific, however, as to how these higher minimum requirements are set.

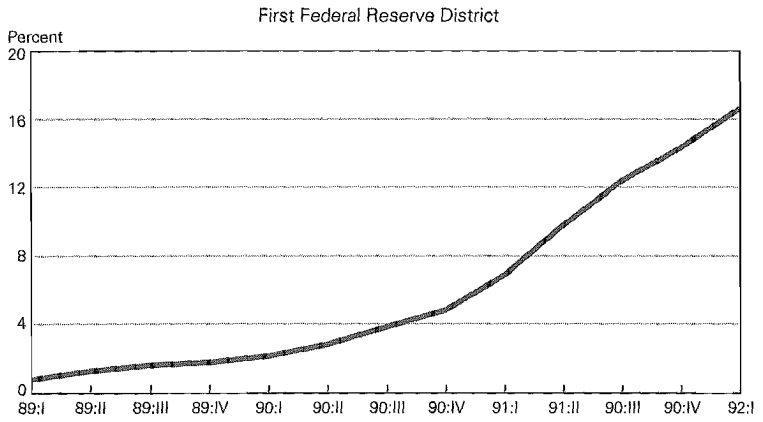
Despite the ambiguity in the regulations, regulatory actions have clarified the leverage capital guidelines. As an institution experiences financial problems, regulators usually initiate formal or informal action requiring the bank to take steps to improve its financial condition. Most CAMEL-rated institutions with overall ratings of 4 (potential of failure, performance could impair viability) or 5 (high probability of failure, critically deficient performance), and even some institutions with a CAMEL rating of 3 (remote probability of failure, flawed performance), will undergo some enforcement action.

The least serious action taken by regulators is the memorandum of understanding (MOU). This informal action, frequently taken after an examination, represents an understanding between the bank's board of directors and the regulator about deficiencies in the bank's operations and the proposed remedial action. While the agreement is not legally enforceable, failure to satisfy the MOU would likely result in a formal action being undertaken by the regulator. The MOU is generally not disclosed publicly.

For more troubled or recalcitrant banks, the regulator will normally enter a formal agreement, either a written agreement or a cease and desist order. Both actions are legally enforceable and are publicly disclosed. Cease and desist orders and written agreements are consid-

Figure 5

Banks Operating under Formal Enforcement Actions, as a Percentage of All Banks



Source: Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation.

ered more severe actions than MOUs, and often involve less negotiation with the bank. Cease and desist orders and written agreements both carry civil penalties.

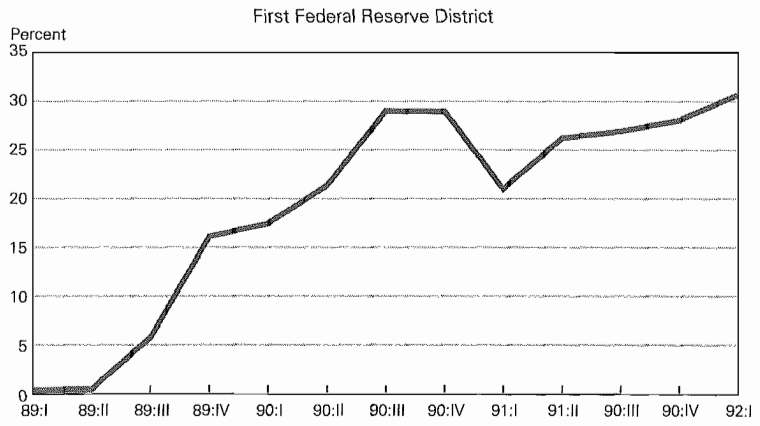
Since 1989, 106 New England banks have signed formal agreements with the FDIC and 41 New England banks have signed formal agreements with the Comptroller of the Currency. The Federal Reserve is the primary regulator for only four state member banks in New England, none of which currently is under formal agreement. However, the Federal Reserve does have formal agreements with those holding companies whose bank subsidiaries are under formal agreement with either the FDIC or the Comptroller of the Currency.

Figures 5 and 6 show how widespread the bank problems are in New England. Almost one-sixth of all banks in New England, representing 30 percent of all bank assets, are operating under a formal agreement. This group includes only the most troubled institutions, where formal agreements have been necessary. The numbers would be much larger if MOUs, about which information is not publicly available, were included. Because so many banks are under formal or informal agreements with regulators, the actions taken in these agreements are critical to the actions banks will take as they seek to recover.

Most formal agreements include sections on management and board supervision of the bank, strategic and capital plans to implement

Figure 6

Asset Value of Banks Operating under Formal Enforcement Actions, as a Percentage of Total Bank Assets



Source: Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation.

the bank's recovery, risk review, and a review of nonperforming assets and reserving procedures. While the FDIC generally requires detailed targets for capital, loan loss reserves, and classified assets, the Office of the Comptroller generally is less specific in its agreements. Table 4 details the specific capital targets, where they are included, for formal agreements signed in 1991 and the first seven months of 1992 with institutions having assets exceeding $300 million.

