Recent Cutbacks in Construction Lending at BIF-Insured Depository Institutions

by James L. Freund and Maureen C. Crowley*

The topic of the "credit crunch" received considerable attention during the early 1990s. As a result, several initiatives aimed at eliminating regulatory disincentives to lending were put in place. For example, documentation requirements recently were reduced to the legal minimum for loans to small and medium-sized businesses. Also, examiners and bankers were encouraged to emphasize the character and general reputation of borrowers when considering such credits.[1] In the academic arena, several studies have examined the recent portfolio adjustments of insured financial institutions to identify possible financial and/or regulatory constraints to the flow of credit. For instance, Hancock and Wilcox (1992) studied permanent single-family and commercial loans. Peek and Rosengren (1993) examined "bank dependent loans," and Bizer (1993) analyzed commercial and industrial loans, as well as "100 percent risk-weight" loans.

This article reports on the role of BIF-insured commercial and savings banks in the provision of construction and development credit to the real-estate industry. Insured depositories traditionally have been a key source for construction and development credit, especially for small builders and developers. Established customer relationships with local financial institutions have been important in ensuring a timely flow of such credit. Thus, any disruption in construction credit from banks is likely to be difficult to replace in the short run.

This article documents the sharp decline in aggregate construction lending on the books of BIF-insured institutions during the 1990-1992 period. Lending patterns varied widely across regions and between categories of banks. A regression analysis is presented that quantified the relative importance of the different factors that determined whether an institution's construction loan portfolio was shrinking. An institution's profitability, capital position, and recent experience with construction lending were the strongest factors in determining whether, and by how much, lending was cut back. In contrast, various tests to capture the influence of real-estate market developments that might affect demand factors did not yield statistically significant results.

The Recent Decline in Construction and Development Lending

As shown in Figure 1, construction loans on the books of BIF-insured commercial and savings banks increased rapidly from just under $40 billion at year-end 1980 to nearly $150 billion at year-end 1989. Because construction cost increases were relatively modest during the period, this increase represented a substantial rise in real activity funded. During the next three years, however, such credits fell by 45 percent, to just over $80 billion at the end of 1992. While construction costs moderated in the early 1990s, most of the decline represented a decrease in projects funded.[2]

Individual Bank Data

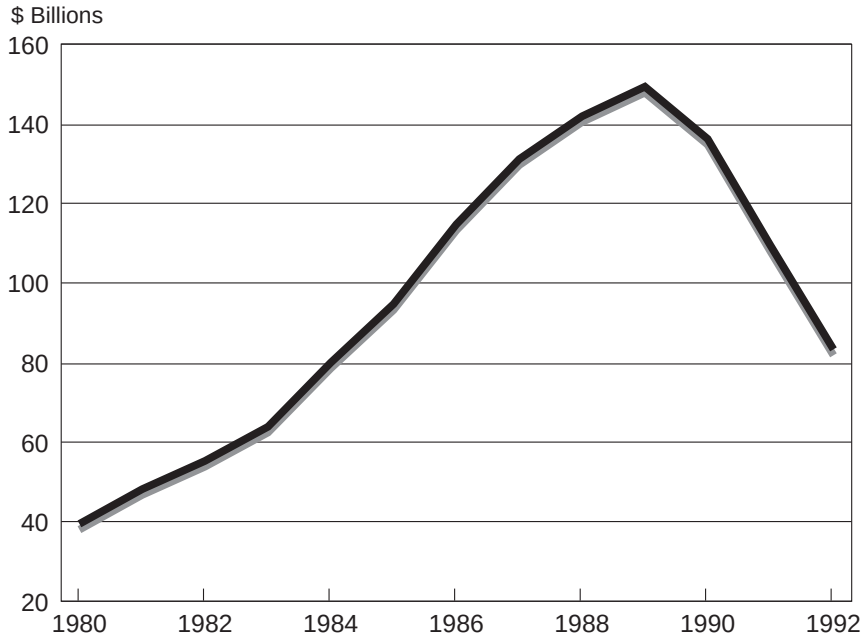
The study utilized data from individual bank Reports of Condition and Income (Call Reports) to examine the rapid decline in construction lending from the second quarter of 1990

* James L. Freund is Chief of the Financial and Industry Analysis Section and Maureen C. Crowley was a financial analyst in the FDIC's Division of Research and Statistics.

[1] See *Inter-Agency Policy Statement on Credit Availability*, FDIC, PR 20-93. Joint release 3/10/93.

[2] The non-residential fixed-investment implicit price deflator (1987=100) rose 14 percent between 1982-1991; the implicit price deflator for residential investment grew 31 percent during the same period. Non-residential investment prices actually declined one percent from 1991-1992, and residential investment prices rose only 1.4 percent in that period. Data are from the Bureau of Economic Statistics, U.S. Department of Commerce.

Figure 1
Construction Loans Held by BIF-Insured Institutions
(End-of-Period Balance: 1980-1992:Q4)



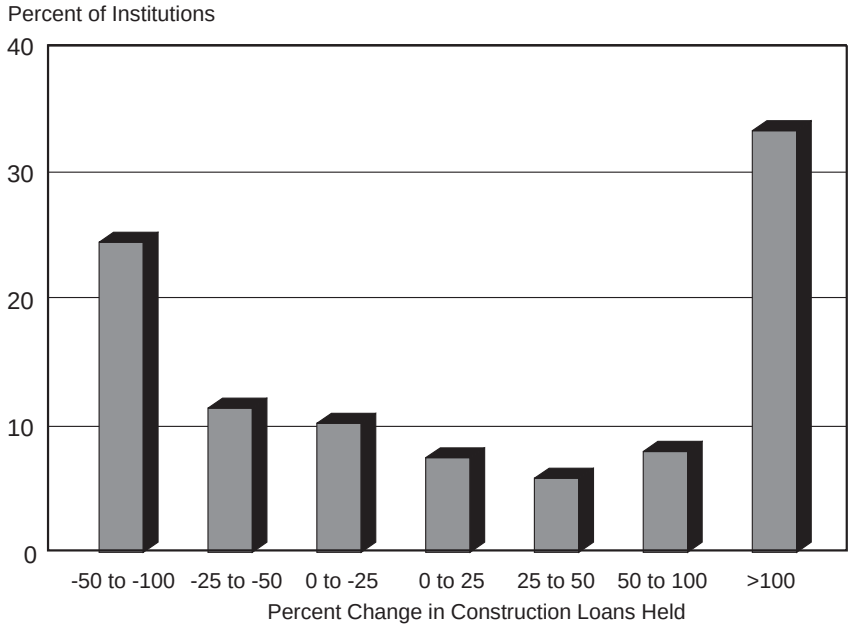
through the third quarter of 1992. The study included banks in continuous operation that had construction loans on their books at either the beginning or the end of the designated period. Because the study focused on the amount of credit supplied by the banking system as a whole, institutions that were involved in mergers during the period were included in the sample. A merger-adjustment procedure was used in which construction loans for currently-operating, BIF-insured institutions that acquired another bank or a thrift were compared to the sum of such loans at their constituent institutions at the beginning of the period. Both unassisted mergers and acquisitions of failed banks and thrifts during the period were included.

