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THE RESCUE OF TROUBLED BANKS: CONSEQUENCES FOR CORPORATE STRATEGIES TO DEAL WITH FINANCIAL AND OPERATING STRESS

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Abstract

A rapidly growing literature on the financing of distressed companies finds that troubled firms often secure relief from stress through asset restructuring, capital restructuring, or both. However, none of the earlier corporate distress restructuring studies have focused on the centrally important commercial banking industry which has been one of the most financially distressed industries of the past decade. In this study financial and operating changes experienced by nearly 730 U.S. insured banks that experienced at least two years of negative earnings and then returned to positive profitability were examined using both univariate and joint tests. The study finds that troubled banking corporations displayed evidence of both financial and operating problems simultaneously, so that financial distress appears to be linked to operating stress in the majority of instances observed. However, operating problems (as reflected, for example, in production inefficiencies and expense-control problems) tended to be of longer duration than corporate financial problems, suggesting that either financial stress tends to be easier to address or is subject to more rapid resolution than are corporate operating problems. Relief from corporate stress in the banking sector appears to be accompanied by accelerated growth in total assets, reduced debt financing costs, a strengthening of liquid asset positions, strengthening of customer loan performance, greater employment of junior-priority and shorter-term debt, and reduced dividends on common stock.

INTRODUCTION

A rapidly growing literature on the financing of distressed companies (as evidenced in recent studies by Altman [1], Giammarino [4], Gertner and Scharfstein [3], John and John [10] and others) finds that troubled firms often secure relief from corporate stress through the employment of asset restructuring, capital restructuring, or both. Faced with the claims of bondholders and other senior creditors holding "hard" contracts for payment, troubled corporations have been found, first of all, to engage in cash generation by converting assets into liquid funds, selling assets piecemeal or even placing whole divisions and subsidiaries on the auction block. Companies using asset sales to deal with financial distress appear in the literature to be predominantly multiple division or multiple-subsidiary type firms, while smaller, single-division companies tend to use capital restructuring more often than asset restructuring to rescue themselves.

This study extends into the banking industry—one of the most distressed of all industries over the past decade—for the first time the developing literature on corporate stress and stress-relief strategies. In this study we examine the financial and operating changes effected by nearly 730 U.S. insured commercial banks that experienced corporate stress in the form of negative profitability for at least two consecutive years during the 1980-90 period, but then returned to positive and monotically increasing net profitability in the latter half of the decade. We not only examine the performance of these stressed banks over time, but cross-sectionally as well by matching them against the performance levels of U.S. insured banks that failed at decade's end and relative to banks of comparable size and market location that completely avoided the stress of negative earnings during the 1980-90 period.

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The study has important implications for public policy in dealing with banks facing corporate stress because of recent federal legislation (most notably the Financial Institutions Reform, Recovery and Enforcement Act and the FDIC Improvement Act) which mandates pro-active government involvement in stressed bank situations, including federal seizure of banks whose tangible capital to total assets ratio falls below 2 percent. These new laws provide for civil penalties, grant regulatory agencies cease and desist powers, and mandate certain managerial decisions (such as prohibitions of mergers and restrictions against the payment of shareholder dividends) for banks experiencing corporate stress. This study provides useful clues on both the causes of corporate stress in the banking field and on the conditions that appear to contribute to relieving corporate stress in banking, particularly asset restructuring (in the form of liquid asset expansion and strengthening of the performance of customer loans) and capital restructuring (in the form of debt substitution with shorter-term debt and junior long-term debt replacing some longer-term senior obligations).

DESCRIPTION OF THE CORPORATE SAMPLE

A complete search of the financial reports (balance sheets and earnings and expense statements) for all U.S. insured banks identified 729 commercial banks that experienced a pattern of positive and negative after-tax net income that indicated corporate financial stress and eventual relief from stress, spanning a period of up to seven years during the 1980-90 decade. Each of these institutions reported at least three annual periods of consistently positive net after-tax income relative to their volume of equity capital before experiencing at least 24 months of negative profitability and, then subsequently, recorded a minimum of three annual periods of positive profitability, as Figure 1 illustrates. For comparison purposes the identity of all the commercial banks declared insolvent in the final year of the decade (1990) was obtained from the Federal Deposit Insurance Corporation and the complete financial reports of these collapsing banking firms were also aligned against the banks recovering from corporate stress. Finally, two samples of banks were assembled consisting of groups of banks either (a) sharing the headquarters' communities with the stressed banking firms or (b) representing those banking firms chosen from the U.S. industry population as a whole that were closest in asset size to the banks experiencing corporate stress.

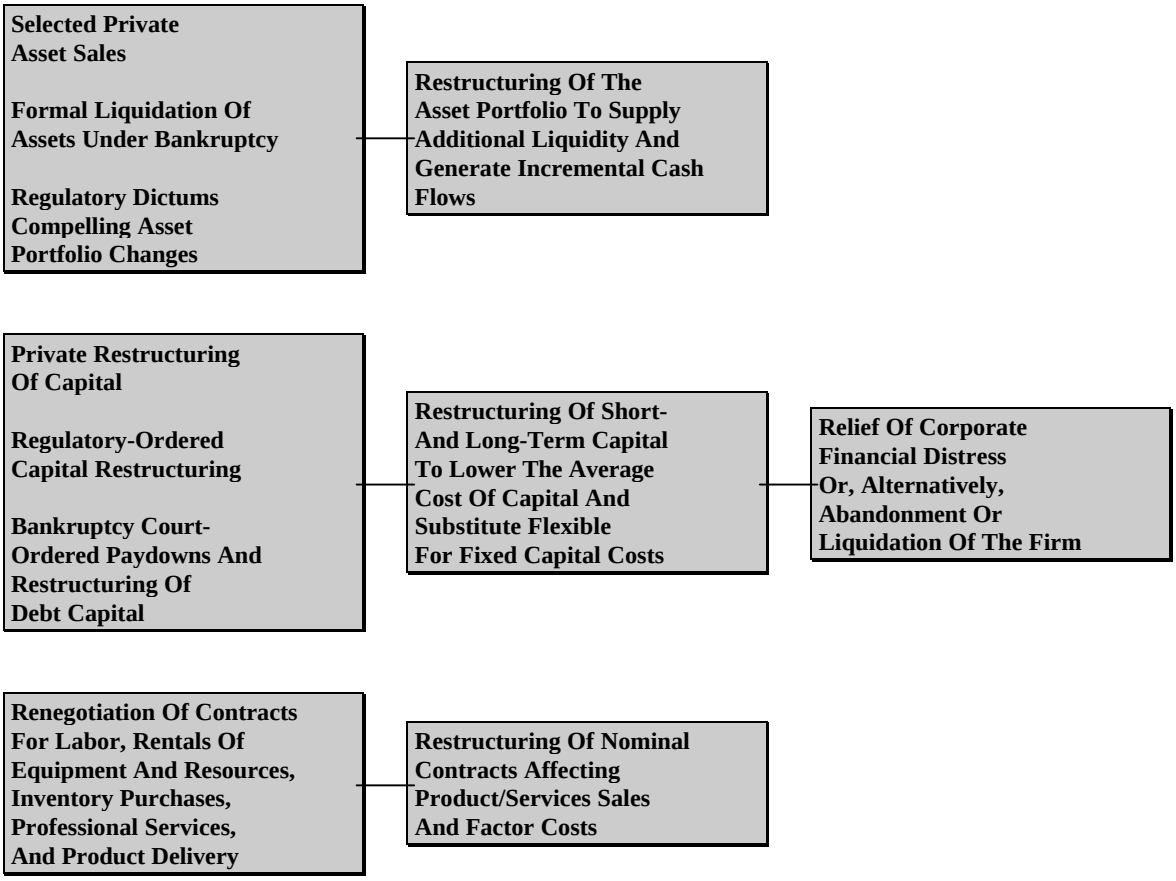
For each banking sample constructed, complete data was obtained for the years 1980-90 from the FDIC's Reports of Condition and Income filed by each bank for all years of the decade. In addition, measures of each bank's response to forces at work in its local market were introduced, including the level and growth of revenues from retail establishments and business payrolls. Market structure variables were added to the performance-tracking equations in the form of the proportion of total bank deposits held by the three largest banks in each local market and the Herfindahl-Hirschman index in 1980 and 1990 as well as the change in these two market structure measures between 1980 and 1990. By including *both* changes within the individual bank and changes in its surrounding environment we can determine the relative importance of individual-bank factors shaping corporate stress and stress relief compared to outside factors which, though beyond management's control, may also affect the onset of corporate stress.