Table 4
Leverage Requirements Mandated in Formal Agreements Signed January 1991 to July 1992

Primary Regulator	Number of Banks[a]	Documents Available	A capital-asset ratio[b] of at least				
			4%	5%	6%	8%	10%
FDIC	26	22	1	1	16	2	1
OCC	5	4	0	4	0	0	0

[a]Banks with assets exceeding $300 million, as of 1990:IV Call Report.

[b]One bank in the FDIC group did not have a capital plan.

Source: Formal agreements (both written agreements and cease and desist orders) signed by the bank with its primary regulator.

In the sample, when specific targets have been set, they have been based on the leverage ratio, although three of the four OCC agreements did set targets for the risk-based capital ratios as well. Many institutions under formal agreement are now being required to satisfy a leverage ratio equal to or greater than 6 percent, with some agreements for leverage ratios substantially above 6 percent. The percentage of total bank assets held in banks with an actual leverage ratio of less than 6 percent has increased significantly, from 46 percent in the first quarter of 1989 to 69 percent in the first quarter of 1992; this means that a requirement of leverage ratios in excess of 6 percent makes further shrinkage of bank assets very likely.

Response by New England Banks

Table 5 shows the actual leverage ratios of the five largest banks regulated by the OCC and the five largest banks regulated by the FDIC that had not failed as of August 1992 and had signed formal agreements citing bank examinations that occurred before the end of 1990, thus enabling us to evaluate the banks' responses. Although a formal agreement does not occur only as a consequence of an exam, the major formal agreements signed recently in New England followed exams by a year or less, and those exams were mentioned in the agreements. The financial information on the 10 banks studied here dates from the quarter in which the exam was initiated. In eight of the 10 banks studied, large decreases in the leverage ratio occurred in that quarter. The banks are listed in random order.

Table 5
Leverage Ratios of 10 Large New England Banks Signing Formal Agreements

Regulator Bank	Ratio One Quarter before Exam Resulting in Formal Agreement	Ratio in Quarter Exam Initiated	Ratio Fourth Quarter after Exam Resulting in Formal Agreement
OCC			
1	5.8	4.5	5.1
2	6.9	5.5	5.8
3	5.3	5.3	4.6
4	6.6	4.5	5.4
5	6.8	6.6	6.9
FDIC			
6	6.9	4.6	2.4
7	4.9	4.4	2.3
8	5.8	4.2	4.2
9	5.4	3.9	4.0
10	11.2	9.6	4.3

Source: Call Reports.

OCC-Regulated Sample of Banks

The largest banks under agreement in New England have the OCC as their primary regulator. The five largest institutions with OCC agreements that satisfied the selection criteria represent 21 percent of total bank assets in New England as of the first quarter of 1990. The size of this share is particularly significant because it does not include the failed Bank of New England and its subsidiaries, which held 10 percent of total bank assets at that time.

The OCC's formal agreements are generally less specific than those of the FDIC. Three of the OCC-supervised banks were required to initiate capital plans, although no specific targets were specified in the agreement. The other two banks were required to maintain leverage ratios above 5 percent. Table 5 shows that three of the OCC-regulated institutions had substantial decreases in their leverage ratio in the quarter of the exam. But in all three instances, the leverage ratio increased from the exam level within one year. The leverage ratio of Bank 3 did not decrease initially, although it declined somewhat within one year after the exam. Bank 5 had only a small initial decrease in its leverage ratio, and within one year its level exceeded that of the quarter preceding the exam.

Table 6 shows how these banks achieved the changes in their capital-asset ratios. The first two columns provide the percentage change in equity capital and total assets in the year following the initiation of the exam that resulted in a formal agreement. The remaining columns show the shares of the one-year asset decline accounted for by different asset categories. A negative share indicates that the asset category grew over the one-year period.

Among the OCC-regulated institutions, three of the five actually increased their capital, and only one did not shrink its assets (Bank 5). Because Bank 5 had leverage ratios well in excess of 6 percent, the leverage ratio was not a constraint to its growth. Since Bank 3 did not initiate changes in the first year of the agreement but did initiate substantial shrinkage in the second year, we report its data for the two-year period following the exam.

