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Total Risk, Systematic Risk, and Off-Balance Sheet Risk for Large Commercial Banks

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ABSTRACT

In recent years large commercial banks have encaded in activities that result in commitments and contingent liabilities that do not appear on their balance sheets. As the dollar value of these off-balance sheet items has increased so, has a concern that back exposure to risk bas increased. Regulators currently employ minimum capital ratios to control risk-taking, but the election are based on balance sheet amounts. Reculators have proceed a "evised form of capital regulation that will incorporate a bank a off-balance sheet items in the minimum required (ap.ts) ration This paper investigates the impact of otf-balance sheet liens in market measures of ris! . Various measures of off-balance sheet items are included in accounting-based mish forecasting models to explain total and systematic risk. Estimated coefficients in the nodels indicate that bank off-balance sheet items are lignificantly regatively related to bank total risk but have no impact on bank systematic risk. These results suggest that the offebalance sheet activities of banks are risk reducing rather than risk increasing activities. The results bring into question the need for the proposed revisions to the minimum capital requirements.

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TOTAL RISK, SYSTEMATIC RISK, AND OFF-BALANCE SHEET RISK FOR LARGE COMMERCIAL BANKS

I. INTRODUCTION

Commercial banks provide a variety of financial services to their customers. A traditional view of banking is that most of these services impact on banks' balance sheets--banks add to asset holdings funded by deposit or other liability sources of funds. Several developing forces, including technological innovation and increased competition, have led to an unbundling of the provision of financial services by banks. Thus unbundling has resulted in an increasing portion of bank activity which does not have an impact on the balance sheet. Banks are able to provide for the credit and other financial needs of their customers in ways that create contingent liabilities or commitments that do not appear on the bank's balance sheet.

The growth of standby letters of credit (SLC), an off-balance sheet contingent liability, illustrates the increasing presence of offbalance sheet items for commercial banks. In 1973 only 7.7 percent of all banks reported the existence of SLCs, and for these banks the ratio of SLCs to equity was 8.4 percent. At year end 1986 55.6 percent of all banks reported SLCs representing 11.7 percent of equity. For the largest banks SLCs have risen from 38 percent of equity at year end 1973 to 155.9 percent of equity by year end 1986.

As the quantity of off-balance sheet items has increased, policy questions have developed. How much risk exposure is generated by the existence, sometimes in relatively large quantities, of these offbalance sheet items? If risk-reducing regulation has its focus on a bank's balance sheet, will the regulation be capable of controlling the bank's total risk exposure.

One question we are interested in investigating in this paper is the extent to which, if at all, market participants take account of the off-balance sheet activity of large commercial banks. A second question is whether the market considers this off-balance sheet activity as an addition to the riskiness of the banks stock, or perhaps through a diversification effect, a decrease in bank riskiness.

In this paper we examine the market's reaction to the existence of off-balance sheet items. We use accounting-based risk forecasting models to investigate the impact of off-balance sheet items on both total risk and systematic risk for large commercial banks. In Section II the risks associated with the off-balance sheet items of banks are examined; in Section III the models are presented and the data is described; Section IV presents the empirical results; and Section V contains conclusions and policy recommendations.

II. BANK OFF-BALANCE SHEET ITEMS AND RISK

Bank off-balance sheet items constitute a diverse group of instruments and commitments with a variety of functions. These items reflect innovative ways banks meet the needs of their customers, usually for future time periods. However, from a regulatory point of view they result in ". . . an expanding portion of bank activities [that] cannot be monitored closely. Moreover, these instruments could pose a risk to the stability of individual banks" (Wolkowitz [1982], p. 3).

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Table 1 lists the types of off-balance sheet items that are reported in Schedule RC-L of bank call reports and shows each item as a percentage of total assets and of equity for a sample of 81 large banks at year-end 1986. As a percentage of equity (1) unused loan commitments, (2) commitments to purchase foreign currencies, (3) the notional value of interest rate swaps, and (4) standby letters of credit (to US and foreign addressees) each average over 100 percent for the sample.