THE RESEARCH LITERATURE ON CORPORATE STRESS

Studies of the causes and correction of financial distress in corporations have been small in scope, but have grown rapidly during the 1990s. Earlier work is dominated by empirical studies of the decline and renewal process for industrial corporations, with little in the way of a conceptual framework to guide the search for the causes of corporate decline and renewal. Moreover, there is little or no attention devoted in earlier studies to the correction of stress problems in financial-service firms.

As Figure 2 suggests, most studies of corporate restructuring today focus upon the shifts that occur on either the uses-of-funds side or the sources-of-funds side of corporate balance sheets and upon changes taking place in corporate income and expense statements to replace "hard" contracts (which place inflexible demands on corporate cash flow) with "soft" contractual agreements (that represent more flexible claims against corporate cash flow, earnings, or resources). Examples of "hard" contracts that may contribute to corporate stress include mandatory nominal salary and wage increases arising from negotiated labor contracts, inflexible rental fees, fixed prices or credit terms promised suppliers, pre-determined terms of sale to customers, and bond contracts and other loan

agreements that specify fixed semiannual interest payments. In pursuit of relief from corporate stress "hard" nominal contracts may be replaced with lower cost or more flexible ("soft") agreements, permitting reduced or variable factor payments to employees, suppliers, and distributors, market-sensitive terms of sale to customers, and variable financing terms that reflect fluctuations in a company's financial and operating condition.



As John and John [10] relate, corporate financial stress typically arises from *lack of synchronization* between a firm's current holdings of liquid assets and its "hard" contracts that demand *inflexible* performance from the distressed firm—a situation that *may* be remedied by asset restructuring, capital restructuring, or through the restructuring of nominal contracts affecting revenue flows or expenses via private negotiation or through the bankruptcy courts. Research to date (as evidenced in the work of Altman [1], Bergman and Callan [2], Jensen [8], and others) suggests that asset sales can be effective in alleviating corporate distress once a threshold proportion of sold assets to total available assets is reached, though asset sales do not seem to generate abnormal shareholder returns unless these sales are at least partially applied to retiring outstanding debt or unless the sales are demonstrably effective in preventing bankruptcy. Capital restructuring to replace longer-term, senior debt commitments with shorter-term and junior debt obligations and the rewriting of restrictive nominal revenue or expense contracts usually accompanies the asset restructuring process.

Somewhat broader studies have recently appeared in the literature, examining both the financial and operating features of distressed corporations. One example is a recent paper by Kose, Lang, and Netter [9] which examines 29 industrial and service firms operating in 28 different SIC code industries. These researchers focused upon COMPUSTAT companies that ranked in the top 25% or top 50% of industry standings in their ratios of annual net earnings to assets (1980-89), then fell to the bottom 25% in a subsequent year, and finally rose to the top 50% or top 25%. Kose *et. al.* found that relief of corporate stress frequently required a *refocusing* of the troubled firm, including setting in motion selected contraction policies (e.g., reduction of firm size and eliminating markets) and

selected expansion policies (including the development of new markets and new product lines in order to emphasize the firm's core business functions). Relief from corporate stress appeared to be rapid, averaging only 3.4 years between the onset of decline and the restoration of positive earnings, but financial restructuring strategies did not appear to help significantly (except in the form of dividend reductions).

Product-line diversification may also affect both the probability of experiencing corporate stress and the likelihood of stress relief, according to a recent study by Sheppard [11]. Product-line diversification can reduce the probability of corporate failure by helping to insure sources of supply and product market access, by promoting more efficient use of managerial skills, by lowering the cost of capital and the level of systematic risk, and by minimizing the risk of antitrust prosecution. Sheppard uses product-count measures of firm diversification for a sample of 32 firms filing bankruptcy petitions between 1983 and 1985. He finds that surviving corporations were more diversified than failing ones, but that diversification ranked lower in importance than the size, financial condition, and market share of each firm in bringing about stress relief, leading Sheppard to recommend against diversification as a way to rescue a stressed company. This conclusion seems to be consistent with Jensen [8] who has argued that the leveraged buyouts (LBOs) of the 1980s were developed to resolve organizational failures that resulted from the rush of corporations to diversify in the 1960s and 1970s.

Gertner and Scharfstein [3] attempt to model a financially distressed firm that has incurred both privately-placed and publicly-traded debt in an effort to determine if a firm's financial distress affects its operating performance. They contend that stressed companies encountering coordination problems in trying to restructure their outstanding debt experience inefficiencies in capital investment and operating policies that become more likely when asymmetric information exists between corporate insiders and outside creditors. Their model predicts that exchanges of old for new securities to mitigate financial distress are more likely to negatively affect a firm's value if senior privately negotiated debt covenants and short-term public debt are present. However, the presence of long-term public debt appears to make successful financial restructuring more likely.

Williamson [12] examines the conditions affecting the ability of a stressed firm to redeploy its assets. He finds that greater amounts of redeployable assets with high liquidation values are associated with heavier use of debt restructuring to rescue troubled firms. However, economic conditions also appear to be important: private asset sales are *less* likely to be effective in relieving firm distress in a recession when buyers who place the highest use value on the troubled firm's assets—typically firms in the *same* industry—are themselves experiencing difficulties. Even optimal capital structures can lead to costly liquidation in some states of the economy (such as a recession) because all the best users of the assets to be liquidated are credit-constrained at the same time and cannot pay the fundamental value for each asset placed on the auction block. In periods of prosperity and rising cash flows, however, individual firms can more easily take on debt to combat corporate stress because they can sell their assets at prices closer to their fundamental values to help meet debt service costs.

A supporting set of arguments has been made recently by Hardouvelis and Wizman [6]. These researchers find that the cost of capital for firms with negative earnings increased over the peak-to-trough period of a business cycle by an average of 175 basis points relative to nonstressed firms during the 1963-91 period. This finding suggests that business cycles have asymmetric effects on stressed firms' cost of capital, resulting in more rapid increases in their capital costs.

Haugen and Senbet [7] contend that private capital markets can be an effective adjustment mechanism for restructuring assets or capital in order to rescue a stressed firm, provided that transactions costs from private portfolio restructuring are lower than formal bankruptcy costs. However, Gilson, John, and Lang [5] contend that private restructurings will be chosen over public (formal bankruptcy) restructurings if the original claimants perceive they will be better off and if there is a consensus on how to divide up the cost savings from pursuing private rather than public resolution of a stressed firm's problems. But, Giammarino [4] observes that significant informational asymmetries and judicial discretion to impose a court-preferred reorganization plan can cause the debtholders of a stressed firm to *not* choose a value-maximizing or cost-minimizing approach. This would be especially true if outside creditors cannot properly value the issuance of new securities and the value of other stress resolution channels.

Finally, Gilson, John, and Lang [5] find that the stockholders of firms that successfully restructured their debt scored a net mean gain in stock price over market trend of approximately 41 percent during the restructuring interval. Abnormal *positive* returns seemed more likely in those reorganizations that resulted in equity securities going to private lenders and senior debt flowing to those who held publicly traded notes and bonds, while *negative* abnormal returns resulted when these transactions were reversed. On balance, stockholders were found to be systematically better off when corporate debt was restructured privately.

From an overall perspective, earlier studies dealing with the resolution of corporate stress have made important strides in describing the costs incurred in achieving stress relief and the financial characteristics of nonfinancial firms involved in successful and unsuccessful corporate asset and capital restructurings. However, earlier work has largely ignored financial-sector firms; we are currently devoid of knowing whether financial-service companies, such as banks, parallel those features of corporate stress and stress relief experienced by nonfinancial companies. It is also unclear from recent research on either financial or nonfinancial firms whether corporate financial stress is typically accompanied by operating stress and whether both of these forms of corporate stress respond equally to stress-relief strategies. These apparent gaps in the currently available literature are approached in the sections that follow.