The shrinkage primarily came from reductions in loans. Three of the four institutions that shrank significantly increased their holdings of securities, and all four had substantial decreases in their loan portfolios. For the credit crunch hypothesis, the loan categories that shrink are also important. Credit card loans and home mortgages can generally be obtained, either directly or indirectly, from institutions outside the region. Thus, decreases in these loan categories do not have as much significance for credit availability, since the borrowers are not dependent on local banks. Borrowers needing construction loans, commercial real estate loans, and commercial and industrial (C&I) loans are more

Table 6
One-Year Percentage Change in Assets and Capital in 10 Large New England Banks under Formal Agreement

Regulator Bank	Percentage Change in Equity Capital	Percentage Change in Total Assets	Share of Asset Decline[a] Accounted for by: Securities	Total Loans	Construction Loans	Commercial Real Estate Loans	C&I Loans
OCC							
1	−9.5	−19.7	5.1	66.3	7.2	−22.4	29.1
2	5.5	−12.8	−33.5	107.9	7.5	−5.4	19.8
3[b]	−18.1	−4.6	−48.3	155.8	102.7	52.7	−73.9
4	14.1	−9.5	−28.3	160.3	15.2	21.1	54.1
5	6.6	.0	n.a.	n.a.	n.a.	n.a.	n.a.
FDIC							
6	−61.5	−25.9	57.2	46.3	15.8	12.8	5.1
7	−51.7	−12.4	−41.7	147.1	2.9	10.5	30.6
8	−12.9	−16.6	66.1	24.0	16.2	.0	21.5
9	−10.6	−10.0	−22.9	199.2	31.1	7.1	33.1
10	−58.7	−10.7	65.6	82.6	50.9	−133.9	37.6

[a]Increases appear as negative numbers.

[b]Because no decline occurred in the first year of the agreement, these data are based on the two-year period following the exam.

Source: Call Reports.

likely to be dependent on local banks. Construction loans declined in all four OCC-regulated banks that shrank, although much of the decline was undoubtedly related to loan demand. Two of the four banks shrank their commercial real estate loans, and three of the four shrank C&I loans. These changes may in part reflect accounting rather than behavioral changes, insofar as many banks at this time were reclassifying C&I loans as commercial real estate loans, thus overstating the actual shrinkage in C&I loans and understating (overstating) the shrinkage (growth) in commercial real estate loans.

FDIC-Regulated Sample of Banks

The FDIC institutions shown in Tables 5 and 6 represent the five largest FDIC-regulated New England banks that met our criteria. These five institutions represent only 2.4 percent of the total assets of New England banks, however. While FDIC institutions are generally smaller than those regulated by the OCC, they are still important because of their large numbers in New England.

The five FDIC banks all had substantial decreases in their leverage ratios at the time of the exam. While two banks stabilized their leverage

ratios, the other three continued to experience declines, in contrast to the four OCC banks that were able to stabilize their leverage ratios at a level exceeding 5 percent in the year following the examination.

All five of the FDIC institutions shrank both their capital and their assets. Banks 8 and 9 maintained their leverage ratio at the exam date level by shrinking assets in roughly the same proportion as their capital. The other three institutions, with capital declines of over 50 percent, could not easily maintain their leverage ratios. Three of the five shrank their securities portfolios and all five shrank their loan portfolios, with a substantial portion of the loan shrinkage in categories most likely to have bank-dependent borrowers.

Bank 10 is particularly striking because of the dramatic decline in its leverage ratio, from 11.2 percent in the quarter before the exam to 4.3 percent one year after the exam. Such a decline raises the question of whether the losses were unanticipated or the bank had been systematically underreserving. In fact, the sharp declines in the leverage ratio when exams occurred would indicate that banks had been underreserved. Unfortunately, a system that focuses on capital ratios encourages institutions to manipulate reserves and charge-offs to avoid further decreases in their capital.

These 10 institutions with formal agreements have significantly reduced their assets. And because of increases in the securities holdings of many institutions, the shrinkage in loans has exceeded the shrinkage of assets. Much of the shrinkage has occurred in lending categories likely to include bank-dependent borrowers. These categories would have declined somewhat because of the recession, however, even in the absence of binding capital regulations.

The Credit Crunch

A regulatory credit crunch requires first that a capital crunch occur. Earlier research has shown that the recent decline in real estate values has caused widespread declines in bank capital, and that poorly capitalized institutions have reduced their assets and liabilities more than well-capitalized institutions. The previous section documents that this behavior is being reinforced by regulatory agreements that require banks to satisfy leverage ratios much greater than the minimum requirements.

Given that a capital crunch has occurred, a credit crunch requires that the decline in local bank lending reduce credit availability to local firms. Losses in bank capital must be widespread and bank-dependent borrowers a significant segment of the local economy. Most small and medium-sized businesses do find banks the only economical source of debt financing (Elliehausen and Wolken 1990; Gertler and Gilchrist

1991). Not only do other financial intermediaries such as insurance firms generally avoid these strata of the market, but their own financial difficulties are likely to preclude them from filling the financing gap left by local banks. A survey of small and medium-sized firms currently being completed at the Federal Reserve Bank of Boston will provide further evidence on their sources of financing and their degree of dependence on banks.