For these four off-balance sheet items the potential risk exposure is quite different. Unused loan commitments could, at any time, be drawn down and impact the balance sheet. If these new loans are funded by a marginal increase in liabilities, financial leverage will increase. However, there is no reason to believe that the credit risk of these new loans will alter the overall credit risk exposure of the bank. Commitments to purchase foreign currencies include spot, forward, and futures contracts. Some of these will, in time, result in a cash outflow, but a portion of these commitments will be offset by other transactions and will have no balance sheet effects. The risk that the counterparty in any particular commitment will default exists, but could be small.

Counterparty default in an interest rate swap may lead to a loss for the bank, but the amount of loss is much smaller than the notional amount of the swap. Finally, standby letters of credit entail a degree of credit risk. If the contingency occurs which activates the letter of credit, the bank is likely to acquire a claim that has a

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substantial risk of default. The funding of the claim will also increase financial leverage.

Another class of off-balance sheet items involves instruments which have been participated to others. These participations illustrate the unbundling of the financing from the origination and servicing activities. If these participations are done without recourse they represent little or no risk to the originating bank.

Characterizing the impact that off-balance sheet items have on a bank's risk is not straightforward. Regulators have recently proposed a risk-based capital regulation scheme in which the existence of certain off-balance sheet items will increase the minimum amount of capital that will be required to be held. The current regulatory minimum capital ratios do not take into account the existence of off-balance sheet positions and are calculated using balance sheet data. It has been argued that the current capital regulation has encouraged banks to engage in activities that create off-balance sheet items and fee revenue without increasing the requirement for capital (see Giddy [1985]). The presumption underlying the proposed requirement is that the existence of off-balance sheet items increases risk exposure and the bank's capital position must be increased accordingly to absorb this increase in risk.

Evidence of the impact of off-balance sheet items on bank risk is sketchy. Several studies have used data on standby letters of credit as a proxy for all off-balance sheet items. Wall and Peterson [1986] include a measure of standby letters of credit in testing the determinants of capital ratios. Goldberg and Lloyd-Davies [1985] test the

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influence of standby letters of credit on the rates paid on a bank's large, negotiable certificates of deposit. In both studies the offbalance sheet variable was not a significant explanator.

Brewer, Koppenhaver, and Wilson [1986] test the significance of three off-balance sheet items in a model relating bank excess returns to market and industry excess returns, where bank excess returns are interpreted as a risk premium. Of the three items included in the model only SLCs were significantly related to excess returns. The coefficients on the loan commitment and commercial letter of credit variables were not significant. The SLC coefficient was negative leading to the interpretation that this off-balance sheet item is a risk-reducing, not risk-increasing, activity of banks.

III. MODEL AND DATA

The main purpose of this paper is to use accounting-based risk forecasting models to investigate the impact of a variety of offbalance sheet items on both total risk and systematic risk for large commercial banks. The accounting-based risk forecasting models are defined as:

$$S_{jt} = a_0 + a_1 X_{1jt} + a_2 X_{2jt} + \dots + a_5 X_{5jt}$$
(1)

$$B_{jt} = b_0 + b_1 X_{1jt} + b_2 X_{2jt} + \dots + b_5 X_{5jt}$$
(2)

where S_{jt} = total risk for the jth bank in period t;
B_{jt} = systematic risk for the jth bank in period t;
X_{ijt} = financial leverage for the jth bank in period t;
X_{2it} = growth rate for the jth bank in period t;

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 X_{3jt} = operating leverage for the jth bank in period t; X_{4jt} = capital-labor ratio for the jth bank in period t; and X_{5jt} = standard deviation of accounting earnings for the jth bank in period t.

Total risk, S_{jt} , is the standard deviation of monthly stock price return including dividends for the five year period 1981-1985. Systematic risk, B_{jt} , is estimated in (3)

$$R_{jt} = b_0 + B_{jt}R_{Mt} + e_{jt}$$
(3)

where R_{jt} is the monthly excess return including dividends for bank j in period t and R_{Mt} is the monthly excess return for the CRSP valueweighted market index. Five years of monthly data is used to estimate B_{jt} .