THE METHODOLOGY FOR HYPOTHESIS TESTING

In order to compare the portfolio changes and other restructurings that may accompany financial and operating stress and relief from stress in a commercial banking corporation, two sets of statistical tests are conducted: (a) an analysis of the comparative *mean* levels of individual-firm performance variables for banking companies experiencing corporate earnings decline and eventual stress relief versus banks that reported consistently positive after-tax income and compared to those that failed at the end of the study period; and (b) *joint* testing of sets of corporate performance measures along with external market indicators. This dual approach reflects the possibility that corporate stress may result in the *joint* interaction of performance measures among themselves inside the firm and with forces coming from outside the individual corporation in ways that an analysis of individual firm performance factors simply cannot capture.

Differences among mean univariate performance levels (D) for comparative groups of banking firms (x and y) with respect to performance measure i are tested statistically using the ratio:

Equation 1

$$h_{(x,y)i} = D_{(x,y)i}/\sigma_{(x,y)i}$$

where $h_{(x,y)i}$ is distributed as t with the absolute value of $h_{(x,y)i}$ judged to be statistically significant if it lies at a risk level of 5 percent or less. Joint tests of the possible restructuring of corporate assets, capital, and operating variables are conducted via a bi-level regression analysis of the form:

Equation 2

$$L_{(x,y)} = L\,[V(i);\, E(j)]$$

where V(i) is an n-dimensional vector of individual-firm performance factors and E(j) is an m-dimensional vector of factors external to the individual banking corporation that may affect the probability of achieving relief from corporate stress. Significance tests for the response probabilities associated with individual components of vectors V and E are conducted along with a likelihood-ratio test of the overall model's goodness of fit.

EMPIRICAL ANALYSIS OF INDIVIDUAL PORTFOLIO MEASURES

In this section we examine individual measures of corporate asset and capital restructuring, of changes in operating performance, and of the size, rate of growth, and supply-side concentration in the headquarters' market area of each bank in the sample. We wish to determine if there are significantly different asset and capital portfolio patterns and significant differences in operating performance among distressed banking companies relative to banking firms with persistent positive after-tax net income and relative to banking companies that ultimately failed. We also wish to explore the hypothesis that corporate financial stress is linked to operating stress as reflected in adverse changes in operating efficiency and expense control. The principal measures of asset and capital portfolio restructuring, operating performance, and external factors examined here include:

Asset Portfolio Restructuring Measures	**Debt And Equity Capital Portfolio Restructuring Measures**
Liquid Assets/Total Assets	Subordinated Debt/Total Assets
Total Loans And Leases (Gross)/Total Assets	Total Capital/Risk-Exposed Assets
Provision For Loan And Lease Losses /Total Loans And Leases	Total Capital/Total Assets
	Borrowings In The Money Market/Total Assets
Real Estate Loans/Total (Gross) Loans	Stockholder Dividends/Net After-Tax Income
Mean Rate Of Growth In Total Assets	Equity Capital/Fixed Assets

Operating Performance Measures	
Noninterest Operating Expenses Per Full-Time-Equivalent Employee	Sales Revenue Productivity Per Full-Time-Equivilent Employee
Overhead Costs/Total Assets	Asset Productivity Per Full-Time-Equivalent Employee
Net Interest Margin/Earning Assets	Mean Rate Of Growth In Total Operating Expenses
Mean Rate Of Growth In Noninterest Operating Expenses	

Market Factors
Level And Rate Of Growth Of Manufacturing Payrolls In Headquarters' Market Area Of Banking Firm
Level Of And Change In Deposit Concentration In Headquarters' Market Area Of Banking Firm

Asset Restructuring

The analysis in Tables 1 and 2 suggests that banking organizations experiencing financial stress experience significant changes in *both* asset portfolio composition and in debt and equity capital structure, as was observed earlier for industrial firms by Altman [1], Gertner and Scharfstein [3], and Jensen [9]. In a period of declining income, for example, bank liquidity ratios appear to fall sharply and then begin to rise again as bank profitability returns to the positive range. Yet, interestingly enough, the recovering banking firms do *not* seem to return their liquid-asset ratios fully to the levels achieved by nonstressed banks of comparable size and comparable market location. The troubled banks *do* narrow their liquidity gap with nonstressed institutions but do *not* completely close that gap. In fact, the ratios of liquid assets to total assets of the recovering banks even dip significantly lower than liquid-asset ratios posted by banks failing at the end of the decade before climbing above the failing-bank liquidity ratios as the period of renewed profitability (stress relief) begins.

Banks under stress reported more assets committed to risky loans and leases throughout the study period than banks not experiencing financial stress, suggesting less flexibility in the troubled firms' asset portfolios. Only failing banks reported persistently higher loan-to-asset ratios except at the year-end that occurred immediately before the latter institutions collapsed when the banks passing through corporate stress reported higher loan-asset

TABLE 1

Analysis Of Asset Portfolio Changes By Individual Banking Firms Facing Corporate Stress And Eventual Stress Relief (Mean Values Of Each Group And t Ratio Tests Of Statistical Significance In Parentheses)

Portfolio Measure	Corporate Banking Group	Period Of Declining And Negative Profitability: Year One	Year Two	Year Three	Year Four	Period Of Renewed Positive Profitability: Year One	Year Two	Year Three	Year Four
Liquid Assets/ Total Assets	Banks Under Stress	0.255	0.107	0.107	0.108	0.347	0.344	0.327	0.323
	Banks Of Comparable Size With Positive Profitability	0.365* (-18.08)	0.113 (-1.29)	0.114 (0.70)	0.122* (3.48)	0.389* (-5.86)	0.385* (-5.89)	0.365* (-5.58)	0.365* (-5.75)
	Banks In Same Markets With Positive Profitability	0.347* (-12.47)	0.115 (-1.39)	0.103 (0.81)	0.126* (-2.19)	0.385* (-4.35)	0.378* (-3.91)	0.357* (-3.57)	0.362* (-4.75)
	Failing Banks	0.239 (1.35)	0.144* (-3.29)	0.139* (-3.34)	0.164* (-2.32)	0.223* (10.33)	0.233* (7.88)	0.223* (7.62)	0.345* (-2.51)
Total Loans And Leases/ Total Assets	Banks Under Stress	0.579	0.589	0.555	0.513	0.511	0.519	0.525	0.531
	Banks Of Comparable Size With Positive Profitability	0.461* (19.39)	0.473* (18.34)	0.459* (15.04)	0.439* (11.04)	0.445* (9.03)	0.456* (8.66)	0.469* (7.76)	0.472* (7.95)
	Banks In Same Markets With Positive Profitability	0.473* (14.00)	0.485* (14.30)	0.466* (11.30)	0.440* (8.99)	0.448* (7.20)	0.464* (6.28)	0.478* (5.41)	0.483* (5.47)
	Failing Banks	0.585 (-0.40)	0.623* (-2.31)	0.632* (-4.98)	0.626* (-8.46)	0.633* (-8.33)	0.595* (-5.12)	0.584* (-3.92)	0.451* (3.19)
Total Real Estate Loans/ Total Loans	Banks Under Stress	0.249	0.261	0.292	0.334	0.369	0.385	0.394	0.399
	Banks Of Comparable Size With Positive Profitability	0.296* (-5.62)	0.302* (-5.15)	0.326* (-4.19)	0.356* (-2.57)	0.387* (-2.10)	0.395* (-1.11)	0.404* (-1.18)	0.412* (-1.50)
	Banks In Same Markets With Positive Profitability	0.285* (-3.66)	0.286* (-2.64)	0.313* (-2.16)	0.346 (-1.21)	0.377 (-.79)	0.384 (0.19)	0.392 (0.13)	0.400 (-0.17)
	Failing Banks	0.316* (-3.96)	0.338* (-4.59)	0.361* (-3.90)	0.405* (-3.84)	0.428* (-3.09)	0.450* (-3.43)	0.484* (-4.77)	0.437 (-0.26)
Provision For Loan And Lease Losses/ Total Loans	Banks Under Stress	0.015	0.031	0.049	0.049	0.020	0.004	0.003	0.004
	Banks Of Comparable Size With Positive Profitability	0.006* (10.55)	0.008* (17.89)	0.031* (21.44)	0.014* (20.09)	0.009* (9.42)	0.006* (-3.27)	0.005* (-4.33)	0.006* (-4.01)
	Banks In Some Markets With Positive Profitability	0.006* (9.80)	0.009* (16.66)	0.014* (19.81)	0.015* (18.54)	0.009* (8.74)	0.006* (-3.16)	0.005* (-3.19)	0.005* (-2.34)
	Failing Banks	0.010* (3.37)	0.012* (8.88)	0.016* (13.02)	0.030* (3.92)	0.038* (-3.99)	0.049* (-7.90)	0.061* (-9.74)	0.071* (-3.96)
Mean Rate Of Growth In Total Assets	Banks Under Stress	8.35	3.33	1.96	2.54	1.33	7.03	5.75	11.49
	Banks Of Comparable Size With Positive Profitability	11.38* (-3.91)	7.90* (-8.01)	8.09* (-4.13)	8.031* (-1.88)	5.07* (-3.30)	6.50 (0.30)	5.02 (1.35)	8.30* (2.02)
	Banks In Same Markets With Positive Profitability	10.63* (-3.21)	8.24* (-7.96)	6.77* (-3.33)	7.30 (-1.63)	5.42* (-3.27)	5.54 (.85)	6.19 (-.63)	7.41* (1.97)
	Failing Banks	18.64* (-4.71)	15.00* (-4.49)	13.33* (-2.03)	10.60 (-1.30)	2.81 (-0.42)	0.42* (2.46)	-9.22* (8.86)	0.58 (0.36)