Conclusion

Unfortunately, the two conditions necessary for a capital crunch are present today: widespread losses in bank capital and the stringent application of capital regulation. The New England real estate bust led to large and widespread declines in bank capital just when capital requirements took on greater significance, as bank regulators began to enforce both risk-based capital ratios, adopted to satisfy the international Basle Accord, and the leverage ratio, adopted domestically. Rigorous enforcement of capital requirements was inevitable after the widespread criticism of regulators and politicians that followed the large deposit insurance losses in the savings and loan industry and the commercial bank losses in Texas. This capital crunch has impaired the ability of banks to satisfy the credit demands of the economy during the economic recovery, limiting the access to credit of legitimate borrowers who happen to be bank-dependent.

The capital crunch–credit crunch hypothesis has the potential to explain several of the anomalies described in the first section of this paper. In contrast to the situation under disintermediation, the capital squeeze can persist for as long as it takes to recapitalize the banking system, and cannot be remedied quickly by a decline in interest rates. Thus, it is consistent with a sustained period of unusually slow growth. Furthermore, during a period of shrinkage in bank assets, bank credit growth would be weak, as has been observed in the current situation. On the other side of the balance sheet, the shrinkage of bank liabilities would account for the unusually slow growth of the broader monetary aggregates, also observed recently. Bank asset shrinkage would be most severe in regions of the country that experienced substantial losses of bank capital, such as New England and the Mid Atlantic states. Because bank capital, unlike bank reserves, cannot be traded between nonaffiliated banks across geographic regions, geographic differences in performance can persist until the capital squeeze is resolved. Thus, the capital crunch hypothesis does have the potential to explain, at least in part, the current economic problems.

Unfortunately, a capital crunch is less responsive to the traditional monetary policy prescription of lower interest rates, which was effective

during previous periods of disintermediation. Although bank capital cannot easily be restored, several policies could ease the regulatory burden. First, the flow of bank capital across geographic regions could be made easier by eliminating restrictions on interstate branching and encouraging interstate mergers in order to restore capital in regions with few well-capitalized banks. Second, the procyclical policy of adjusting leverage ratios according to CAMEL ratings could be stopped. Third, greater attention could be given to improving bank capital as bets are taken, rather than penalizing banks once bets are lost.

While none of these policies will provide immediate relief to "crunched" borrowers, they will be positive first steps. Banking problems generated over a decade will require a substantial time for resolution.

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Discussion

*William M. Crozier, Jr.**

To begin, I feel I owe a debt to authors Joe Peek and Eric Rosengren and to their leader and colleague, Dick Syron, for tackling an issue that began to bother me in the summer of 1991. At that time, it appeared that the leverage ratio was getting in the way of promoting bank earnings recovery, and hence would delay the capital rebuilding process that clearly is a necessary part of any economic recovery. I vented my frustration to Dick Syron and, at his suggestion, wrote him a letter on the topic, with copies to Federal Reserve Board Governor John LaWare and Jerry Corrigan, President of the New York Fed. Happily, Dick's views also began to come forward in the form of urgings to his colleagues, scholarly papers, and even testimony at congressional hearings. Dick directly, and I somewhat indirectly, also got Marty Feldstein's attention, which resulted in a well-cast piece in *The Wall Street Journal* in March of 1992. Thus, some thoughtful work has entered the public domain, now including Peek and Rosengren's paper. My sense is that all this effort will matter, particularly if the Fed and its fellow central banks tie up some loose ends from the Basle Accord in the area of maturity risk.

Of course, as with many other matters, the Fed is the right leader on the leverage issue. The Office of the Comptroller of the Currency was never a problem. (As a matter of fact, Comptroller Clarke felt quite comfortable with the label "Low Leverage Bob.") But, as can be seen from Peek and Rosengren's Table 4, the Federal Deposit Insurance Commission (FDIC) needs some convincing, and perhaps Peek and Rosengren's paper and this conference will help. As the message is

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carried forward, careful note should be taken of the authors' recommendation to avoid pro-cyclical actions. It is a sound principle indeed to throw banking weight against, instead of into, the peaking and troughing of the cycle. We need more reminders of that sound banking advice—advice so basic, yet so regularly ignored in recent times.

Now, however, I would like to address aspects of the paper where my angle on the issues may be just a bit different from the authors'. I do believe, as Peek and Rosengren have concluded, that "the capital crunch has impaired the ability of banks to satisfy the credit demands of the economy during the economic recovery." I would argue, however, that for now the only significant credit demand that banks have not had the chance to satisfy is that of the U.S. government. It seems to me that a serious disruption has occurred in private credit demand in this most atypical recession. The evidence I have—some of it obtained personally—has confirmed my long-held view that lending money is basically a passive business. A bank cannot make a customer borrow, no matter how much those in high places think banks can.