To minimize the problem of end-of-year window dressing of accounting data, variables X_{ljt} through X_{4jt} are constructed using 20 quarterly observations for the 1981-1985 period. Financial leverage, X_{ljt} , is the ratio of total equity to total assets; X_{2jt} is the average annual growth rate in net income calculated each quarter compared to the same quarter in the previous year. Operating leverage, X_{3jt} , is calculated as the percentage change in earnings before interest and taxes divided by the percentage change in total operating revenue. X_{4jt} is the ratio of salary expense to bank fixed assets. Finally, X_{5jt} is the standard deviation of quarterly net income for the five year period.

Jahankhani and Lynge [1980] estimated models that have some similarities with (1) and (2). Using data from the early 1970s, measures

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of a bank's dividend payout ratio, deposit variability, and the loan to deposit ratio were significant explanators of bank systematic risk. Significant explanators of bank total risk were dividend payout ratio, financial leverage, deposit variability, and a measure of loan losses. The impact of financial leverage was negative on both systematic and total risk.

The variables included in models (1) and (2) relate various accounting measures that proxy risk to the market measures of risk. Theoretically, both total risk and systematic risk should be negatively related to financial leverage and positively related to the standard deviation of accounting earnings. Systematic risk can be either positively or negatively related to the growth rate in earnings and to operating leverage. The labor to capital ratio, as the measure used here is constituted, should be positively related to systematic risk.

Extensive data on bank off-balance sheet activity is only available for the years 1984 and forward. Therefore, in the empirical work all off-balance sheet variables are averages of year-end 1984 and 1985 values. Although other variables cover a five year period, the presumption utilized here is that the 1984-1985 off-balance sheet activity of commercial banks is representative of their activity for the full five years.

To test the impacts of the presence of the off-balance sheet items, the leverage variable, X_{1jt}, is calculated both with total assets and with total assets augmented by a group of off-balance sheet items that could, if certain future contingencies occur, result in an increase in bank assets, thereby increasing financial leverage. This group is

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constructed as the sum of items 3, 6, 7, 9, 10, and 11 minus item 8 from Table 1. In addition, several individual off-balance sheet items and other groups of items, each as a percent of total assets, are entered separately as independent variables in addition to those variables specified in (1) and (2).

As the off-balance sheet exposure of commercial banks has increased in recent year, it is expected that market participants include this information in pricing the banks' common stocks. If this is the case, and if the activity represented by off-balance sheet items adds to bank risk, then the existence of these items should be reflected in market measures of risk. If this is the case it may be detected by an improved explanatory power of the models incorporating one or more measures of off-balance sheet items. Whether the presence of offbalance sheet exposure increases or decreases a bank's risk exposure can be inferred from the signs of the estimated coefficients of the off-balance sheet variables.

If off-balance sheet risk is a diversifiable risk then it will be significantly related to total risk (in equation [1]) instead of systematic risk (in equation [2]). Since nonsystematic risk is diversifiable, well-diversified investors are not concerned with this risk. However, nonsystematic risk is still a concern of the Federal Deposit Insurance Corporation (FDIC) since nonsystematic financial risk will affect the probability of default by a bank (Ronn and Verma [1986]).

If systematic risk is affected by the presence of off-balance sheet items, then a degree of market regulation is at work bringing

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pressure on the returns of banks with large off-balance sheet risk exposure to compensate investors for this increased risk, or to reduce other sources of risk. To the extent that this market force alters bank behavior, the need for regulatory attention to off-balance sheet risk exposure is diminished.

Stock price data and related financial statement data for a sample of 81 large commercial banks or bank holding companies is used for empirical analysis. Holding company data is taken from the Bank Compustat tape. Data on off-balance sheet items will be taken from schedule RC-L of bank call reports for the lead bank of the holding company. The sample is restricted to those bank holding companies whose lead bank accounts for the majority of the consolidated holding company assets. Average sample values for the 81 banks and bank holding companies are shown in Table 2.