The Call Report data have two limitations. First, direct data on net credit extensions are not available. Thus, construction lending activity must be estimated by subtracting the stock of loans at the end of a period from that at the beginning, and adding back any charge-offs taken during the period.[3] A second drawback is that the data do not separate commercial and residential construction lending.

Given those caveats, Figure 2 shows while aggregate bank lending declined, not every bank cut back on construction lending. Indeed, both ends of the distribution were highly populated, with high proportions of banks experiencing both sharp increases and decreases during the period. Overall, 46 percent of BIF-insured commercial and savings banks experienced a decline in construction credit; the remaining 54 percent had a higher volume of such loans in 1992:Q3 than in 1990:Q1.

Banks with Reduced Construction Loans. The more than 4,400 institutions that had reduced adjusted construction credits outstanding at the end of the period were typically larger banks with relatively heavy initial concentrations of such lending. These banks (and the institutions

Figure 2
Median Change in Construction Loans Held by BIF-Insured Institutions in Continuous Operation
(1990:Q1-1992:Q3)



[3] Charge-offs are accounting adjustments to a period-end balance sheet that reduce a bank's loan balances in recognition that the loan is likely to default. If this adjustment is not added back in, calculated net credit extensions would be understated. Adjustments were not made for other factors affecting changes in the stock of loans on the books over any period — net loan sales and writedowns of loan balances at foreclosure — because data do not exist at the necessary level of detail.

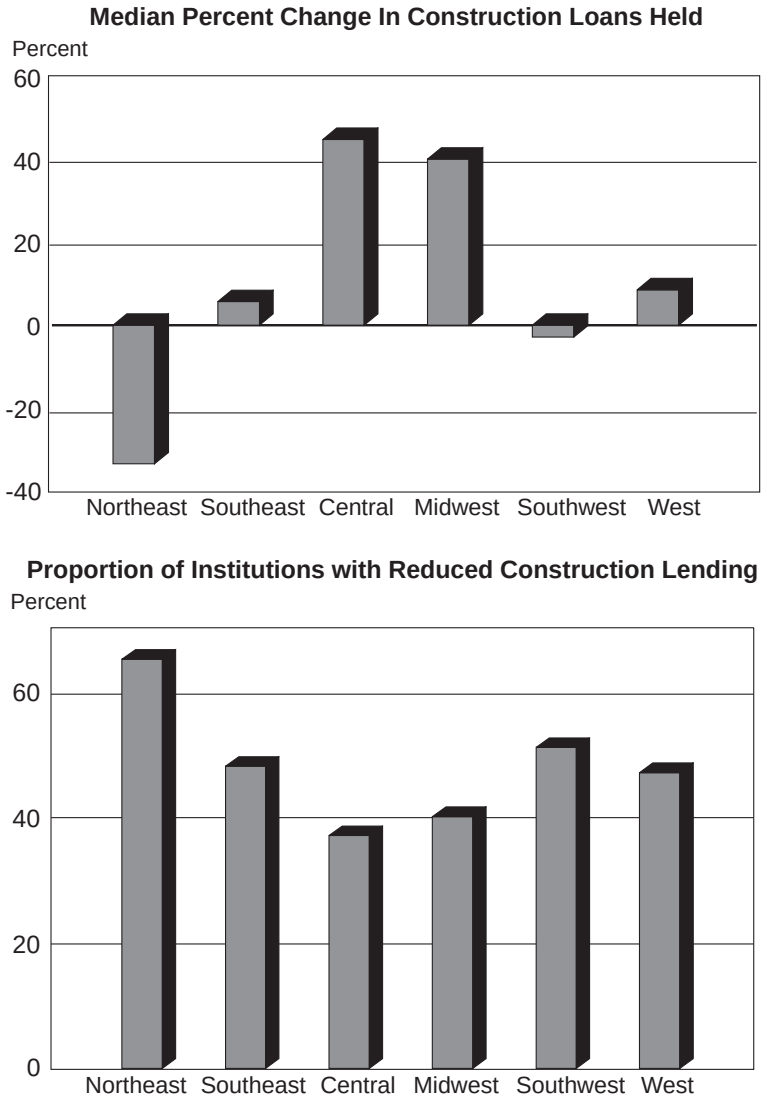
they acquired) accounted for 85 percent of total construction lending in early 1990. By the end of the period under study construction loans on their books, after adjustment for charge-offs, had dropped by $64 billion. Twenty-one large banks accounted for a large portion of the total reduction. Each of these institutions experienced a reduction of $500 million or more during the period; the decline in construction lending at these institutions totaled $24 billion.

The subsequent failure of institutions that played key roles in construction loan markets in 1990 had a significant influence on declines in overall lending. Commercial banks and savings banks that were operating in 1992 absorbed 418 failed thrifts and banks during the period under study. The median change in construction credit for the combined institutions was -48 percent. These institutions accounted for 40 percent ($25 billion) of the overall decline in construction lending.

Banks with Increased Construction Lending. Over half of the BIF-insured institutions that were making construction loans in the third quarter of 1992 had more loan volume on their books (after adjustment for charge-offs) than in early 1990. More than 3,000 banks at least doubled their lending during that period — 1,000 of these institutions had construction loans on their books in 1992 that were not in the market three years earlier.

Banks with a higher volume of construction loans on their books accounted for $8.6 billion in increased construction lending. This increase was dwarfed, however, by the $64 billion decline in construction lending among institutions that cut back.