That does not mean, however, that the biggest borrower of them all is in retreat or that the inability of banks to add to their holdings of government securities is unimportant—quite the contrary. Central bankers, in particular, should realize that in the face of a serious recession, commercial banks should be stuffed with government securities in order to help earn their way out of their capital hole with safe and highly liquid assets. Instead, thanks to leverage ratios, banks have had to forgo building government securities portfolios as high as they might have and have had to shed liabilities. Furthermore, in the process of decreasing liabilities, banks have forced their depositors into direct lending to the government or, more often, into the surrogacy of mutual funds. Thus, as a result of overly rigorous leverage standards, banks have been denied more traditional balance sheet nourishment and have had to give further ground to their mutual fund competitors. These competitors not only are outside the Basle Accord, but also are outside leverage requirements and, of course, outside the Fed, the FDIC, and the Federal Deposit Insurance Corporation Improvement Act.

Of course, as one might imagine, with the handwriting clearly on the wall, banks are now expanding into mutual funds. More monetary control for the Fed in all of this? More systemic safety? I do not think so. Moreover, policies that delay the rebuilding of bank earnings raise the cost of capital to banks, require higher pricing, and delay economic recovery. Peek and Rosengren understand this clearly. I merely wish they had said something about the opportunity to build capital that has been missed by not allowing banks to lever further their purchases of U.S. government securities.

But to return to the topic of private credit demand, I doubt very much if there really is a capital crunch or credit crunch. When examining

the statistics on loan trends, for example, one would have to make allowances not only for a severe recession, but also for the off-loading to alternate markets of high-quality credit that does not meet the new bank profitability standards based on the Basle agreement. Charge-offs and movement to ISF/OREO accounts (in substance foreclosure and other real estate owned) would also play a role. In consumer credit, securitization with or without sale would also be important. All of this balance sheet "engineering" suggests that room could easily be made for the addition of profitable new relationships, if they were to exist.

If we could gather the data and analyze the corporate finance of what is going on in the marketplace, I imagine we would find that investors today are looking only at opportunities that either are riskless or have relatively large returns, which few projects do. If projects have suitable prospects, they are well financed and easily banked. On the other hand, projects lacking strong investor support cannot pass muster at banks.

Returning to our text and thinking about why projects cannot pass muster, I might salvage a little more of the Stiglitz and Weiss model than our authors would. For many transactions we have an information/reliability gap. For instance, it is hard to know what collateral is worth. A steep decline in real estate values has occurred in the Northeast, yet measured against other parts of the United States, some of our real estate markets are still very high. Moreover, given today's shaky economy, the ability to sustain current levels of income is suspect, which further erodes values based on income levels. Those borrowers who do show up want to take only limited risk and hence put as little of their own money as possible on the line. They will not guarantee, and we have lost some of our faith in guarantees—real or moral—anyway. It may take time to close the information/reliability gap, and perhaps some crunch-like stories may emerge as a result. Crunch-like stories, but not a credit crunch.

Finally, a word about interstate branching and interstate mergers, which the authors encourage in their recommendations. I happen to believe in both, and see geographic diversification as a help in strengthening the banking industry. But I do not see the phenomenon helping to restore capital quickly to distressed areas. Instead, I see the process moving resources to regions in need of funds and away from troubled areas. Why, with the bars down, are outside banks not rushing into New England? Perhaps because the prospects just are not there. Meanwhile, Fidelity is busy diverting new hoards of funds to more promising locations through bond, stock, and short-term mutual funds. That is not inherently bad, but more of the same may bring new complaints from those who perceive regional credit crunches.

Discussion

*Albert M. Wojnilower**

I begin with some quotes from a U.S. Treasury report:

> . . . there exists a genuine unsatisfied demand for credit on the part of solvent borrowers . . . one of the most serious aspects of this unsatisfied demand is the pressure for liquidation of old working-capital loans, even sound ones. . . . this pressure is partly due to a determination on the part of bankers to avoid a recurrence of errors . . . it is also due in *large* part to the attitude of bank examiners (my emphasis).

More about this later.

Joe Peek and Eric Rosengren have done a first-rate job of documenting how a sudden intensification of scrutiny and stiffening of capital requirements by bank supervisors combined with a collapse of real estate prices to bring on a disastrous credit contraction in New England. Peek and Rosengren pioneer in courageously publicizing and criticizing an evidently highly articulated and sometimes perverse set of bank supervisory codes, about which very little has previously been divulged. And as much as the authors and the Federal Reserve Bank of Boston are to be congratulated for bringing all this into the open, other supervisory authorities should be called to account for having hidden from public view a process that goes far to explain why economic growth is so depressed (and not only in New England) and may be lamed for years to come. Also at fault are the economists and policy-makers who, although they knew what was happening, were asleep at the very gates they were trained to guard, and failed to call attention to the obvious

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macroeconomic consequences of tightening the rules for the whole banking system at the same time.

But despite the general excellence of the paper, Peek and Rosengren's remedial proposals do not go to the heart of the problem. Unlike them, I am not subject to the constraints of public office, and will propose a more forceful approach.