*Indicates the mean difference in performance level between banks experiencing negative profitability and eventual relief from corporate stress and the peer banks used for comparison is statistically different at least at the 5-percent significance level.

ratios than even failing institutions. However, there were few statistically important differences in the composition of stressed and nonstressed bank loan portfolios, suggesting that the *types* of loans banks make are not necessarily a threat to their financial stability; rather, it is the *quality* of individual loans, regardless of type or category, that determines the degree of risk exposure and financial stress faced by individual banking firms.

The period of declining and negative income for stressed banking firms was marked by greater loan losses relative to other banking corporations headquartered in the same local areas. However, when positive income returned, the loan-loss record of the stressed banks improved so much that it dropped beneath the loan-loss experience of comparable nonstressed banking firms. The stressed banks' credit portfolio losses were even larger than the mean loan-loss ratios of failing banks until the former institutions' net income rose again into the positive range, at which point the failing banks reported both higher and accelerating credit losses.

Finally, the overall size of the asset portfolios of banks under corporate stress expanded more slowly than did nonstressed banks comparable in market location and size in the years when the former institutions' profitability was negative. This growth deficiency persisted into the first year of renewed positive earnings, but then evaporated two to four years following the last year of negative after-tax income. By the final year of the study the formerly stressed banks' assets were growing at an annual rate at least 38 percent faster than among the nonstressed institutions.

Capital Restructuring

As Table 2 shows, the significant differences in asset portfolios between banking corporations under stress and nonstressed banking firms were accompanied by statistically significant differences in *capital structure* among the same two sets of firms. During the declining and negative-income years the stressed banks shifted more heavily into subordinated debt obligations, maintaining their heavier use of this junior-priority, long-term debt throughout both the years of negative earnings and the years in which the stressed banks' net income was once again in the positive range.

TABLE 2
Analysis Of Capital Structure Changes By Individual Banking Firms Under Corporate Stress And Eventual Stress Relief (Mean Values Of Each Group And t-Ratio Tests Of Statistical Significance In Parentheses)

		Period Of Declining And Negative Profitability				Period Of Renewed Positive Profitability			
Portfolio Measure	**Corporate Banking Group**	**Year One**	**Year Two**	**Year Three**	**Year Four**	**Year One**	**Year Two**	**Year Three**	**Year Four**
Subordinated Debt/Total Assets	Banks Under Stress	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004
	Banks Of Comparable Size With Positive Profitability	0.001* (2.20)	0.000* (3.38)	0.000* (4.30)	0.001* (3.98)	0.001* (3.88)	0.001* (2.63)	0.001* (2.99)	0.001* (4.33)
	Banks In Same Markets With Positive Profitability	0.001 (1.11)	0.001* (1.97)	0.001* (4.04)	0.002* (4.20)	0.002* (3.77)	0.001* (2.49)	0.001* (2.98)	0.001* (3.78)
	Failing Banks	0.001 (0.64)	0.000 (1.15)	0.000* (5.58)	0.000* (2.30)	0.001 (0.36)	0.001 (0.67)	0.000 (0.50)	0.000* (2.07)
Total-Capital/ Risk-Exposed Assets	Banks Under Stress	0.078	0.084	0.080	0.073	0.062	0.066	0.070	0.069
	Banks Of Comparable Size With Positive Profitability	0.080 (-1.32)	0.102* (-10.94)	0.104* (-14.95)	0.104* (-18.41)	0.083* (-14.81)	0.082* (-13.46)	0.083* (-8.26)	0.080* (-7.17)
	Banks In Same Markets With Positive Profitability	0.079 (-.49)	0.098* (-7.81)	0.101* (-10.62)	0.102* (-14.47)	0.081* (-11.84)	0.081* (-10.86)	0.082* (-6.80)	0.029* (-5.28)
	Failing Banks	0.0078 (0.06)	0.083 (0.38)	0.080 (0.001)	0.074 (-0.23)	0.057 (1.73)	0.033* (7.18)	-0.010* (10.27)	0.057 (0.42)

TABLE 2

Analysis Of Capital Structure Changes By Individual Banking Firms Under Corporate Stress And Eventual Stress Relief (Mean Values Of Each Group And t-Ratio Tests Of Statistical Significance In Parentheses)

(CONT'D)

Portfolio Measure	Corporate Banking Group	Period Of Declining And Negative Profitability: Year One	Year Two	Year Three	Year Four	Period Of Renewed Positive Profitability: Year One	Year Two	Year Three	Year Four
Total Capital/ Total Assets	Banks Under Stress	0.086	0.079	0.075	0.068	0.070	0.075	0.079	0.080
	Banks Of Comparable Size With Positive Profitability	0.096* (-5.57)	0.097* (-11.88)	0.098* (15.21)	0.097* (-20.12)	0.098* (-20.03)	0.099* (-17.38)	0.099* (-11.34)	0.098* (-9.72)
	Banks In Same Markets With Positive Profitability	0.092* (-3.36)	0.093* (-8.16)	0.094* (-11.45)	0.094* (-15.78)	0.096* (-15.99)	0.097* (-13.93)	0.097* (-9.01)	0.096* (-7.49)
	Failing Banks	0.079* (2.29)	0.075 (1.75)	0.074 (0.62)	0.067 (0.14)	0.057* (4.45)	0.034* (8.76)	-0.010* (11.35)	0.075 (0.62)
Money-Market Borrowings/ Total Assets	Banks Under Stress	0.027	0.011	0.008	0.008	0.008	0.011	0.010	0.013
	Banks Of Comparable Size With Positive Profitability	0.022* (2.96)	0.007* (3.09)	0.006* (2.16)	0.005* (2.60)	0.006 (1.60)	0.007* (2.32)	0.006* (2.18)	0.007* (3.20)
	Banks In Same Markets With Positive Profitability	0.024 (1.63)	0.008* (2.26)	0.008 (0.47)	0.007 (1.73)	0.008 (0.06)	0.009 (1.07)	0.009 (0.81)	0.008* (1.96)
	Failing Banks	0.030 (-0.31)	0.014 (-0.62)	0.013 (-1.27)	0.015 (-1.82)	0.009 (-0.26)	0.008 (1.05)	0.009 (0.42)	0.008 (0.93)
Equity Capital /Premises And Fixed Assets	Banks Under Stress	9.19	8.79	8.43	9.98	9.65	10.98	10.90	10.04
	Banks In Same Markets With Positive Profitability	12.09* (-3.05)	13.48* (-3.77)	16.57* (-4.62)	23.29* (-2.47)	20.66* (-3.19)	21.99* (-3.93)	33.01* (-2.10)	23.30* (-5.19)
	Banks Of Comparable Size With Positive Profitability	14.34* (-5.10)	16.17* (-4.35)	17.59* (-5.17)	17.43* (-3.56)	20.93* (-6.71)	24.94* (-6.25)	27.13* (-5.36)	29.11* (-4.60)
	Failing Banks	7.35 (1.10)	5.74* (3.05)	7.73 (0.35)	6.73 (1.32)	4.21* (4.50)	2.73* (6.72)	-0.64* (8.60)	10.16 (-0.04)
Stockholder Dividends/ Net After-Tax Income	Banks Under Stress	0.294	0.113	-0.141	-0.144	-0.108	0.216	0.402	0.390
	Banks In Same Markets With Positive Profitability	0.465 (-1.13)	0.510 (-1.80)	0.563* (-7.24)	0.590* (-9.11)	0.952* (-2.08)	0.539* (-6.66)	0.561* (-2.48)	0.599* (-3.17)
	Banks Of Comparable Size With Positive Profitability	0.414 (-0.85)	0.478 (-1.73)	0.528* (-8.94)	0.646 (-11.33)	0.534* (-2.82)	0.606* (-9.58)	0.570* (-2.79)	0.555* (-2.97)
	Failing Banks	0.247 (0.34)	0.156 (-0.17)	0.361* (-4.84)	0.434 (0.76)	0.897 (-1.04)	1.470 (0.85)	-0.004* (6.63)	0.039 (7.26)