Figure 3
Change in Construction Loans at BIF-Insured Institutions by Region
(1990:Q1-1992:Q3)



Characteristics of Gainers and Losers

Both popular discussions and academic work have focused on several key factors in discussing lending changes at banks during the so-called "credit crunch" period. Figures 3 through 5, which illustrate some of these factors, show that lending behavior was anything but uniform.

Figure 3 shows regional differences.[4] Commercial and savings banks in the Northeast experienced a sharp decline in construction loans on their books. The median change in adjusted construction loans in the Northeast was -35 percent, and two-thirds of the institutions experienced declines. In the Southwest the median change was -3 percent. At least half of the banks in all other regions increased construction lending. In fact, in the Central and Midwest regions the median change exceeded 40 percent. It should be noted, however,

[4] The regional definitions are as follows:

Northeast - Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Puerto Rico, Rhode Island, Vermont.

Southeast - Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia.

Central - Illinois, Indiana, Kentucky, Michigan, Ohio, Wisconsin.

Midwest - Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota.

Southwest - Arkansas, Louisiana, New Mexico, Oklahoma, Texas.

West - Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, Pacific Islands, Utah, Washington, Wyoming.

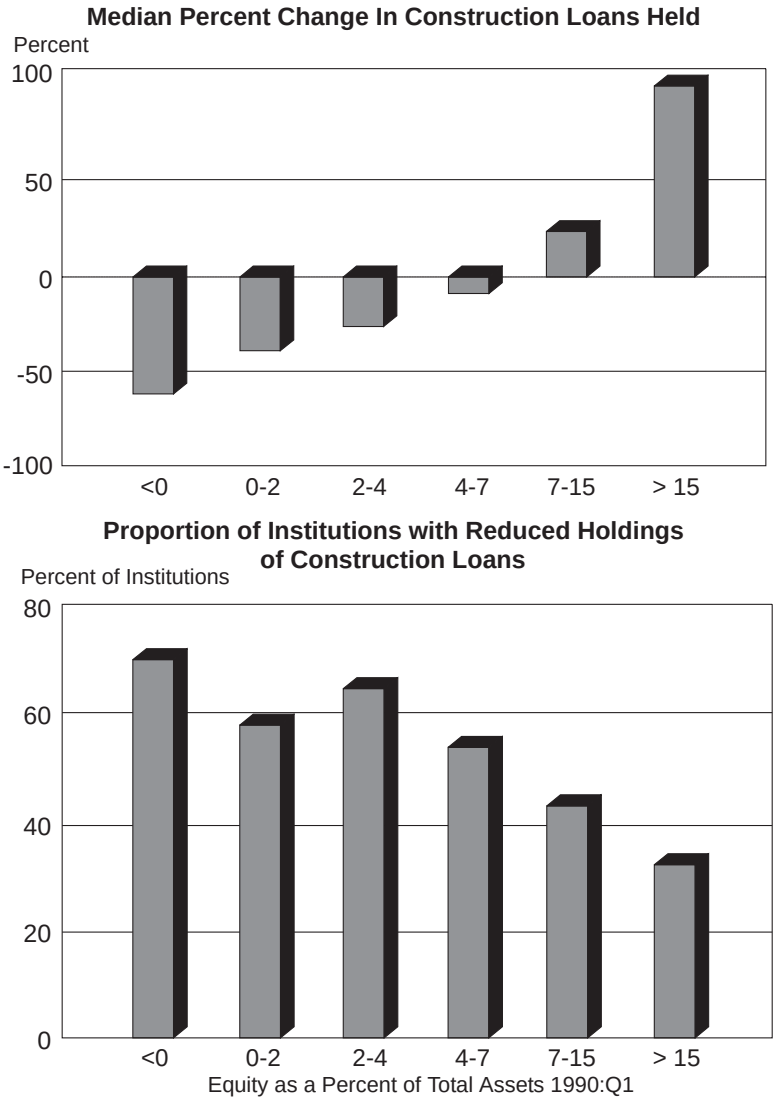
that a significant proportion of the institutions in all regions also recorded declines (lower panel, Figure 3).

Figure 4 illustrates the often-observed notion that capital shortages act generally as a deterrent to lending — and particularly to riskier credits such as construction loans. The median change among the 300 institutions in the sample that had less than 4 percent equity capital in 1990:Q1 was -39 percent. About 2,500 banks with initial capital-to-asset ratios between 4 percent and 7 percent had a median change in construction loans held of -9 percent. Many well-capitalized institutions increased construction loan portfolios sharply. Among the 6,400 banks with initial capital ratios between 7 percent and 15 percent, the median change was a positive 23 percent. Half of the banks with capital in excess of 15 percent more than doubled their lending.

Banks with heavy concentrations of real-estate lending in early 1990 — and those with high proportions of delinquent real-estate loans — subsequently were likely to cut back on construction lending. For the 4,000 banks that started the period with more than 30 percent of their portfolios in real-estate assets, the median change was -3 percent. In contrast, the 181 banks that had less than 5 percent of their assets in real-estate lending as of 1990:Q1 aggressively pursued construction loans, with half of these institutions more than tripling their holdings by 1992:Q3 (Figure 5).

The collapse of many commercial real-estate markets and mounting economic difficulties saddled many banks with problem real-estate loans in early 1990. As shown in Figure 6, the median change in construction lending for banks reporting no problem real-estate loans (90 days or more past due or in nonaccrual status) was an increase of 38 percent.[5] In contrast, institutions in the sample (representing just over 30 percent of total assets) with more than 5 percent of their real-estate loans in difficulty reduced their construction lending sharply during the period. At the extreme, those banks reporting 15 percent or more of their real-estate loan portfolio as troubled had a median change of -39 percent. Even among the best-capitalized institutions at least 40 percent of the institutions cut back during the 1990-1992 period.

Figure 4
Change in Construction Loans at BIF-Insured Institutions by Equity Capital
(1990:Q1-1992:Q3)



A Model of Bank Construction Lending

A model was constructed to identify, and determine the relative importance of, the various influences on construction lending at BIF-insured institutions in the early 1990s. The model was based on the premise that banks allocate a desired share of their portfolio to construction loans, given their level of assets. Because it is not possible to adjust an institution's portfolio instantaneously, only part of the desired adjustment of construction loans on the books is likely to be made during any given period.