By a series of accidents of fate, I have been dealing with the subject of this paper for virtually my whole professional career of forty-plus years. Although I didn't coin the term "credit crunch," in 1980 I became the first to have the temerity to describe and analyze the phenomenon in a scholarly publication (the label "scholarly" refers to the publication, not necessarily to my article). Long before 1980, I had predicted the quintessential credit crunch of 1966 as well as subsequent ones. But even before that, in the latter 1950s while still at the Federal Reserve Bank of New York, I had been allowed as part of my doctoral research to analyze some mid-1950s samples of bank examination records. My dissertation, *The Quality of Business Loans*, was published by the National Bureau of Economic Research in 1962.

In those years hardly any defaults or bank failures occurred. The project was sponsored by older folks who remembered the Great Depression. Some of them attributed its severity and duration not so much to the initial tide of loan defaults and bank failures as to the subsequent bloodthirstiness of the supervisory authorities and bank examiners in forcing the liquidation of many intrinsically sound loans, businesses, and banks. Then as now, I wonder, were those officials egged on by vindictive politicians and public?

Rather than harp on minor quibbles with Peek and Rosengren that are largely irrelevant to the powerful and accurate thrust of their paper, let me take a brief and presumptuous try at placing their results in a broader structural and historical framework.

Not a Crunch, but Slow Strangulation

Labeling the recent and current credit strangulation as a "crunch" misapplies both the dictionary meaning and my personal definition of the term. "Crunch" implies a happening that, however painful, is sudden and brief. The crunches of the past, whether touched off by disintermediation or by other triggers, occurred at times of strong credit demand and restrictive monetary policy. A largely unexpected rupture in banks' willingness and/or ability to acquire assets crippled particular banks, borrowers, or asset markets, with little regard to the role (if any) they might have played in bringing the economy to its overheated state. One such episode "crunched" primarily the Treasury bond market; others struck mainly at the municipal bond, commercial paper, or

certificate of deposit markets; still others were embolisms in the flow of business loans, mortgages, or consumer credit.

In all cases the Federal Reserve was pleased by the contraction of credit, although alarmed at its unintended and unforeseen intensity. A combination of judicious public statements, use of the discount window, and provision of liquidity cured the crunch in short order, although the cyclical consequences were generally longer-lasting. The most permanent effect each time was to leave both public and the Fed determined never to let the problem recur, with the result that no two crunches were alike in the way they were triggered.

The current credit problem is not a sudden spasm due to restrictive monetary policy, excessive credit demand, or other transitory factors. Just as the current economic situation should not be called a "recession" because of the misleading implication that old-fashioned prosperity may be just around the corner, so the term "crunch" is unduly hopeful insofar as it implies a sudden unexpected pain that soon will subside, more or less harmlessly. In actuality, there is virtually no prospect of such relief.

The Revenge of the Supervisors

The phenomenon Peek and Rosengren are documenting is, to echo the opening quotation, "partly due" to a market reaction to the credit explosion ignited by the preceding vicious cycle of financial deregulation and inflation. But mainly, "in large part," it is due to the response by the supervisory authorities. Ideally, the supervisors might have reacted to the escalating excesses in real estate, foreign, and highly leveraged loans by compelling, however belatedly, the most egregious offenders to adopt more prudent lending and capital policies. Understandably, however, in view of the political harassment to which they were subjected, they avoided such judgment calls, choosing instead to formulate a new set of blanket statistical rules to be applied simultaneously across the board to all—leaders and followers alike, swindled as well as swindlers.

In 1988, the Federal Reserve instigated the Basle international credit risk standards, which are being implemented over the 1989–92 period. An international concord was necessary to prevent more aggressive foreign banks from filling the credit vacuum being created in the United States. The Basle Accord assigned zero risk to U.S. Treasury security holdings of any maturity and did not at all impede such purchases (another example, by the way, of how the deregulation of credit and interest rates is leading in roundabout but predictable fashion to still further governmentalization of credit flows). But the authorities were alert to this government securities "loophole." As described by Peek and Rosengren, they sharpened the application of the hitherto rather

innocent leverage ratio rules, so that any and all asset acquisition would be inhibited.

How these rules were applied, and how they interacted with the so-called CAMEL ratings, was publicly described, for the first time so far as I know, in the Federal Reserve Bank of Boston's *1991 Annual Report* (Syron and Randall 1992). Until that report and Peek and Rosengren's papers, I had been attributing the credit squeeze largely to examiner zeal in applying the Basle risk-based capital ratios; but this new information suggests that the leverage ratio may well have had the more powerful contractionary effect. Going even beyond the credit risk and leverage ratios, the authorities recently proposed, as mandated by new federal legislation, a further set of interest-rate-risk guidelines that calls for additional capital in the event an institution's asset and liability durations are not matched closely enough. While such a standard (as well as the credit and leverage standards) is desirable in principle, it is not at all clear that Congress intended the Fed to draw this new playing field so narrowly as to deliberately put 20 percent of banks out of bounds, which is what they have done (Board of Governors of the Federal Reserve System 1992a and 1992b). As a result, maturity extension in Treasuries is further inhibited. And some officials never seem to tire of warning that after all these capital hurdles have been cleared, still higher ones will be erected.