*Indicates the mean difference in performance level between banks experiencing decline and recovery and the peer banks experiencing negative profitability and eventual relief from corporate stress and the peer banks used for comparison is statistically different at least at the 5-percent significance level.

Under the terms of the Basle Agreement mutually adopted in June 1988 by bank regulatory agencies in the United States, Canada, Japan, and Western Europe, long-term debt that is subordinated to the claims of depositors may be counted as supplementary bank capital, subject to an upper limit of no more than 50 percent of a bank's total primary (core) capital. However, because subordinated debentures do count as meeting a portion of the regulatory capital requirements for banks and because debt capital is usually less costly to issue after taxes than

new stock, the growth of subordinated debt among stressed banks can be viewed as a redeployment of capital into a lower-priority, more highly leveraged, and regulatory-sanctioned form of financing.

However, in terms of *total* long-term capitalization (equity capital plus subordinated debentures), the stressed banks remained well *below* the nonstressed banks in three of the declining and negative income years and in all four years when profitability returned to the positive track, suggesting that greater use of longer-term debt is part of the stress-relief process for banking companies. The stressed banking firms were, in fact, better capitalized at the conclusion of the study period only relative to those banks that ultimately failed by decade's end. This finding suggests that stress relief in banking does not necessarily lead to quick recovery in overall capital adequacy for a troubled bank, at least relative to peer banking firms that have avoided corporate stress.

Table 2 indicates that the stressed banks chose to fund more of their assets with short-term debt than did the nonstressed institutions, consistent with the notion that troubled banks lose some of their largest depositors first and generally must replace this comparatively stable and relatively low-cost funding source with short-term nondeposit capital. Stressed banks also made heavier use of retained earnings as a source of long-term capital even after their profitability returned to positive levels, reporting consistently lower dividend payout ratios than nonstressed banks through to the end of the study period. In fact, the stressed banks even posted lower dividend payouts than the banks that eventually failed with the exception of the final two years before the latter were closed by the Federal Deposit Insurance Corporation.

Operating Stress

The comparative performance means shown in Table 3 suggest that financial stress in banking was accompanied by *operating stress*. Employee productivity in generating sales revenue fell sharply in the years of declining and negative income and early in the period of renewed positive earnings and did not approach the revenue productivity levels achieved by nonstressed banks until the fourth year of restored profitability. Interestingly enough, the stressed banks did not pass the failed banks in employee revenue productivity until the second year that net income turned positive again when the latter were only three years from failure.

Operating expenses generally grew faster among the stressed banks while their profitability fell relative to non-stressed institutions. However, in the years when financial stress was gradually being relieved as indicated by a return to positive income, the stressed banks' operating expenses grew more slowly or declined faster relative to operating expense levels among nonstressed banks until the final year of the study (1990) when operating expenses among those banking corporations formerly under stress once again outpaced expense growth at banks with persistently positive earnings. Only the failing banks consistently outpaced the stressed institutions in their growth of operating expenses.

Banking corporations usually have little control over their interest expenses because of competition for loanable funds from other financial intermediaries and from issuers of corporate and government debt. However, banking firms *may* exercise some control over their *noninterest* operating costs which consist principally of wages, salaries, and overhead expenses determined in narrower, more localized markets. Moreover, it is generally in noninterest expenses where *agency costs*, if they are present, will appear as management and other insiders increase their personal utility through excessive production costs beyond those necessary to generate output with maximum resource efficiency.

The stressed banks reported persistently *greater* noninterest costs per full-time-equivalent employee throughout their bouts with declining income and for the first two years after their income returned to positive levels. Only in the last two years of restored profitability did the per-employee noninterest operating expenses of recovering banking corporations become insignificantly different from the noninterest costs posted by nonstressed firms. One reason for the apparently higher noninterest operating costs among stressed banks appeared to be their elevated overhead costs which outpaced the overhead expenses of non-stressed banks in every year but one (the first year that income declined to negative levels). A second reason for higher expenses among stressed institutions lay in persistently lower employee productivity in managing assets which was recorded in every year of the study. The stressed banks eventually improved their employees asset productivity in the years of restored profitability, but the peer nonstressed banks never surrendered their statistically significant productivity leadership to the stressed institutions. Only against banks destined to fail did the stressed banks maintain a positive advantage in employee asset productivity once they had returned to positive earnings.

TABLE 3

Analysis Of Changes In Operating Performance For Individual Banking Firms Under Corporate Stress And Experiencing Eventual Stress Relief (Mean Values Of Each Group And t-Ratio Tests Of Statistical Significance In Parentheses)