[5] Nonperforming loans are classified as 90 days or more past due if they are well-secured and in process of collection. Otherwise, their status must be designated as nonaccrual.

Figure 5
Change in Construction Loans at BIF-Insured Institutions, by Initial Real-Estate Lending Concentration
(1990:Q1-1992:Q3)

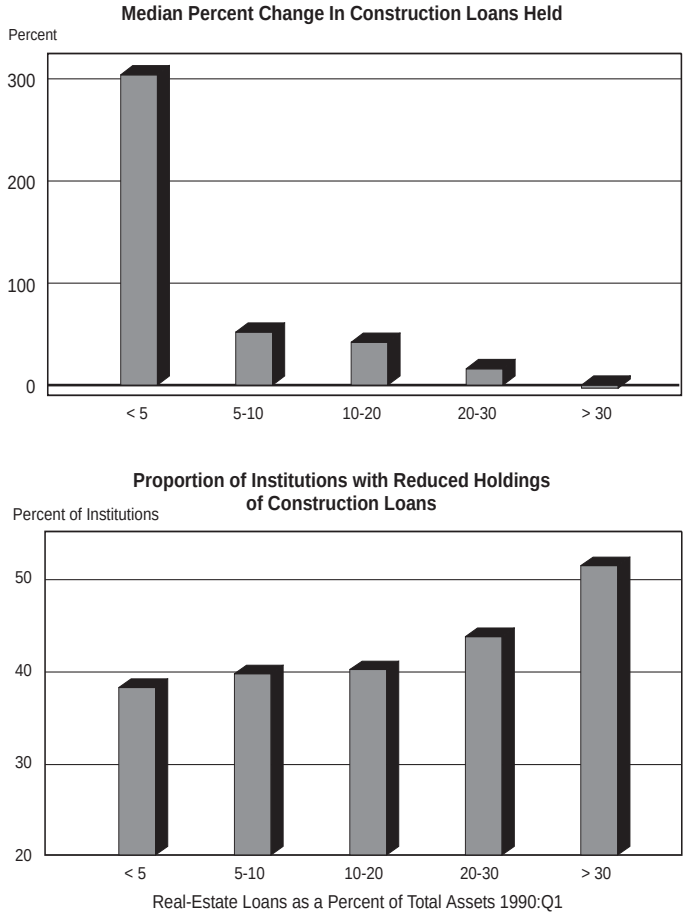
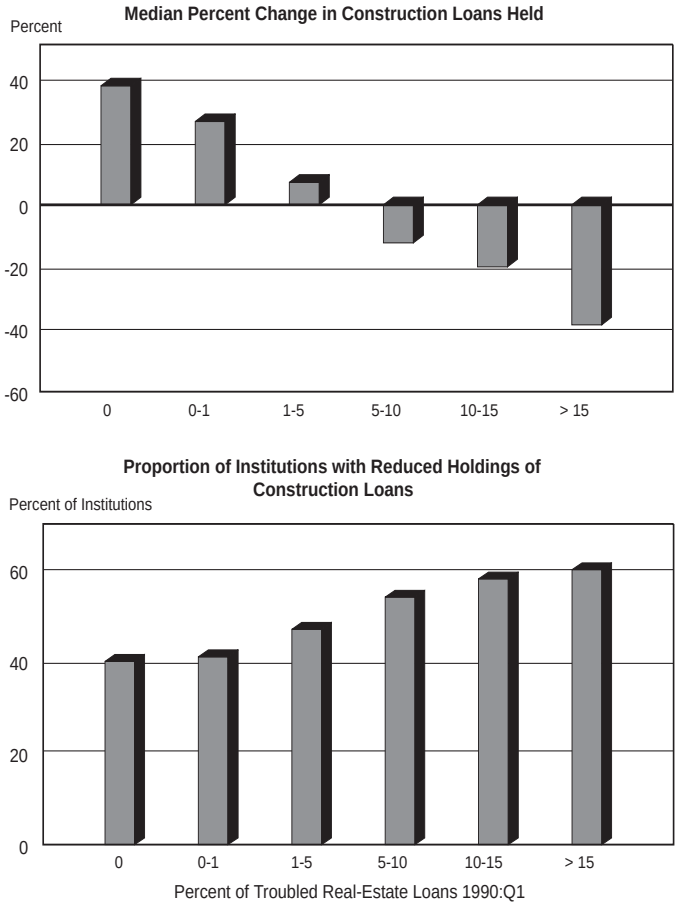


Figure 6
Change in Construction Loans at BIF-Insured Institutions, by Initial Troubled Real-Estate Loans Held



Thus, the construction loans (CL) on the books at the end of any given period, after adjustment for charge-offs, are likely to be the last period's stock of such loans plus or minus a fraction, β, of the difference between today's desired level (CL^*) and last period's actual level:

$$(1)\quad CL_t = CL_{t-1} + \beta\,(CL_t^* - CL_{t-1})$$

The desired stock of construction loans in period t is posited to be a target proportion of total assets. The target proportion is addressed in this study, while the level of assets is taken as given. Thus,

$$(2)\quad CL_t^* = (CL_t/ASSETS_t)^*\ (ASSETS_t)$$

Given the focus of this study on explaining changes in lending, equation (4) was derived by substituting equation (2) into equation (1) and rearranging terms in equation (3). After scaling the results, equation (5) explains the change in construction loans during a period relative to assets at the end of the period. It is posited that in any period the relative change in construction lending is: 1) positively related to that period's desired portfolio concentration in construction lending and 2) negatively related to last period's construction loans relative to today's level of total assets.

$$(3)\quad CL_t = CL_{t-1} + \beta(CL_t/ASSETS_t)^*\ (ASSETS_t) - \beta CL_{t-1}$$

$$(4)\quad CL_t - CL_{t-1} = \beta(CL_t/ASSETS_t)^*\ (ASSETS_t) - \beta CL_{t-1}$$

$$(5)\quad \frac{(CL_t - CL_{t-1})}{ASSETS_t} = \beta(CL_t/ASSETS_t)^* - \beta(CL_{t-1}/ASSETS_t)$$

A fully specified model of the target proportion of assets allocated to construction loans would incorporate the returns and risks to construction lending relative to all other assets. This paper estimates a reduced-form approach to identifying the major influences on the desired role of construction lending in bank portfolios.