IV. EMPIRICAL RESULTS

Tables 3 and 4 present the estimated coefficients and t-ratios for models (1) and (2) respectively. Line 1 of Tables 3 and 4 represent the base case excluding any off-balance sheet variables. When total risk, S_{jt}, is the dependent variable (Table 3), the estimated coefficients of the financial leverage (LEV) and the income variability (SNI) variables are significant at the 5 percent level. The signs of these two coefficients are as expected. The negative sign on the LEV coefficient indicates that the higher is the equity to total asset ratio (the less financial leverage is employed) the lower is a bank's

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total risk. The positive coefficient for SNI indicates that total risk varies directly with net income variability.

The adjusted R^2 of the estimated equation is 0.468. As additional explanatory variables are added to the basic model the adjusted R^2 changes by small amounts, and the sizes, signs, and significance of the coefficients from the basic model on line 1 change very little. This suggests that the estimates in the basic model are robust.

Altering LEV by adding the selected off-balance sheet items to total assets produces an adjusted leverage variable (ALEV). Estimated coefficients using ALEV in place of LEV are shown on line 2 of Table 3. This variable is not superior to the unadjusted leverage measure in explaining total risk as is indicated by the decline in adjusted R^2 and the reduced significance of the coefficient of ALEV compared to that of LEV. This result suggests that the market does not simply make an adjustment in the financial leverage measure to incorporate information about certain off-balance sheet activities of banks.

Lines 3 through 8 of Table 3 introduce to the basic model various groups and individual off-balance sheet items, each as a percent of total assets. Since the off-balance sheet items constitute a heterogeneous collection of participations, commitments, and other arrangements, it is difficult to represent the influence of these items in any simple way. The independent variables introduced on lines 3 through 8 attempt to group items with similar characteristics. The specific items constituting each variable are listed at the bottom of Table 3.

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At the outset it can be seen that all of the off-balance sheet variables have negative coefficients. Three of these estimated coefficients are significant at the 5 percent level (OB, PART, and SLC), two are significant at the 10 percent level (SWAP and CLC), and the coefficient on COMM is not significantly different from zero. These results suggest that at least some of the off-balance sheet items do have a significant impact on total risk, and that this impact is riskreducing. This result is consistent with the results of Brewer, Koppenhaver, and Wilson [1986] for standby letters of credit but extends these results to other categories of off-balance sheet items.

Table 4 presents estimates of model (2) using systematic risk, B_{jt} , as the dependent variable. Again, the coefficients of the basic model are on line 1. As was the case for model (1), LEV and SNI have significant coefficients with the same signs as in Table 3. In addition the growth (GROW) and operating leverage (OPLEV) variables have coefficients that are significant at the 5 percent level. These base model coefficients are stable across alternative specifications of the model. The adjusted R² varies slightly across the various model specifications.

The coefficient of the adjusted financial leverage variable (ALEV) is significant and positive. Although its t-ratio and the adjusted R² on line 2 are higher than for the base model, the difference is slight. None of the other off-balance sheet variable coefficients is significantly different from zero. This suggests that off-balance sheet activity has no impact on a bank's measure of systematic risk.

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Finally, Table 5 presents the Pearson correlation coefficients among all variables used in the regressions. This table indicates that there is some multicollinearity among the independent variables in both models (1) and (2).

V. SUMMARY AND CONCLUSIONS

In this paper two accounting-based models are estimated to test the impact of off-balance sheet risk on total risk and systematic risk for large commercial banks and bank holding companies. Accounting data for the five year period 1981-1985 is used along with a variety of off-balance sheet items from bank call reports for a sample of 81 large banks.