Portfolio Measure	Corporate Banking Group	Period Of Declining And Negative Profitability: Year One	Year Two	Year Three	Year Four	Period Of Renewed Positive Profitability: Year One	Year Two	Year Three	Year Four
	Banks Under Stress	163.5	171.7	161.8	148.2	143.6	157.0	173.4	180.5
Sales	Banks Of								
Revenue	Comparable Size	165.1	179.1*	177.6*	170.1*	163.6*	170.5*	186.9*	194.4*
Productivity	With Positive Profitability	(-0.50)	(-2.47)	(-5.19)	(-8.27)	(-7.60)	(-3.66)	(-3.30)	(-3.60)
Per Full-Time-	Banks In Some Markets								
Equivalent	With Positive	168.3	182.0*	181.8*	173.6*	166.3*	173.2*	189.1*	162.7*
Employee	Profitability	(-1.33)	(-2.89)	(-5.51)	(-7.72)	(-7.05)	(-3.99)	(-3.49)	(2.55)
	Failing Banks	140.2*	158.7*	163.0	152.2	149.1	147.2	156.0*	122.0
		(3.57)	(2.10)	(-0.18)	(-0.74)	(-0.98)	(1.63)	(2.88)	(0.67)
	Banks Under Stress	3.59	2.70	0.12	-5.07	-8.71	4.00	11.31	9.63
Mean	Banks Of Comparable								
Rate	Size With Positive	0.60*	10.05*	-0.155	-2.25	-1.97*	8.42*	13.29*	8.48
Of Growth	Profitability	(4.62)	(-10.29)	(0.04)	(-1.86)	(-8.45)	(-3.74)	(-2.98)	(0.56)
In Total	Banks In Same Markets	0.52*	9.64*	-0.45	-3.43	-2.12*	7.44*	13.90*	7.47
Operating	With Positive	(4.11)	(-8.94)	(0.11)	(-1.08)	(-7.26)	(-2.99)	(-3.89)	(1.26)
Expenses	Profitability								
	Failed Banks	6.18	15.48*	5.22	2.08*	6.54*	11.42	11.97	-38.11
		(-1.57)	(-5.91)	(-1.14)	(-3.04)	(-3.02)	(-2.50)	(-0.24)	(1.92)
	Banks Under Stress	55.94	45.74	49.63	53.59	53.51	54.26	55.53	57.59
Noninterest	Banks Of								
Operating	Comparable Size	45.12*	47.78*	45.20*	47.39*	49.08*	50.99*	52.67	56.04
Expenses	With Positive Profitability	(9.29)	(4.88)	(5.84)	(8.92)	(6.30)	(2.45)	(1.77)	(1.21)
Per Full-Time-	Banks In Same Markets								
Equivalent	With Positive	45.66*	42.75*	45.56*	47.97*	49.61*	51.25*	53.25	56.03
Employee	Profitability	(8.35)	(4.50)	(4.83)	(6.30)	(4.47)	(2.11)	(1.24)	(0.87)
	Failing Banks	50.17*	44.07	49.01	52.76	58.17*	67.10*	82.33*	34.09
		(2.97)	(1.37)	(0.43)	(0.57)	(-2.76)	(-4.50)	(-6.10)	(1.20)
	Banks Under Stress	0.004	0.005	0.005	0.006	0.005	0.005	0.005	0.005
	Banks Of								
	Comparable Size	0.004	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*
Overhead	With Positive	(1.22)	(2.85)	(6.14)	(7.32)	(6.13)	(4.97)	(5.12)	(4.21)
Costs/	Profitability								
Total Assets	Banks In Same Markets	0.004	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*
	With Positive	(1.87)	(3.50)	(5.27)	(6.84)	(5.94)	(5.32)	(5.65)	(4.85)
	Profitability								
	Failing Banks	0.005*	0.005*	0.006*	0.006*	0.007*	0.007*	0.008*	0.002*
		(-2.88)	(-2.39)	(-1.98)	(-3.21)	(-5.02)	(-6.05)	(-6.97)	(30.00)
	Banks Under Stress	1475.6	1498.4	1498.2	1525.9	1569.3	1683.3	1742.3	1835.8
Asset	Banks Of Comparable								
Productivity	Size With Positive	1525.6	1597.5*	1675.8*	1777.9*	1829.4*	1887.4*	1936.1*	2044.9*
Per Full-Time-	Profitability	(-1.82)	(-3.57)	(-6.16)	(-8.64)	(-8.30)	(-4.95)	(-5.06)	(-5.79)
Equivalent	Banks In Same Markets								
Employee	With Positive	1555.0*	1636.9*	1724.1*	1826.8*	1874.8*	1924.0*	1974.6*	2064.4*
	Profitability	(-2.47)	(-4.17)	(-6.35)	(-8.21)	(-7.96)	(-5.19)	(-5.29)	(-5.52)
	Failing Banks	1305.3*	1385.3*	1527.8	1559.8	1505.2	1485.5*	1406.3*	1701.1
		(3.01)	(1.99)	(-0.39)	(-0.44)	(1.00)	(2.92)	(5.78)	(0.26)

TABLE 3
Analysis Of Changes In Operating Performance For Individual Banking Firms Under Corporate Stress And Experiencing Eventual Stress Relief (Mean Values Of Each Group And t-Ratio Tests Of Statistical Significance In Parentheses)

(CONT'D)

Portfolio Measure	Corporate Banking Group	Period Of Declining And Negative Profitability: Year One	Year Two	Year Three	Year Four	Period Of Renewed Positive Profitability: Year One	Year Two	Year Three	Year Four
	Banks Under Stress	0.012	0.008	0.010	0.005	0.008	0.009	0.007	0.007
	Banks Of Comparable								
Net Interest	Size With Positive	-0.001*	-0.014*	-0.009*	-0.008*	0.002*	0.003*	0.001*	0.001*
Margin/	Profitability	(9.49)	(9.28)	(7.57)	(6.17)	(4.84)	(4.88)	(4.87)	(4.53)
Earnings	Banks In Same Markets								
Assets	With Positive	-0.002*	0.015*	-0.009*	-0.008*	0.003*	0.002*	0.000*	0.001*
	Profitability	(12.42)	(12.44)	(10.17)	(7.52)	(5.52)	(6.55)	(6.45)	(6.18)
	Failing Banks	0.018*	0.018*	0.022*	0.023*	0.024*	0.019*	0.006	0.001
		(-2.55)	(-2.85)	(-4.15)	(-7.52)	(-6.54)	(-3.37)	(0.42)	(0.48)
	Banks Under Stress	23.60	-12.26	22.55	7.73	-0.73	0.39	3.85	8.67
	Banks Of Comparable								
Mean Rate Of	Size With Positive	12.06*	-1.43*	8.23	6.71	6.03*	6.75*	6.22*	10.28
Growth In	Profitability	(7.81)	(-11.31)	(1.01)	(0.57)	(-5.89)	(-6.13)	(-3.57)	(-0.70)
Noninterest	Banks In Same Markets								
Expenses	With Positive	12.92*	-2.20*	8.24	6.06	6.23*	6.05*	6.74*	8.27*
	Profitability	(6.80)	(-9.50)	(1.01)	(0.92)	(-5.50)	(-5.29)	(-4.17)	(-6.26)
	Failing Banks	17.67	-3.40*	13.91	11.39	17.90*	17.18*	16.46*	-40.57*
		(1.80)	(-3.69)	(0.60)	(-1.46)	(3.59)	(-4.99)	(-3.10)	(2.33)

*Indicates the mean difference in performance level between banks experiencing negative profitability and eventual relief from corporate stress and the peer banks used for comparison is statistically different at least at the 5-percent significance level.

In summary, financial stress among individual banking corporations appears to be reflected in differences in *both* asset portfolio composition and in capital structure. Moreover, relief from financial distress (as reflected in net income returning to positive levels) does not necessarily result in improvements in asset or capital portfolios sufficient to reach performance levels displayed by banking corporations *not* showing signs of financial stress. In banking relief from corporate stress appears to be accompanied by accelerated asset growth, decreased credit losses, greater use of junior-priority long-term debt as well as short-term borrowings, and reduced shareholder pay-out ratios. Financial stress among banking corporations also appears to be accompanied by *operating stress*, reflected in such performance measures as lower employee productivity, faster growth in operating expenses, and greater noninterest operating costs per employee (including higher overhead costs), which are not fully corrected even after corporate stress is relieved. Thus, operating stress, on average, did not undergo correction as quickly as financial stress, suggesting that operating problems require longer planning horizons to remedy and are not necessarily relieved when a troubled firm's financial condition improves.

REGRESSION MODELS FOR DETECTING CORPORATE STRESS

In order to extend the analysis of banking corporations experiencing financial stress several joint tests were performed to determine if banking companies experiencing financial stress could be distinguished from banking firms otherwise comparable in size or location *not* experiencing stress during periods of declining and negative income and in periods when stress was relieved. Specifically, we wish to determine if banking corporations that

survive financial stress display internal and/or external features that allow us to differentiate them from firms not under stress.

The analysis of the joint impact of individual-firm performance and outside factors is conducted through a bi-level regression model in which the explanatory variables consisted of:

Equation 3:

$$L = L(V(F,O)_i,E_j)$$

where F represents individual-firm financial performance measures, 0 reflects measures of corporate operating performance (focusing predominantly upon expense control and productivity) for the ith firm, while E reflects measures of product or service demand and supply-side structure in the jth market in which each firm operates. The foregoing model hypothesizes that stressed banking companies tend to simultaneously display *both* financial and operating stress when product demand and competitive factors are held constant. Tables 4 and 5 provide a summary of the model's equations carrying the highest likelihood ratios as indicators of goodness of fit. Inspection of the likelihood ratios reveals that the classification equations were statistically significant at least at the five percent risk level and all but one equation (in 1984 in Table 5) is statistically significant at least at the one-percent risk level.