Several characteristics of a bank and its portfolio are likely to have affected a bank's desired construction loan portfolio during the early 1990s. First, a bank's capital position is a key determinant of its ability and willingness to book relatively risky assets such as construction loans.[6] On the one hand, the better the initial capital position of the bank, the more likely that it would be willing and able to take on relatively risky investments such as construction lending. On the other hand, poorly capitalized banks may decide they should take chances to "gamble" their way back to health — the well-known "moral hazard" argument. Studies conducted at the FDIC suggest that the effect of capital positions on lending also can be tempered by the profitability of the bank.[7] For instance, highly capitalized banks that are temporarily experiencing earnings problems may lend less-aggressively than profitable, highly capitalized institutions.

Second, many have argued that the adverse developments in real-estate markets in the late 1980s led to a negative perception regarding real-estate investments in the early 1990s. Thus, institutions with high concentrations of construction loans in the early 1990s reportedly were under pressure — from existing stockholders, potential sources of new capital, and/or regulators — to reduce their concentrations of such loans regardless of other economic factors. In addition, institutions that had a high proportion of nonperforming real-estate loans would be less inclined, *ceteris paribus*, to make new construction loans.

In order to understand the "credit crunch," it is important to separate restricted supply of credit from lower demand. Lack of data is a serious obstacle to identifying shifts in demand for construction loans. Nonetheless, this paper attempts to identify local economic conditions that should affect banks' construction loan portfolios. Because construction loans for residential and commercial projects are combined in the bank data, developments likely to affect loan demand in both sectors of real-estate markets were included.

These factors were incorporated into equation (5), yielding the following relationship:

$$
\begin{aligned}
(6)\ \frac{(CL_t - CL_{t-1})}{ASSETS_t} &+ \alpha_0 \\
&+ \alpha_1 (CAPITAL/ASSETS)_{t-1} \\
&+ \alpha_2 (AVERAGE\ RETURN\ ON\ ASSETS)_{t,\ t-1} \\
&- \alpha_3 (CL/ASSETS)_{t-1} \\
&- \alpha_4 (NONPERFORMING\ REAL\text{–}ESTATE\ LOANS)_{t-1} \\
&+ \alpha_5 (CONTEMPORANEOUS\ REAL\text{–}ESTATE\ DEMAND\ INDICATORS)_{t,\ t-1} \\
&- \beta (CL_{t-1}/ASSETS_t) \\
&+ \mu
\end{aligned}
$$

Empirical Tests

The estimation of the equation was complicated by two factors regarding the final term, $(CL_{t-1}/ASSETS_t)$, which was introduced into the model when the first difference/partial adjustment framework was adopted. First, the equation also includes a term to capture the independent negative influence of high concentrations of construction lending in the initial period. Because the two terms are likely to be highly collinear, the initial concentration variable was omitted. It is likely that the remaining term will capture some of the influence of the omitted variable. Second, the fact that the final term is imbedded, arithmetically, in the dependent variable suggests that contemporaneous correlation may be a problem, thereby further complicating the interpretation of the results.

Moreover, the equation that was estimated added several independent variables to the basic model to account for non-economic factors. First, a dummy variable was added to identify institutions that acquired a failed bank or thrift during the period. Because the data were adjusted for mergers, this variable should identify any negative effect on the combined entity's portfolio resulting from the unwillingness of the acquirer to assume the failed institution's construction loans. Acquirers often choose not to take all of the assets of a failed institution. Second, a set of dummy variables was included to distinguish among charter types of the BIF-insured institutions. If, as some have claimed, supervisory pressure acted to discourage real-estate lending, any differences among federal regulatory agencies with regard to such actions would be identified by these variables. Because a dummy variable for FDIC-supervised savings banks was omitted, the included dummy variables measure regulator-specific differences relative to savings banks.

Because it is virtually impossible to isolate the relevant market areas a bank serves for construction lending, two basic tests were conducted. First, the model was tested for all banks that were active during the period 1990:Q1 to 1992:Q3, without regard

[6] Hancock and Wilcox, in particular, discuss the role of capital position thoroughly.

[7] For a discussion of the interaction between profitability, capital position, and loan growth, see O'Keefe (1993).

to specific real-estate market influences that might differentially affect demand for construction loans. Second, a subset was selected consisting of institutions that were located in the 50 major metropolitan areas for which detailed data on both residential and commercial real-estate markets were available.

All Banks. The results explaining the change in construction lending between 1990:Q1 and 1992:Q3 for the 9,563 BIF-insured depository institutions that were active construction lenders are reported in Table 1. The dependent variable was the change in construction loans on an institution's books, after adding back charge-offs, divided by total assets in 1992:Q3.[8]

As for the independent variables, profitability was measured by the average return on assets during the entire period. Troubled real-estate lending at a bank was captured by the proportion of real-estate loans in 1990:Q1 that was either 90 days or more past due or in nonaccrual status. The lag term initially was measured as the ratio of construction loans on the books in 1990:Q1 to total assets in 1992:Q3.

The capital position of a bank was entered as the equity capital-to-total assets ratio as of 1990:Q1. Subsequent tests used an estimate of each institution's surplus or deficit capital position relative to its leverage capital requirement.[9] The estimated required level was based on the bank's overall CAMEL rating and general guidelines followed by examiners at federal bank regulatory agencies on the corresponding capital needed. While both measures yielded significant results, the latter variable was somewhat stronger. Thus, only the results for the capital surplus variable are reported here.[10]

The basic results are reported in line (1) of Table 1. Standard errors are reported below each coefficient. As hypothesized, both profitability and capital positions had significant, positive effects on construction lending. Banks with problem real-estate assets were less likely to increase holdings of such loans.

The acquisition of a failed bank or thrift during the period was associated with subsequent cutbacks in construction lending, after adjusting for the effects of the merger. Also noteworthy was the relative effect of different regulators. Statistical tests suggest the coefficient for national banks was significantly lower than for both state member and nonmember banks, but the coefficients for the two regulators of state banks were not significantly different from each other.

