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Leverage and Systemic Expected Shortfall during the Financial Crisis of 2007-2008

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Abstract

The purpose of this study is to identify ex ante whether leverage ratios, based on BCBS definitions, can predict its systemic expected shortfall (SES), extending the empirical results in Acharya et al. (2015). Acharya et al. (2015) considers a market-based measure of leverage and demonstrates that it provides considerable explanatory power for SES. This study considers the role of two alternative measures of leverage: the ratio of risk-weighted assets to Tier 1 capital and assets to equity. While the ratio of assets of equity does not show any predictive ability for SES, the ratio of risk-weighted assets to Tier 1 capital subsumes the explanatory power of the market-based leverage. The adjusted R^2 value in model specifications using risk-weighted assets show considerable improvements indicating that it provides better explanatory power. Overall, the results show that the balance sheet measure of risk-weighted assets to Tier 1 capital is a superior metric for predicting systemic expected shortfall when compared to a market-based approach.

Keywords: Systemic expected shortfall, Risk-weighted assets, Leverage, Financial crisis
JEL Classification: G01; G10; G18; G21

I. Introduction

In the aftermath of the financial crisis of 2007-2008, the Basel Committee on Banking Supervision (BCBS) has shifted focus towards strengthening capital ratios[1] for enhanced prudential standards in financial institutions (BCBS, 2006; BCBS, 2010; BCBS, 2011; BCBS, 2015). Capital is of critical importance to financial systems because it provides a cushion to absorb losses. Former chairman of the Federal Reserve, Ben Bernanke, notes "banking organizations' capital requirements should better reflect their risk profiles, improving the resilience of the U.S. banking system in times of stress, thus contributing to the overall health of the U.S. economy." To ensure that capital ratios are commensurate with risk exposures, assets are weighted according to risk (risk-weighted assets) and equity is measured as the core financial strength from a regulator's perspective (Tier 1 capital). The purpose of constraining leverage can help mitigate risks associated with destabilizing deleveraging processes and invoke safeguards against model risks and measurement error to ensure transparency and quality for the soundness of the banking industry.

The goal of this study is to identify ex ante whether leverage ratios based on BCBS definitions can predict its systemic expected shortfall (henceforth, SES), extending the empirical results in Acharya et al. (2010). Acharya et al. (2010) argue that each financial institution's contribution to overall systemic risk can be measured based on its SES, which is its propensity to be undercapitalized when the system as a whole is undercapitalized. The leading indicators for a firm's SES, implied by their model, include a bank's marginal expected shortfall and leverage.

[1] In the BCBS context, capital ratios are considered equity divided by assets. In the context of this study, the leverage ratio is simply the inverse function – assets divided by equity (for consistency with Acharya et al., 2010).

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In Acharya et al. (2010), the approximation for leverage involves a market-based measure, defined as the ratio of the quasi-market value of assets (LVG) to market value of equity. The authors show that these two indicators have predictive ability for proxies of systemic expected shortfall. While the market-based measure of leverage may be considered the market's perception of leverage, it may differ from financial statement ratios identified from risk-weighted assets and Tier 1 capital. Thus, this study strives to examine the relative degree of predictability from associated from the market-based leverage ratio and alternative leverage ratio definitions.

First, I confirm the main results in Acharya et al. (2010). I find that MES and the quasi-market leverage ratio provide a statistically significant role in explaining cross-sectional returns, after controlling for traditional measures such as expected shortfall, volatility, beta, and firm size. Next, I examine the role two alternative measures of leverage: risk-weighted assets to Tier 1 capital (RW) and assets to equity (A2E). I find that A2E does not have any predictive power for systemic shortfall. However, the ratio of risk-weighted assets to Tier 1 capital provides considerable explanatory power for SES. In fact, when RW is estimated simultaneously with the quasi-market leverage ratio, it subsumes the explanatory power of LVG. The adjusted R^2 value in a specification of MES with LVG is 7.2% while the adjusted R^2 value in a model specification of MES and RW is 10.9%, suggesting that RW provides better explanatory fit for the model. Overall, the results show that the balance sheet measure of risk-weighted assets to Tier 1 capital is a superior metric for predicting systemic expected shortfall when compared to a market-based approach.

The results in this study have important regulatory implications. Acharya et al. (2010, pp. 15) suggests that a regulator should, "use any variable that can predict capital shortfalls in a crisis." Additionally, they hint that deposits may be considered relatively safe-havens in terms of financing (due to federal insurance) while alternative forms debt, such as repos and commercial paper are considered risk (Acharya et al., 2010, pp. 29). This notion is directly related to the results in this study as risk-weighted assets considers and accounts for the underlying collateral used in these transactions. This paper also relates to a large body of literature on banks' systemic risk. Bisias, Flood, Lo, and Valavanis (2012) provide a comprehensive survey of this literature. Huang, Zhou, and Zhu (2012) adopt a systemic risk indicator based on credit default swaps. Allen, Bali, and Tang (2012) examine CATFIN and show that it has predictive ability for economic downturns six months into the future. Adrian and Brunnermeier (2011) outline a proposed measure for systemic risk, ΔCoVaR, which captures the marginal contribution of an individual bank to overall systemic risk. This study primarily examines the empirical construct of the SES proposed by Acharya et al. (2010), although the results of the ratio of risk-weighted assets to Tier 1 capital may be extended to other areas.