Those explanatory variables most successful at differentiating stressed from nonstressed banking corporations include key measures of internal *financial stress*—the net interest margin or ratio of interest revenues less interest expenses to total earning assets, the size of each firm's equity capital relative to its fixed assets, its relative degree of liquidity, and the average cost of issuing debt capital to fund the individual banking firm. Measures of *operating performance stress* included overhead costs relative to total assets and the growth of total non-interest operating expenses. *None* of the financial and operating ratios were favorable to the stressed companies, except the net interest margin which averaged higher for banking firms under stress, suggesting that, despite financial problems and operating difficulties, stressed banks, on average, were still able to achieve a significant spread between their borrowing and lending costs. However, the liquidity ratios reported by stressed banks were consistently weaker and their overhead costs higher in the years of declining and negative profitability as well as during the years when positive profitability was restored. Stressed banks' noninterest operating expenses grew faster until their after-tax profits returned to positive levels, at which point their expense growth generally became indistinguishable from nonstressed banking firms.

During the years of declining and negative income the key factors separating stressed banking companies from nonstressed firms operating in the same headquarters' markets included both financial and operating variables, particularly liquidity deficiencies, a higher volume of overhead expenses (relative to total assets), and more rapid growth of total operating expenses (including higher costs in raising debt capital). When positive income was again achieved, there was a shift in importance among the explanatory factors with capital adequacy, overhead costs, and annual expense growth becoming more important discriminators between stressed and nonstressed banking firms than was true when corporate profits were declining and negative. Thus, as the financial problems of distressed banking companies faded, their operating problems remained centered on relatively high and rapidly growing operating expenses and these expense-control difficulties persisted, as Table 4 suggests.

A similar picture appears to characterize distressed banking companies when profiled against non-stressed banking companies of comparable size, as profiled in Table 5. Rapid expense growth remained a significant problem throughout the study period when firm size was held constant, while higher debt capital financing costs faded in importance as did stressed firms' liquidity problems and their elevated overhead costs.

Interestingly enough, outside factors rarely played a statistically significant role in classifying stressed versus nonstressed banking corporations. Measures of product demand (particularly the level of manufacturing payrolls at the beginning of the study period in each headquarters' community and structure (as reflected in the proportion of market-area deposits controlled by the largest firms and the change in the dominant position controlled by the largest firms between the beginning and end of the study period) were generally not statistically significant until near the end of the decade. In the final three years when positive profitability had been restored, the level of manufacturing payrolls in the relevant market area was *negatively* related to the incidence of corporate stress. (We must note here that the signs of the partial regression coefficients are reversed in the bi-level regression algorithm employed in this study which normalizes on the zero value of the dependent variable rather than on the value of

TABLE 4

Bi-Level Regression Models Classifying Distressed Banking Firms From Nonstressed Companies Of Comparable Market Location (1980-90) (The Relevant t-Statistics Appear In Parentheses Below Each Regression Coefficient And The Significance Levels Follow In Brackets)

Year	Constant	Net Interest Margin/ Earning Assets	Equity Capital/ Fixed Assets	Liquid Assets/ Total Assets	Overhead Costs/ Total Assets	Annual Growth in Non-interest Expenses	Average Deposit Interest Cost	Manu-facturing Payrolls in Market Area (1980)	Change in Market Concentration (1980-1990)	Likelihood Ratio (chi-square value)
1980	0.775	-21.324*	0.008	2.692*	31.529	-0.005*	-26.371*	0.000	-0.964	1229.07*
	(1.12)	(14.13)	(2.15)	(9.74)	(0.98)	(4.28)	(8.79)	(2.38)	(1.60)	(0.00)
	[.289]	[.000]	[.143]	[.002]	[.323]	[.039]	[.003]	[.123]	[.206]	
1981	1.328	-21.314*	0.013*	2.445*	23.568	-0.004	-30.217*	0.000	-1.037	1224.12*
	(3.33)	(21.02)	(4.27)	(8.61)	(0.58)	(1.66)	(17.45)	(1.60)	(1.83)	(0.00)
	[.068]	[.000]	[.039]	[.003]	[.445]	[.198]	[.000]	[.206]	[.176]	
1982	0.295	-15.292*	0.008	3.823*	21.804	-0.008*	-19.241*	0.000	-0.970	1201.32*
	(0.16)	(11.63)	(2.83)	(19.34)	(0.45)	(5.63)	(7.76)	(1.77)	(1.57)	(0.00)
	[.689]	[.001]	[.093]	[.000]	[.503]	[.018]	[.005]	[.183]	[.211]	
1983	1.376	-14.859*	0.015*	4.765*	15.535	-0.015*	-41.037*	0.000	-1.188	1147.26*
	(3.04)	(6.47)	(5.05)	(21.83)	(0.20)	(19.77)	(22.94)	(0.27)	(2.24)	(0.00)
	[.081]	[.001]	[.025]	[.000]	[.652]	[.000]	[.000]	[.606]	[.135]	
1984	6.274*	-29.461*	0.010	-1.304	-71.601*	0.031*	-78.683*	0.000	-1.121	1097.93*
	(51.90)	(82.96)	(2.77)	(2.13)	(4.08)	(48.14)	(59.10)	(0.02)	(1.97)	(0.00)
	[.000]	[.000]	[.096]	[.145]	[.043]	[.000]	[.000]	[.880]	[.161]	
1985	5.286*	-19.127*	0.024*	-1.933*	-70.112*	-0.002	-76.184*	0.000	-0.733	1187.42*
	(44.53)	(44.92)	(10.63)	(4.98)	(4.50)	(0.29)	(54.74)	(0.41)	(0.88)	(0.00)
	[.000]	[.000]	[.001]	[.026]	[.034]	[.592]	[.000]	[.524]	[.347]	
1986	6.058*	-11.280*	0.028*	-2.527*	-140.911*	-0.006*	-95.905*	0.000	-0.286	1181.41*
	(58.97)	(17.81)	(15.19)	(10.75)	(16.34)	(4.63)	(66.12)	(0.12)	(0.13)	(0.00)
	[.000]	[.000]	[.000]	[.001]	[.000]	[.032]	[.000]	[.724]	[.714]	
1987	2.487*	-10.221	0.021*	0.285	-105.000*	-0.019*	-51.179*	0.000	-0.286	1181.41*
	(9.40)	(2.96)	(14.32)	(0.14)	(8.82)	(19.00)	(16.65)	(2.41)	(0.36)	(0.00)
	[.002]	[.085]	[.000]	[.707]	[.003]	[.000]	[.000]	[.121]	[.551]	
1988	0.779	-10.596	0.019*	-0.126	-85.115*	-0.024*	-16.933	0.000*	-0.279	1260.55*
	(1.10)	(3.41)	(14.89)	(0.03)	(5.22)	(19.71)	(2.26)	(5.01)	(0.14)	(0.00)
	[.294]	[.065]	[.000]	[.868]	[.022]	[.000]	[.133]	[.025]	[.780]	
1989	0.058	-8.690	0.014*	-0.015	-123.700*	-0.025*	-1.619	0.000*	-0.427	1271.98*
	(0.01)	(2.41)	(11.36)	(0.00)	(9.77)	(16.53)	(0.02)	(7.29)	(0.33)	(0.00)
	[.943]	[.121]	[.001]	[.986]	[.022]	[.000]	[.886]	[.007]	[.567]	
1990	-0.926	0.687	0.024*	1.323	-79.421	-0.001	3.935	0.000*	-0.010	1237.11*
	(1.46)	(0.01)	(18.59)	(2.50)	(3.56)	(0.07)	(0.14)	(6.44)	(0.00)	(0.00)
	[.228]	[.906]	[.000]	[.114]	[.59]	[.793]	[.710]	[.011]	[.989]	

*indicates that the partial regression coefficients or likelihood ratio values shown are statistically significant at least at the five percent risk level.