Keep in mind also that it is really the examiners, through their evaluations of individual credits, who decide how much capital a bank has. That probably is why capital-to-asset ratios fall at examination time, as Peek and Rosengren point out.

Little wonder that banks are reacting by getting out of the asset acquisition business. The soundest loans are called first, or denied renewal, because the debtors can pay. Weak loans, where the risk is that a payment demand might prompt a default or disclose a flaw not yet discovered and charged against bank capital by the examiners, are allowed to linger longer. The persistence of economic sluggishness, which augurs deterioration in the credit quality of many borrowers that are still sound, intensifies the urgency of credit liquidation from the standpoint of each individual bank. A ranking of large banks would show, I predict, a high inverse correlation between capital-to-asset and loan-to-asset ratios. The most strongly capitalized banks hold, and are adding, the fewest loans.

An earlier Peek and Rosengren paper (1992) reports that "In the first quarter of 1990 bank examiners found substantial problems in the Bank of New England's real estate portfolio. This caused other banks (and examiners) to reexamine their institutions." My reading, which is not necessarily theirs, is that the supervisors' decision to face the overlending problem at one major offender launched a process in which other lenders and supervisors were forced to question the valuation of all real

estate that served directly or indirectly as collateral or capital. Even performing loans and borrowers came under pressure, not to speak of potential new borrowers. Indeed, it would be useful to have data that distinguished between bank capital writedowns that resulted from actual default, as contrasted with anticipatory writedowns on loans that were still performing. In any event, just as distress sales of real estate were mounting, the access to credit of firms that might have leased the space was demolished. Prices would no doubt have fallen sharply in any event, but in this fashion their utter collapse became inevitable.

The Economic Repercussions

It was also rendered certain that a general decline in loan demand would soon set in and receive widespread blame for the reduction of credit. But, when the Federal Reserve tightens monetary policy, in principle only a single spending cancellation may be identifiable as due to a reduction of credit supply. Vendors, suppliers, and servicers of the canceled project now have smaller credit needs than before, and their reaction will correctly be described by bankers and by econometricians as a fall in demand. It is difficult to identify specific denials of credit even at times of drum-tight money. Nevertheless, hardly anyone doubts the ability of tight money to provoke recessions. An unexpected supervisory action that reduces the asset-acquisition potential of a sizable group of financial institutions is equivalent to a major restrictive open-market operation. When the action affects capital rather than bank reserves, it is more insidious and much harder to reverse. With capital as with bank reserves, the fact that on the micro level we observe mostly demand declines does not alter the fact that a macro supply shock initiated the surgery.

Peek and Rosengren have reminded us of the disintermediation crunches of the past. In those sudden crunches, depositors chose temporarily to withdraw their funds from helpless bank and thrift institutions. Today we have chronic rather than sudden disintermediation, at the initiative not of the depositors but the institutions. They are under competitive as well as political pressures to shrink themselves. Technological advances have cheapened the cost of securities transactions, particularly for the huge and growing panoply of government-backed instruments that compete with banks for both loan and deposit business. At the same time, through punitive increases in deposit insurance premiums, capital requirements, and the like, banks are being made the scapegoats for the financial sins of society—misbehavior that, whatever individual banking outrages may have occurred, was absolutely inevitable under the low-margin, high-volume incentive structure created by deregulation. Banks and thrifts are the only institutions being

Table 1
Depository Institutions' Managed Liabilities[a]
Annual Percent Change

Annual Averages of Monthly Data				Quarterly Averages at Seasonally Adjusted Annual Rates		
1960	7.3	1976	12.6	1989:	I.	3.7
1961	12.0	1977	13.7		II.	2.3
1962	13.1	1978	13.0		III.	.9
1963	13.6	1979	10.7		IV.	−.3
1964	12.0	1980	7.6	1990:	I.	.1
1965	11.8	1981	9.8		II.	−.8
1966	8.8	1982	8.7		III.	−.5
1967	9.6	1983	12.2		IV.	−2.1
1968	9.4	1984	11.7	1991:	I.	−.6
1969	4.7	1985	8.4		II.	−2.0
1970	4.9	1986	6.7		III.	−4.6
1971	18.8	1987	5.6		IV.	−4.2
1972	16.5	1988	6.8	1992:	I.	−3.8
1973	15.8	1989	4.1		II.	−5.2
1974	11.6	1990	−.1		III.	−5.4
1975	9.4	1991	−1.9		IV.	−4.1
		1992	−4.4	1993:	I.	−5.9

[a]Includes overnight and term repurchase agreements and Eurodollars, savings and money market deposits, and small and large time deposits.