The estimated coefficients of independent variables incorporating various aspects of the off-balance sheet position are statistically significant in a model explaining total risk, but not significant in a model explaining systematic risk. The impact of the off-balance sheet items on total risk is negative indicating that these items tend to reduce the total risk of these banking firms. Since the results indicate that off-balance sheet risk affects total risk and not systematic risk, off-balance sheet risk is not a concern of welldiversified investors. While the FDIC is concerned with total risk and the probability of failure, the risk-reducing tendencies of the off-balance sheet items indicates that regulatory actions to penalize the activities leading to these positions by requiring additional capital may be inappropriate.

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REFERENCES

- H. P. Beighley, J. H. Boyd, and D. P. Jacobs (1975), "Bank Equities and Investor Risk Perceptions: Some Entailments for Capital Adequacy Regulation," <u>Journal of Bank Research</u>, 6:3 (Autumn), pp. 190-201.
- Barbara Bennett (1986), "Off Balance Sheet Risk in Banking: The Case of Standby Letters of Credit," <u>Economic Review</u>, Federal Reserve Bank of San Francisco (Winter), pp. 19-29.
- E. Brewer, G. Koppenhaver, and D. Wilson (1986), "The Market Perception of Bank Off Balance Sheet Activities," <u>Proceedings of a Conference</u> on Bank Structure and Competition, Federal Reserve Bank of Chicago, pp. 413-436.
- Ian Giddy (1985), "Regulation of Off-Balance Sheet Banking," The Search for Financial Stability: The Past Fifty Years, Federal Reserve Bank of San Francisco, pp. 165-177.
- Michael A. Goldberg and Peter R. Lloyd-Davies (1985), "Standby Letters of Credit: Are Banks Overextending Themselves?" Journal of Bank Research, 16:1 (Spring), pp. 28-39.
- Ali Jahankhani and Morgan J. Lynge, Jr. (1980), "Commercial Bank Financial Policies and their Impact on Market-Determined Risk," Journal of Bank Research, 11:3 (Autumn), pp. 169-178.
- Adi S. Karna and Duane B. Graddy (1982), "Bank Holding Company Leverage and the Return on Stockholders' Equity," <u>Journal of Bank Research</u>, 13:1 (Spring), pp. 42-48.
- G. D. Koppenhaver (1987), "Standby Letters of Credit," Economic Perspectives, Federal Reserve Bank of Chicago, July/August, pp. 28-38.
- R. C. Merton (1977), "An Analytical Derivation of the Cost of Deposit Insurance and Loan Guarantee," Journal of Banking and Finance, 1:1 (June), pp. 3-11.
- Ehud I. Ronn and Avinash K. Verma (1986), "Pricing Risk-Adjusted Deposit Insurance: An Option-Based Model," Journal of Finance, 41:4 (September), pp. 871-895.
- Anthony M. Santomero (1984), "Modeling the Banking Firm," Journal of Money, Credit, and Banking, 16:4 Part 2 (November), pp. 576-602.
- Larry D. Wall and David R. Peterson (1986), "Capital Changes at Large Affiliated Banks," Working Paper 86-4, Federal Reserve Bank of Atlanta.

Benjamin Wolkowitz, et. al. (1982), "Below the Bottom Line," Staff Study #113, Board of Governors of the Federal Reserve System.

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TABLE 1

SCHEDULE RC-L OFF-BALANCE SHEET VARIABLES

		As a %	As a %
Item		of Total	of Total
#	Variable Title	Assets*	Equity*
1	Securities borrowed	0.12%	2.14%
2	Securities lent	0.19%	3.40%
3	Commitments to purchase when-issued securities	0.38%	7.05%
4	Commitments to sell when-issued securities	0.29%	5.20%
5	Notional value of interest rate swaps	8.62%	171.70%
6	Standby letters of credit to U.S. addresses	4.89%	93.44%
7	Standby letters of credit to non U.S. addresses	0.87%	17.02%
8	Standby letters of credit participated to others	0.57%	11.27%
9	Commercial letters of credit	1.15%	21.51%
10	Commitments to purchase foreign currencies	19.17%	385.27%
11	Unused loan commitments	24.10%	454.60%
12	Commitments to purchase futures & forward contr.	2.94%	58.21%
13	Commitments to sell futures & forward contracts	2.27%	44.08%
14	Obligations to purchase under option contracts	0.70%	13.62%
15	Obligations to sell under option contracts	0.35%	6.64%
16	Participations in acceptances conveyed to others	0.40%	7.28%
17	Participations in acceptances acquired from others	0.02%	0.29%
18	Other significant commitments or contingencies	1.54%	29.90%
19	Loans sold or participated to others	2.44%	46.44%