Large reductions in subsequent construction lending were statistically correlated with high initial holdings of construction loans. The .57 coefficient represented a reasonable partial adjustment factor. However, this variable, as suggested above, also captured the independent, negative effect of high initial holdings of construction loans in a period of severe difficulty for such assets. The rather high adjusted R^2 was greatly influenced by the inclusion of this very significant variable and by its probable role in contemporaneous correlation in the estimated equation.

[8] Direct data on such charge-offs are available for construction loans, starting in 1991. The adjustment factor for the three quarters of 1990 under study was estimated by applying the ratio of construction loan charge-offs to total real-estate charge-offs in 1991 to total real-estate charge-offs during 1990.

[9] As calculated by John O'Keefe of the FDIC's staff.

[10] For a more detailed discussion of measures of a bank's capital position relative to its "desired level" or target level, see Hancock and Wilcox (1992).

Table 1
Changes in Construction Lending: Full Sample Results

					Lag/Concentration				Charter Type[d]			Region[d]		
	Constant	Capital Surplus Deficit[a]	Avg. ROA[b]	Troubled Real-Estate Loans[a] (%)	Const. Loans[a]/ Assets[c]	Greater Than .10[d]	Less Than .01[d]	Acquired Failed Inst.[d]	Nat. Bank	State, Fed Member	State, Non-Member	South-West	West	Adj. R^2
(1)	0.006[e]	+0.02[e]	+0.08[e]	-0.07[e]	-0.57[e]	—	—	-0.004[e]	+0.004[e]	+0.008[e]	+0.006[e]	—	—	.56
	(0.001)	(0.002)	(0.01)	(0.006)	(0.006)			(0.001)	(0.001)	(0.002)	(0.001)			
(2)	-0.011[e]	+0.03[e]	+0.28[e]	-0.09[e]	—	-0.068[e]	+0.004[f]	-0.008[e]	+0.004[e]	+0.008[e]	+0.005[e]	—	—	.28
	(0.002)	(0.003)	(0.01)	(0.01)	(0.004)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)				
(3)	-0.011[e]	+0.03[e]	+0.28[e]	-0.10[e]	—	-0.071[e]	+0.005[e]	-0.008[e]	+0.001	+0.005[e]	+0.003[f]	+0.004[e]	+0.013[e]	.29
	(0.002)	(0.003)	(0.01)	(0.01)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)		
(4)	-0.006[e]	+0.03[e]	+0.28[e]	-0.10[e]	—	0.068[e]	+0.004[e]	-0.008[e]	+0.0004	+0.004[f]	+0.002	—	—	.28
	(0.002)	(0.01)	(0.01)	(0.01)	(0.002)	(0.001)	(0.002)	(0.0020)	(0.002)	(0.002)	(0.001)			

[a] 90:Q1
[b] 90:Q2-92:Q3
[c] 92:Q3
[d] Dummy variables specification
[e] Significant at 99 percent confidence level
[f] Significant at 90 percent confidence level
Observations = 9,563

Table 2
Changes in Construction Lending: Additional Hypotheses

					Lag/Concentration			Charter Type[c]			Region[c]		Camel Rating[c]		
	Constant	Capital Surplus Deficit[a]	Avg. ROA[b]	Troubled Real-Estate Loans[a] (%)	Greater Than .10[c]	Less Than .01[c]	Acquired Failed Inst.[c]	Nat. Bank	State, Fed Member	State, Non-Member	South-West	West	Avg. Camel Rating	Incr. Camel Rating[f]	Adj. R^2
(1)	-0.024[d]	+0.03	+0.40[d]	-0.09[d]	-0.050[d]	+0.010[e]	-0.006[e]	-0.002	+0.008	+0.014[d]	+0.021	+0.009[e]	—	—	.48
	(0.005)	(0.05)	(0.06)	(0.03)	(0.005)	(0.005)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)	(0.005)			
(2)	-0.008[d]	+0.03[d]	+0.24[d]	-0.10[d]	-0.073[d]	+0.004[d]	-0.003	+0.001	+0.006[d]	+0.003[e]	+0.003[e]	+0.013[e]	—	—	.25
	(0.002)	(0.003)	(0.01)	(0.01)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)			
(3)	-0.024[d]	+0.05[d]	+0.35[d]	-0.11[d]	-0.067[d]	+0.005[d]	—	-0.003	+0.005[d]	+0.002[e]	+0.001[e]	+0.011[d]	+0.005[d]	+0.004[d]	.27
	(0.003)	(0.01)	(0.02)	(0.01)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)		

[a] 90:Q1
[b] 90:Q2-92:Q3
[c] Dummy variables specification
[d] Significant at 99 percent confidence level
[e] Significant at 90 percent confidence level
[f] 1990-1992
Observations: Equation (1): Assets >$1 Billion ... 401
Equation (2): Assets <500 Million ... 8,892
Equation (3): No mergers ... 8,346

To mitigate this problem, the initial construction loan variable was replaced by two dummy variables to capture the high and low ends of the distribution of the variable. The high-concentration dummy identified all institutions with initial construction loans to current assets of ten percent or more (463 institutions with total assets of $300 billion). The low-concentration dummy marked banks with less than one percent of total assets in construction loans (5,221 institutions with total assets of $800 billion). The results of this alternative specification are reported in Table 1, row 2. As expected, high initial levels of construction loans were associated with subsequent reductions, while the opposite was true for banks with low concentrations. The change in specification increased the importance of the economic factors captured in the other coefficients; the sign on the constant term reversed. The explanatory power of the model declined significantly, with the adjusted R^2 falling to .28.

A set of regional dummy variables also was included to capture broad differences in economic conditions influencing construction lending. In the tests discussed below, specific local market conditions were examined in areas in which suitable data existed. When dummy variables were included in the equation, only the coefficients for the Southwest and the West were statistically significant. The positive signs no doubt reflected the emerging recovery in many Southwestern states during the early 1990s from their difficulties in the mid-1980s, and the heavy building in key California markets in the early 1990s that led to current problems in commercial real-estate markets. An alternative specification in which dummy variables were included for only these two regions is reported in Table 1, row 4. In neither specification did the addition of the regional dummy variables appreciably improve the explanatory power of the equation.

Other Hypotheses. Several "credit crunch" studies have focused on a limited number of large banks. The considerable number of smaller banks that increased their construction lending suggests that this approach would be incomplete when studying construction lending. A variable capturing the size of the institution was tested to see if scale were a factor, but it was found to be insignificant (not shown). Table 2 reports the results of alternative tests in which the basic model was applied separately to large banks with initial assets over $1 billion (row 1), and small banks with initial assets of less than $500 million (row 2).