TABLE 5

Bi-Level Regression Models Classifying Distressed Banking Firms From Nonstressed Banking Firms Of Comparable Size, (1980-1990) (The Relevant t-Statistics Appear In Parentheses Below Each Regression Coefficient And The Significance Levels Follow In Brackets)

Year	Constant	Net Interest Margin/ Earning Assets	Equity Capital/ Fixed Assets	Liquid Assets/ Total Assets	Overhead Costs/ Total Assets	Annual Growth in Non-interest Expenses	Average Deposit Interest Cost	Manu-facturing Payrolls in Market Area (1980)	Change in Market Concentration (1980-1990)	Likelihood Ratio (chi-square value)
1980	0.538	-17.364*	0.015*	4.061*	52.381	-0.009*	-19.046*	0.000	-1.171	1595.94*
	(0.72)	(11.79)	(7.89)	(26.26)	(3.35)	(12.31)	(6.10)	(1.99)	(3.05)	(0.00)
	[.396]	[.001]	[.005]	[.000]	[.067]	[.001]	[.014]	[.159]	[.081]	
1981	1.523*	-18.368*	0.019*	3.908*	37.009	-0.006*	-30.802*	0.000	-1.422*	1586.16*
	(5.70)	(19.34)	(8.81)	(26.00)	(1.57)	(4.40)	(23.62)	(0.97)	(4.53)	(0.00)
	[.017]	[.000]	[.003]	[.000]	[.211]	[.036]	[.000]	[.325]	[.033]	
1982	1.300	-16.590*	0.016*	4.858*	31.429	-0.009*	-28.235*	0.000	-1.223	1535.49*
	(3.48)	(14.85)	(7.58)	(35.52)	(1.17)	(8.11)	(18.07)	(0.46)	(3.23)	(0.00)
	[.062]	[.000]	[.006]	[.000]	[.280]	[.004]	[.000]	[.499]	[.072]	
1983	2.363*	-15.268*	0.023*	5.643*	21.040	-0.017*	-50.510*	0.000	-1.356	1451.74*
	(9.81)	(8.29)	(13.42)	(38.12)	(0.51)	(31.22)	(39.25)	(0.08)	(3.68)	(0.01)
	[.002]	[.004]	[.000]	[.000]	[.475]	[.000]	[.000]	[.771]	[.055]	
1984	7.517*	-31.301*	0.020*	-1.316	-64.354*	-0.038*	-88.750*	0.000	-1.745*	1409.94
	(86.92)	(111.80)	(9.70)	(2.86)	(4.22)	(79.78)	(84.85)	(0.25)	(5.95)	(0.05)
	[.000]	[.000]	[.002]	[.091]	[.040]	[.000]	[.000]	[.619]	[.015]	
1985	7.394*	-21.021*	0.033*	-1.981*	-79.715*	-0.001	-100.000*	0.000	-1.447*	1539.53*
	(98.11)	(61.96)	(19.18)	(7.64)	(7.24)	(0.38)	(103.84)	(0.00)	(4.45)	(0.00)
	[.000]	[.000]	[.000]	[.006]	[.007]	[.536]	[.000]	[.948]	[.035]	
1986	7.759*	-10.948*	0.039*	-2.818*	-150.800*	-0.004	-116.000*	0.000	-0.473	1544.41*
	(111.26)	(27.45)	(27.04)	(17.93)	(29.95)	(1.33)	(110.43)	(0.23)	(0.49)	(0.00)
	[.000]	[.000]	[.000]	[.000]	[.000]	[.250]	[.000]	[.633]	[.485]	
1987	2.950*	-6.700	0.031*	0.682	-83.028*	-0.026*	-56.494*	0.000	-0.827	1649.93*
	(15.16)	(1.90)	(25.82)	(1.09)	(10.72)	(34.59)	(23.64)	(1.13)	(1.60)	(0.00)
	[.000]	[.168]	[.000]	[.297]	[.001]	[.000]	[.000]	[.288]	[.206]	
1988	0.883	-12.502*	0.025*	0.407	-31.867	-0.038*	-19.720	0.000	-0.975	1653.39*
	(1.46)	(6.52)	(24.10)	(0.37)	(1.74)	(49.52)	(3.19)	(1.91)	(2.28)	(0.00)
	[.226]	[.011]	[.000]	[.545]	[.188]	[.000]	[.074]	[.167]	[.131]	
1989	-0.384	-9.257*	0.021*	0.443	-47.031	-0.021*	6.326	0.000*	-0.982	1708.03*
	(0.25)	(3.84)	(19.87)	(0.41)	(2.82)	(14.44)	(0.36)	(5.20)	(2.41)	(0.00)
	[.617]	[.050]	[.000]	[.523]	[.093]	[.000]	[.550]	[.023]	[.121]	
1990	-0.080	-8.441	0.034*	0.477	-5.486	-0.002	-1.985	0.000*	-0.676	1659.82*
	(0.01)	(2.99)	(30.00)	(0.47)	(0.03)	(1.03)	(0.04)	(4.30)	(1.14)	(0.00)
	[.908]	[.084]	[.000]	[.491]	[.858]	[.310]	[.833]	[.038]	[.287]	

*indicates that the partial regression coefficients or the likelihood ratios shown are statistically significant at lease at the five-percent risk level.

one.) This negative relationship suggests that banking companies in smaller markets with lower levels of manufacturing activity are *less* likely to experience corporate stress and *more* likely to recover from stressful conditions.

In contrast, changes in the proportion of deposits held by the largest banks were *positively* related to corporate stress, with stress more likely to emerge in those areas experiencing deepening control by the largest banks. Because most of the banking firms in the stressed sample were relatively small by industry standards, these firms probably were likely to be more vulnerable to competitive dominance by leading firms operating in their local areas.

SUMMARY AND CONCLUSIONS

The rapidly developing literature dealing with corporate stress and the strategic responses that corporations make to stress suggests that companies with serious financial problems tend to draw upon a combination of asset restructuring and capital restructuring to solve their financial problems, rather than relying upon only one of these devices for stress relief. Moreover, the research literature is decidedly mixed on whether or not corporate financial distress is usually accompanied by operating distress in the production and delivery of goods or services. Unfortunately, the earlier corporate literature largely ignores the financial-services sector, which this study focuses upon in a first effort to fill in the gap in our understanding of the process of corporate stress and stress relief specifically as it applies to financial-service firms.

Application of both mean-difference tests and logistic regression models to a large group of stressed U.S. banking corporations displaying declining and negative after-tax net income over a portion of the 1980-90 period serves to confirm some of the findings of the earlier research literature dealing with financial stress among industrial firms. However, this study also poses new findings regarding successful strategies for attacking the problem of corporate stress. For example, troubled banking corporations appear to display evidence of financial and operating problems *simultaneously* and their profitability typically returns to positive levels as their financial problems are brought under control. The key elements bringing relief from corporate financial stress among banking corporations seem to center upon restored liquidity levels, lower shareholder pay-out ratios, the substitution of shorter-term and lower-priority debt capital for longer-term senior debt obligations, and reduced credit risk exposure. Relief of corporate operating stress, by contrast, appears to be conditioned by slower growth in assets and operating expenses, stronger expense controls (especially for overhead and noninterest costs), and improved employee productivity.

Surprisingly, outside factors appear to be less important in the generation of banking stress and in achieving stress relief than do financial and operating factors within the individual firm. Presumably, *well-managed banks can face financial and/or operating stress and achieve stress relief independent of the market conditions they face*. In contrast, banking firms with weak management may not be able to fend off outside pressures and, therefore, are more prone to fail.

However, the operating problems of distressed banks tend to *outlast* their financial problems, suggesting that the financial sources of corporate stress may, in general, be easier to address successfully within a shorter time frame than are operating problems centered upon production and delivery, which may require longer decision horizons to successfully resolve. It may also be the case that operating stress is not as readily apparent to those outside the firm (especially to capital market investors) as is financial stress in an efficient market and, therefore, operating stress brings a slower response from management and other corporate insiders. Moreover, the accelerated pace of financial innovation in recent years (including the securitization process, the development of leveraged buy-out techniques, and junk bonds) may have provided more avenues for relief from financial stress than are currently available to deal with operating stress.

Finally, the present study can only be viewed as *suggestive* of the causes and the cures of corporate stress, particularly as it affects financial-service firms. Confirmation of the relationships observed in this study between internal management decisions, external market conditions, corporate stress, and stress-relief will require in-depth future research across different types of financial firms under varying management strategies and market conditions.

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