Source: Board of Governors of the Federal Reserve System, H.6 releases.

made to pay for the public safety net, although everyone understands that as a practical matter this net extends to the major money market funds, insurance companies, securities dealers, and other competitors.

Total bank assets have expanded modestly, to be sure, thanks to huge purchases of government securities. The amounts bought merely correspond, however, to the growth of demand deposits, with respect to which banks are largely passive. When it comes to the managed liabilities of the banks, those they can modulate by adjusting the interest rates they offer, contraction has become the order of the day. The table depicts, from a somewhat different perspective than Peek and Rosengren's figures, the path of shrinkage that depository institutions are choosing as respects their non-demand-deposit liabilities. From the beginning of deposit rate deregulation in the early 1960s until late 1989, annual growth was consistently at least 4 percent or faster—usually much faster, 8 percent and more. Beginning with late 1989, all but one of 12 quarters show negative growth rates, and they are deepening. This response is particularly revealing in view of the enormous inducement to acquire both loans and securities that is provided by the steep yield curve and the wide spread between money costs and the prime lending rate.

The Treasury report quoted at the outset referred not to New

England but rather to the Seventh (Chicago) Federal Reserve District. It was written by two officials, one of them Charles Hardy, a respected Federal Reserve scholar, the other Jacob Viner, a venerated conservative economic scholar whose name even young economists still may recognize. The date of publication was 1935. By 1935, the yield spread between Treasury bills and bonds had narrowed about 1 percent from 1932 to 1934 but was still huge, with bills at ¼ percent and bonds at 2½ percent, a differential that contemporaries no doubt attributed to inflationary expectations. As at present, the true reason for the steep yield curve was the intense pressure, of course much more severe in the 1930s than today, to avoid any and all risk exposure. Bond yields had fallen a little further, and real GDP had just about recovered its 1929 level, when the Federal Reserve Board raised reserve requirements in 1936 and twice again in 1937, precipitating a fresh recession.

What Is Needed

One-half of American jobs are in small companies with fewer than 100 employees. Small companies typically spearhead employment recoveries, with the larger ones joining only late in the game. Today, employment gains are especially dependent on small, new, and indeed novel ventures, as large bureaucratic enterprises around the world—whether communist or noncommunist, public or private, military or civilian, profit or nonprofit—are shedding experienced and disciplined but nonetheless redundant employees. In the business recovery of the mid 1980s, small enterprises prospered marvelously despite sky-high real interest rates, in important part because lenders were forced by deregulation to be hungry and aggressive. Today, from the credit standpoint, such firms are homeless. The lifeblood of enterprise capitalism is literally draining away.

How can matters be improved? Peek and Rosengren suggest three ways. The first, more careful supervision as loans are made, is useful for the future, but now would be the wrong time to start. Countercyclical policy should dampen risk-taking in good times when optimism is too carefree. But in bad times, lenders must be encouraged to take more rather than fewer chances. At present, judged by the broad credit and monetary aggregates, the net result of the restrictive bank capital policy and the stimulative short-term interest rate policy is, at best, a standoff.

Secondly, Peek and Rosengren correctly urge the ending of the procyclical policy of raising required leverage ratios for weaker banks, the policy of kicking them harder, the deeper down they are—but that will not help much or soon at the macroeconomic level. Peek and Rosengren also advocate eliminating geographical restrictions in banking. While that is surely worthwhile for structural reasons, we should

keep in mind that greater integration can also promote the faster spread of infection. As with hurricanes, insurance diversification minimizes the impact of the average storm, but also guarantees that a truly big storm will injure every insurer.

The crucial remedy for which the situation calls was included in a set of proposals I first offered in a much less supportive Federal Reserve setting almost two years ago (Wojnilower 1990). Whether or not individual banks are held to tougher capital standards, they must be required to increase credit, preferably to the private sector, in harmony with the Federal Reserve's aggregate target for national credit growth. If banks, large and small, cannot or will not lend, how can the aggregate growth targets be attained? If a bank does not lend, who needs it? What is its franchise? What risks is it incurring? Why should it have the benefit of a lender of last resort or deposit insurance? And if its capital is so inadequate that no asset expansion at all is tolerable, it should be closed and will not be missed. Some will say that setting a growth standard would cause bad loans to be made. They are right. But as macroeconomists we may be just as confident that, in times like these, defaults will be fewer when banks are lending than when they are not.

Some day in the distant future, financial institutions will have become so overcapitalized that they will resume competing for earnings through growth and risk-taking. The resulting economic and eventually inflationary stimulus will alarm the Federal Reserve and they will raise interest rates. But because the lenders (and by then, probably many borrowers, too) are strongly capitalized, they will, to the surprise of the authorities and many observers, be quite oblivious to small and, later, even to large interest rate increases. Ultimately it will take an old-fashioned credit crunch to stop the inflationary spiral.

We should all live so long.

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