*Average values for 81 bank samples as of year-end 1986.

TABLE 2

VARIABLE MEANS AND STANDARD DEVIATIONS

Variable	Symbol	Mean	Standard Deviation
Systematic Risk	Bjt	0.922	0.3185
Total Risk	Sjt	0.078	0.0169
Financial Leverage	LEV	0.055	0.0128
Growth Rate of Net Income	GROW	0.111	0.0799
Capital Labor Ratio	CAPLAB	1.168	0.3762
Operating Leverage	OPLEV	0.720	2.7572
Standard Deviation of Net Income	SNI	11.194	32.4532
Adjusted Financial Leverage	ALEV	0.042	0.0146
Off-Balance Sheet Group	OB	0.396	0.4040
Commitments	COMM	0.039	0.0668
Participations	PART	0.023	0.0259
Notional Value of Swaps	SWAP	0.041	0.0812
Standby Letter of Credit	SLC	0.044	0.0384
Commercial Letter of Credit	CLC	0.010	0.0088

For a sample of 81 commercial banks and bank holding companies.

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Line #	CONSTANT	LEV	ALEV	08	СОММ	PART	SWAP	SLC	CLC	GROW	CAPLAB	OPLEV	INS	R ¹ 2
1	0.1014 (11.25)	-0.4922 (3.97)								-0.0205 (1.05)	0.0036 (0.96)	-0.0007 (1.38)	0.00021 (4.53)	0.468
2	0.0875 (10.92)		-0.3196 (2.62)							-0.0247 (1.18)	0.0041 (1.01)	-0.0008 (1.40)	0.00022 (4.34)	0.410
ب	0.1127 (11.83)	-0.6399 (4.93)		-0.012 (2.79)						-0.0325 (1.69)	0.0059 (1.59)	-0.0005 (1.08)	0.00023 (5.09)	0.512
4	0.1027 (11.11)	-0.5161 (3.98)			-0.015 (0.66)					-0.0214 (1.09)	0.0043 (1.10)	-0.0007 (1.41)	0.00021 (4.47)	0.464
5	0.1080 (11.55)	-0.5604 (4.47)				-0.120 (2.11)				-0.0273 (1.41)	0.0042 (1.13)	-0.0007 (1.31)	0.00021 (4.54)	0.491
6	0.1049 (11.56)	-0.5587 (4.39)					-0.035 (1.82)			-0.0329 (1.24)	0.0053 (1.38)	-0.0006 (1.23)	0.00022 (4.76)	0.484
7	0.1142 (12.01)	-0.6448 (5.05)						-0.138 (3.06)		-0.0315 (1.67)	0.0058 (1.59)	-0.0006 (1.25)	0.00025 (5.42)	0.521
8	0.1096 (10.98)	-0.5821 (4.41)							-0.344 (1.80)	-0.0312 (1.55)	0.0047 (1.25)	-0.0007 (1.34)	0.00021 (4.52)	0.483
Numb The	ers in par off-balanc	centheses be sheet v	are absol /ariables	lute valu consist	e t-ratio of the fo	8. llowing	ftems fro	om Table	1:					

ESTIMATED COEFFICIENT VALUES FOR EQUATION (1): TOTAL RISK

 $\begin{array}{rcrcrcrcrcr} 0B &=& 3 + 6 + 7 - 8 + 9 + 10 + 11 \\ COMM &=& 12 + 13 + 14 + 15 + 18 \\ PART &=& 8 + 16 + 17 + 19 \\ SVAE &=& 8 + 7 - 8 \\ CLC &=& 9 \end{array}$