The most notable differences for large banks are the lack of significance of initial capital position and the increased importance of profitability. The results also suggest that differentials among charter types are more important among large banks. When only larger institutions were considered, lending at national banks was not significantly different than at the omitted savings banks. In fact, in this test only state nonmember banks had significantly more construction lending. The negative effects of high initial construction loan holdings were smaller for large banks, but the positive effect on subsequent construction lending for banks with low initial lending also was stronger.[11] The results

[11] An inspection of those banks with the highest increases in construction lending suggested that a number of large banks that were aggressive construction lenders were predominantly foreign-owned. To the extent that such institutions respond to corporate needs of customers in their home country, they would not be affected by the same forces as domestic institutions. However, when a dummy variable was entered to distinguish the 136 banks in the sample that had at least 25 percent foreign ownership, it was statistically significant but negative.

for small banks were similar to the overall sample results.

It is possible that the influence of regulators on banks' construction lending would be exerted directly in the form of pressure not to make these types of loans. Bizer (1993) believes, alternatively, that the primary channel through which such regulatory pressure is exerted is by downgrading the supervisory classification of the institution that results from an unfavorable bank examination — the summary composite CAMEL rating for banks. To test for this effect, both the initial CAMEL rating of the bank and a dummy variable that took the value of 1 if the institution was downgraded during the period between 1990:Q1 and 1992:Q3 were included in the model.[12] In general, it might be expected that banks with either a high initial CAMEL rating or those "downgraded" (poorly-performing institutions) might be reticent about taking on new construction credits in a risky real-estate environment. On the other hand, a positive coefficient would suggest that a "moral hazard" problem caused poorly-managed institutions to engage in riskier lending and/or that better-managed banks chose not to make such loans given the troubled real-estate environment.

The results are shown in Table 2, row 3. Both low initial ratings and "downgradings" in ratings were associated with higher construction lending. These results do not support the Bizer hypothesis concerning the dampening effect of examinations on lending. Of course, in the case of ratings changes, the increase in lending could have caused the poorer review.

Alternatively, it has been argued that regulatory enforcement actions that inhibited construction lending were triggered by extremely poor capital positions.[13] To test this hypothesis, institutions with capital deficits or capital that exceeded their estimated leverage requirement by one percent or less in early 1990 were identified. When tested in conjunction with the model as specified, a dummy variable denoting those banks did not have a significant effect on construction lending.

Geographic Demand Factors. To fully assess the significance of deteriorating financial conditions or regulatory actions that might have affected the availability of credit, account must be taken of real-estate market conditions that affected the demand for such loans. Unfortunately, it is impossible to define the geographic market areas for a given period for a given type of bank loan — primarily because information does not exist on the extent and location of out-of-area lending.

Some earlier studies attempted to address this problem by grouping states into broad regions. In this study the opposite approach was attempted. Instead of attempting to match demand indicators to banks, the model was applied to banks located in the 50 major real-estate markets for which the best commercial real-estate data existed. Data from Torto/Wheaton Research collected by CB Commercial were utilized for office-building and industrial-building activity, and from F.W. Dodge for retail markets. About 2,200 BIF-insured institutions located in the 50 major markets in 1992:Q3 were studied.

Differential demand for commercial construction loans was measured by the weighted average percentage growth in occupied floor space across three categories of commercial real estate — office, industrial, and retail — in each market during the 1990-1992 period. A similar weighted average of vacancy rates in 1990 also was used to gauge differential market conditions.[14] The percentage change in newly issued permits for residential construction was used to measure geographic differences in demand for housing construction credit.[15]

The test results are presented in Table 3. Results are reported in row 1 for the basic model applied to the smaller sample; the results were quite similar to the full sample of all banks nationwide. When initial construction lending was included, all variables were still significant. However, the coefficient on the initial capital position of the bank was larger. The dummy variables for charter type no longer were substantially different from each other. Results are presented in row 2 for the basic model using dummy variables for initial construction loan holdings to avoid contemporaneous correlation problems. The importance of initial capital position was enhanced in this specification, but the charter-type dummy variables were insignificant. All other variables were barely changed from the basic results nationwide.

The results of adding the market-specific real-estate variables are shown in Table 3, row 3. New construction lending at banks rose more rapidly in markets in which newly issued permits for residential construction were the strongest. This result held when it was tested in conjunction with the measures of commercial activity or when tested alone. Surprisingly, high commercial vacancy rates and lack of growth in occupied commercial floor space across markets were not associated with cutbacks in construction lending. Tests isolating markets with the highest and lowest vacancy rates and the highest and lowest growth in demand — when tested separately or in conjunction with one

[12] CAMEL ratings are at least partially determined by some of the financial measures used in the equation. However, the rating presumably also reflects other aspects of a bank's performance and, thus, may well have an independent effect.

[13] Peek and Rosengren (1993) argue that regulatory enforcement actions spurred by low capital were key to cutbacks in lending.

[14] Both variables were weighted by the relative importance of the categories of commercial real estate in new construction in the market in question during the period under observation.

[15] No comprehensive measure of market disequilibrium in housing markets is available. Newly issued permits were used as a measure of differential demand for construction loans. While permits are usually issued well in advance of the actual bank construction lending, for a period as long as that under observation, this measure runs the risk of simultaneity between the independent and dependent variables.