The remainder of the paper is organized as follows. Section II discusses the model framework for systemic expected shortfall. Section III describes the data and variables. Empirical results are presented in Section IV. Section V concludes.

II. Framework for SES

To examine the implementation of SES, I describe its construct in this section. Let e_1^i be firm i's equity capital at time 1. The firm's expected shortfall in default is then:

$$ES^i = E[e_1^i | e_1^i \leq 0]$$

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Firm i's SES is the amount of equity capital falling below the target threshold. This level is considered the fraction (k^i) of total assets (a^i), conditional on a systemic crisis when aggregate capital $S_1$is less than k times the aggregate assets (A) at time 1:

$$SES^i = E[e_1^i - k^i a^i | E_1 \leq kA]$$

where $E_1 = \sum_{j=1}^{N} e_1^j$ and $A = \sum_{j=1}^{N} a^j$ for N firms in the financial system. SES^i is scaled by firm i's initial equity capital and the financial system's equity capital is also scaled by initial equity capital to control for firm size:

$$\frac{SES^i}{e_0^i} = E[\frac{e_1^i}{e_0^i} - k^i \frac{a^i}{e_0^i} | \frac{E_1}{E_0} \leq k \frac{A}{E_0}]$$

The percentage return measure of SES is then estimated as:

$$SES^i(\%) = E[r^i - (k^i)(l^i) | R \leq (k)(L)]$$

where $r^i = \frac{e_1^i}{e_0^i}$ is the stock return of firm i, $l^i = \frac{a^i}{e_0^i}$ is the leverage of firm i, $R = \frac{E_1}{E_0}$ is the return of the entire system, and $L = \frac{A}{E_0}$ is the aggregate leverage of the entire system. Acharya et al. (2010) proposes that, given there is no knowledge of a firm's threshold capital (k^i), the *realized* systemic expected shortfall of financial institutions may be used during the crisis (from July of 2007 to December of 2008). SES is the expected amount a firm is undercapitalized conditional on the entire system being undercapitalized. This study follows this definition accordingly.

III. Data and Variables

Balance sheet and income statement data are obtained from the Consolidated Financial Statements for BHCs in the FR Y-9C reports. Firms with zero or missing asset values are dropped. Daily stock returns and market returns are obtained from the Center for Research in Security Prices (CRSP). A CRSP-FRB link provided by the Federal Reserve Bank of New York is utilized to match entity numbers in the FR Y-9C to PERMCO numbers in CRSP. The final sample consists of 322 BHCs

Acharya et al. (2010) show that the leading indicators to predict SES include the marginal expected shortfall (MES) and leverage (LVG). In essence, true systemic events are extreme tail events (which occur once a decade), while normal tail events (which occur once a year) are considered moderately bad days. Thus, MES is a financial institution's losses in the tail of the aggregate industry's loss distribution and is measured during "normal" tail events. These events are defined as the 5% of the worst days in the market, denoted as $I_{5\%}$. MES is calculated (from July 1, 2006 through June 30, 2007) as:

$$MES_{5\%}^i \equiv -E[\frac{e_1^i}{e_0^i} - 1 \mid I_{5\%}] = \frac{1}{\#\text{ days}} \sum_{\text{t: system is in its 5\% tail}} R_t^i$$

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The variable LVG is an approximation (on June 30, 2007) using a market-based measure of leverage:

$$LVG^i = \frac{\text{quasi–market value of assets}}{\text{market value of equity}} = \frac{\text{book liabilities + market equity}}{\text{market equity}}$$

The main variables of interest in this study are two alternative measures of leverage: the ratio of risk-weighted assets to Tier 1 capital (RW) and the ratio of assets to equity (A2E). Risk-weighted assets have been studied extensively in the literature (Shrives and Dahl, 1992). Berger, Kick, and Schaeck (2014) examine the ratio of risk-weighted assets to total assets as an ex-ante measure for portfolio risk. Berger note that this ratio appropriately weights activities according to their credit risk to allow inferences about the soundness of a bank and it is more likely to reflect changes in portfolio risk without time lags. Tier 1 capital is also examined by numerous studies. Demiguc-Kunt, Detragiache, and Merrouche (2013) show that ratio of Tier 1 capital to total common equity is a more relevant measure for firm performance during the crisis than alternative equity ratios. Finally, A2E is a measure of total book assets to total book equity. RW and A2E are measured on June 30, 2007.