TABLE 3

1.360	1.363 (7.30)	1.323 (6.86)	1.357 (7.28)	1.344 (6.66)	1.277 (8.40)	1.383 (7.61)	CONSTANT	
-8.202	-8.080 (3.08)	-7.855 (3.04)	-7.968 (3.05)	-7.965 (2.90)		-8.469 (3.39)	LEV	
					-8.358 (3.60)		ALEV	
				0.041 (0.45)			BO	
			0.319 (0.68)				СОММ	
		1.077 (0.92)					PART	
	0.207 (0.52)						SWAP	
0.242 (0.25)							SLC	
							CLC	
-0.9005 (2.23)	-0.899 (2.26)	-0.858 (2.15)	-0.9004 (2.27)	-0.879 (2.16)	-0.819 (2.06)	-0.919 (2.34)	GROW	
0.0863 (1.10)	0.0804 (1.02)	0.0850(1.11)	0.0755 (0.95)	0.0824 (1.05)	0.0734 (0.96)	0.0901 (1.18)	CAPLAB	
-0.0257 (2.49)	-0.0260 (2.52)	-0.0260 (2.53)	-0.0252 (2.45)	-0.0261 (2.52)	-0.0286 (2.79)	-0.2550 (2.49)	OPLEV	
0.0021 (2.12)	0.0021 (2.21)	0.0022 (2.32)	0.0022 (2.31)	0.0021 (2.18)	0.0019	0.0022 (2.28)	SNI	
0.384	0.386	0.391	0.387	0. 385	0.402	0.392	R ²	

ESTIMATED COEFFICIENT VALUES FOR EQUATION (2): SYSTEMATIC RISK

Line -

-

2

5

S

6

7

-8.202 (3.00)

(6.69)1.360

8

1.350 (6.57)

-8.116

(0.34)1.349

(2.12)

-0.878

0.0859 (1.10)

-0.0256 0.0022

0.385

(2.49)

(2.28)

(2.99)

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Numbers in parentheses are absolute value t-ratios.

The off-balance sheet variables consist of the following items from Table 1:

SUAP SUAP SLC CLC COMM OB = 3 + 6 + 7 - 8 + 9 + 10 + 11 = 12 + 13 + 14 + 15 + 18. . 1 i. 96 3 Ś -+ 7 -16 + 8 17 + 19

TABLE 4

TABLE 5

PEARSON CORRELATION COEFFICIENTS n=81

	LEV	GROW	CAPLAB	OPLEV	SNI	3 jt	Sjt	ALEV	OB	COMM	PART	SWAP	SLC	CLC
	1.00													
I	0.40	1.00												
AB	-0.24	-0.15	1.00											
ZV	-0.11	0.00	-0.02	1.00										
	-0.35	-0.35	0.07	0.14	1.00									
7	-0.51	-0.46	0.24	-0.16	0.40	1.00								
L	-0.56	-0.40	0.22	-0.02	0.56	0.71	1.00							
7	0.91	0.45	-0.28	-0.17	-0.41	-0.54	-0.51	1.00						
	-0.57	-0.43	0.31	0.15	0.35	0.40	0.24	-0.77	1.00					
1	-0.37	-0.21	0.34	-0.02	0.09	0.29	0.18	-0.45	0.51	1.00				
C	-0.36	-0.28	0.16	0.07	0.13	0.29	0.07	-0.47	0.62	0.46	1.00			
?	-0.43	-0.28	0.31	0.12	0.26	0.31	0.18	-0.56	0.78	0.48	0.60	1.00		
	-0.56	-0.42	0.29	0.12	0.44	0.41	0.26	-0.71	0.86	0.43	0.60	0.80	1.00	
	-0.40	-0.44	0.27	0.06	0.21	0.36	0.22	-0.64	0.78	0.41	0.47	0.52	0.61	1.00