Table 3

Changes in Construction Lending: The Influence of Local Real-Estate Market Conditions

					Lag/Concentration			Local Demand			Charter Type[d]				
	Constant	Capital Surplus Deficit[a]	Avg. ROA[b]	Troubled Real-Estate Loans[a] (%)	Const. Loans[a]/ Assets[c]	Greater Than .10[d]	Less Than .01[d]	Occup. Comm. Space (% Chg.)	Comm. Vac. Rate	Res. Permits (% Chg.)	Acquired Failed Inst.	Nat. Bank	State, Fed Member	State, Non-Member	Adj. R^2
(1)	0.009[e]	+0.05[e]	+0.21[e]	-0.13[e]	-0.62[e]	—	—	—	—	—	-0.005[f]	+0.012[e]	+0.012[e]	+0.012[e]	.68
	(0.004)	(0.01)	(0.03)	(0.02)	(0.01)						(0.003)	(0.004)	(0.004)	(0.004)	
(2)	-0.009[f]	+0.07[e]	+0.54[e]	-0.23[e]	—	-0.07[e]	+0.007[e]	—	—	—	-0.008[f]	+0.005	+0.007	+0.003	.34
	(0.005)	(0.01)	(0.04)	(0.02)		(0.004)	(0.003)				(0.005)	(0.005)	(0.006)	(0.005)	
(3)	-0.031[e]	+0.07[e]	+0.54[e]	-0.25[e]	—	-0.06[e]	+0.007[e]	-0.003[f]	+0.002[e]	+0.005[e]	-0.009†	+0.006	+0.008	+0.005	.34
	(0.008)	(0.001)	(0.04)	(0.02)		(0.04)	(0.003)	(0.002)	(0.001)	(0.003)	(0.005)	(0.006)	(0.006)	(0.006)	

[a] 90:Q1
[b] 90:Q2-92:Q3
[c] 92:Q3
[d] Dummy variables specification
[e] Significant at 99 percent confidence level
[f] Significant at 90 percent confidence level
Observations = 2,192

another — were similarly unsuccessful.[16]

Table 4 presents some sample statistics illustrating the reason underlying the lack of success of the commercial real-estate variables. It divides the sample into the highest and lowest quartiles with respect to construction loan growth. Banks with declines in construction lending were located typically in areas where residential building was declining. The banks with the highest growth in construction lending were located in metropolitan areas where residential permits rose 13 percent, on average, during the 1990-1992 period. In the case of commercial indicators, however, little difference was apparent between market trends and bank construction lending.

The lack of success of the commercial market variables may reflect specification problems. One explanation is that demand for commercial construction credit did not increase in those markets with growing local demand for commercial space and relatively low vacancy rates. These areas may have had no new construction because developers continued to be discouraged by excess supply conditions elsewhere in the country. However, this explanation is not borne out by data available on new commercial permits. These data show that commercial construction in many areas, especially the Southwestern states, rose during the study period.

Another explanation is that banks were funding primarily residential construction activity, leaving commercial construction lending to others. Given the problems that thrifts and insurance companies were experiencing at that time, this explanation also seems unlikely. Moreover, data collected by

[16] Different markets are likely to have different amounts of vacancy space even in market equilibrium, due to differences in land costs, varying transportation costs within the region, and whether the local real-estate market is growing or shrinking. In an attempt to account for such differences, excess supply in commercial real-estate markets during the period under observation was measured as the difference between the average vacancy rate during the 1980-1990 period and the rate during the first quarter of 1990. Even in this re-specified form the variable continued to be statistically significant with the wrong sign. In addition, lagged vacancy rates were tested in recognition that loans on the books respond to cutbacks in new construction lending only after existing commitments were funded. This specification did not improve the results either.

Table 4

Real-Estate Market Characteristics and Changes in Construction Lending

Variable	High Construction Loan Growth	Low Construction Loan Growth	All Other
Observations	535	497	1,159
Mean Change in Construction Loans[a] / Assets[b]	+3.6%	-7.9%	-0.4%
Mean Percent Change Occupied Commercial Floor Space	+0.9%	0.8%	+0.7%
Composite Commercial Vacancy Rate	11.2%	10.8%	10.7%
Mean Percent Change in Newly Issued Residential Building Permits	13.1%	~1.6%	11.5%

[a] 90:Q1-92:Q3
[b] 92:Q3

HUD on new-construction loan commitments by commercial banks suggest that over 40 percent of total construction lending during the period under study was for non-residential projects.[17]

Finally, the underlying problem may have been that out-of-area lending at many banks may have weakened the link between local commercial activity and lending. Non-local lending is more likely with respect to large commercial projects than with many residential projects, which are typically smaller in scale. One test of this hypothesis is to separate large banks from small ones. Presumably, larger banks have a broader geographic reach. However, a variety of tests limiting the sample to banks in three asset-size categories — less than $1 billion, $500 million, and $100 million — failed to yield significantly different results.

Conclusion

While the term "credit crunch" typically refers to a general restriction of lending, construction loan funding activity during the 1990-1992 period varied widely among BIF-insured commercial and savings banks. Although construction lending declined sharply at many large institutions, a large number of smaller institutions rapidly increased their lending during the period. The key variables influencing construction lending activity included capital position, past degree of concentration in — and success with — construction lending, and profitability during the period.

As has been the case in other studies, attempts to isolate the effects of reduced loan demand on the decline in construction credit proved difficult. Differences in the health of local housing markets were significant in explaining lending patterns among depository institutions, but the same linkage did not hold for commercial real-estate market conditions. Because commercial projects are often large and the funding market more national in scope, "out-of-area" lending is probably more important than for residential construction credit. Unfortunately, no data exist on the geographic pattern of banks' construction lending. Without that information, it is impossible to match lending data with commercial real-estate market indicators in a meaningful way.

No attempt was made to address directly the issue of whether regulators "caused" the credit crunch. Everything else being equal, the various tests showed some differences among institutions supervised by different regulators, suggesting that policy enforcement may have had a small effect on lending practices. However, the evidence did not suggest that adverse changes in supervisory ratings negatively affected construction lending. Moreover, variables testing for an additional negative effect of bank location in New England and for very weak capital positions, that would trigger supervisory actions, added little explanatory power. These results were not consistent with the hypothesis that unusual regulatory pressure on weakened institutions in New England during the period may have affected lending in that region in an important and unique way.

The results suggest that bank regulators seeking to apply policies that were aimed to alleviate the "credit crunch" were faced with a trade-off. Many institutions were increasing their lending in the 1990-1992 period. Large banks that had dominated the construction loan market in the late-1980s and were already holding considerable volumes of problem credits cut back the most. Attempts to maintain the flow of credit to real-estate developers had to, by sheer force of numbers, include these institutions. However, safety-and-soundness considerations suggested that tighter underwriting standards and less concentration in construction lending were prudent steps to maintain — or restore — the health of the institutions and the deposit insurance funds.

[17] See *Survey of Mortgage Lending Activity*, Table 13, U.S. Department of Housing and Urban Development, Office of Financial Management, various issues.

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