A number of control variables are employed, similar to those used in Acharya et al. (2010). These include the expected shortfall (ES), stock volatility (Vol), systematic risk (Beta), and firm size (Asset). ES is the negative of the firm's average stock return in its own 5% left tail. Vol is the standard deviation of a firm's daily returns. This variable is approximated as the square root of the sum of squared daily log returns. Beta is the estimate of the coefficient from a regression of a firm's daily stock returns on the value-weighted portfolio (from CRSP). ES, Vol, and Beta are measured from July 1, 2006 through June 30, 2007. Assets are the natural logarithm of total book assets measured on June 30, 2007.

IV. Empirical Results

Table 1 reports the summary statistics for the variables used in this study. SES, proxied as the ex post return from 2007Q3 through 2008Q4, is -42.61% on average which is comparable to -46% found in Acharya et al. (2010). On average, a firm's return in its own left tail is 3.14% while the firm's return in the market's left tail is 1.24%. Again, these are comparable to Acharya et al. (2010), which find that ES is 2.73% and MES is 1.63%. The volatility of returns averages 22.79% and beta is 1.00. The natural log of assets is 14.80 on average which is considerably larger than that in Acharya et al. (2010). They report a mean value of 10.84. This difference is attributed to the different dataset used. Acharya et al. (2010) considers financial from Compustat/CRSP while this study uses bank holding companies from FR Y-9C, which are typically the larger, parent companies for banks. It should be noted that Acharya et al. (2010) primarily focus their study on 102 banks while this study considers a broader set of BHCs. The average asset size for banks in this study is a little over $30 billion. Turning to the main variables of interest in this study, I find that LVG is 7.45 while Acharya et al. (2010) finds an average LVG of 5.25. Again, I attribute these differences to the sample sets used in the studies. Finally, RW averages 9.15 and A2E averages 11.16.

Table 2 provides the correlation matrix for these variables. Vol and ES are found to be highly correlated (0.96). Thus, in the multivariate regression tests, I do not include a specification with both Vol and ES. It is found that Beta and MES are highly correlated (0.90). Additionally, Beta

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is also found to be highly correlated with ES (0.71) and Vol (0.64). Thus, I consider Beta separately when conducting analysis in further tests.

Table 3 conducts the main cross-sectional regression tests in this study. In their empirical results, Acharya et al. (2010) show that MES and LVG do a reasonably good job at explaining realized SES. Columns (1) and (2) examine MES and LVG and find that they are statistically significant, higher marginal expected shortfall and market-based leverage is associated with lower cumulative returns during the crisis of 2007-2008. These results are generally consistent with Acharya et al. (2010). However, while the adjusted R^2 in column (1) is similar in magnitude for MES, the adjusted R^2 in column (2) is much lower than Acharya et al. (2010). Acharya et al. (2010) finds an adjusted R^2 of 27.3% in a specification with MES and LVG while I find an adjusted R^2 of 7.2%. Column (3) documents the results of the risk-weighted leverage ratio instead of the market-based leverage ratio. It is clear that the incremental improvement of the adjusted R^2 is greater using RW rather than LVG. Adjusted R^2 increases from 6.1% to 7.2% from column (1) to column (2) while the adjusted R^2 increases from 6.1% to 10.9% from column (1) to column (3). Additionally, the economic magnitude is greater for the risk-weighted leverage ratio. A one standard deviation increase in LVG is associated with a decrease in SES of 5.24% while a one standard deviation increase in RW is associated with a decrease in SES of 7.60%. Column (4) does not find that A2E is significantly associated with SES. I examine a specification with both LVG and RW because they exhibit low correlation (from Table 2). In column (5), it is clear that RW subsumes the ability for LVG to predict shortfalls during the crisis. Columns (6) and (7) consider additional control variables and this effect holds in these models. Overall the results show that MES and RW are provide significant predictive ability for SES, over and beyond that of MES and LVG suggested by Acharya et al. (2010).

Table 4 conducts the same tests as those in Table 3 for a subset of BHCs with over $1 billion market capitalization as of the end of 2007Q2. The results here are even more striking. MES is no longer found to be a significant predictor of SES. The adjusted R^2 is -2.1% in column (1). However, column (3) shows that the ability for risk-weighted assets to Tier 1 capital vastly improves the adjusted R^2 to 18.9%. Columns (5), (6), and (7) all show that RW is the only factor which contains predictive ability for a firm's cumulative losses during the financial crisis.

Table 5 provides risk rankings and statistics for individual BHCs with over $1 billion in market capitalization as of June 30, 2007. This table is sorted by the RW ratio. The first column reports the BHC name from FR Y 9C. The second column reports the systemic expected shortfall (%) for this sub-sample. National City Corp has the largest loss of 94.69% and also the highest RW ratio of 15.24. The second largest SES is from Colonial Bancgroup, Inc. which had an SES of 91.82% and a RW ratio of 10.94. The third column reports the average day-to-day loss in market capitalization during days in which the market return was in its 5% left tail in the period before the crisis (July 1, 2006 to June 30, 2007). This variable is generally skewed towards larger banks in the sample. The sixth column reports the ranking of firms based on the fitted values of SES on MES and RW based on all 322 BHCs in the sample. This is considered the "predictive" ability of the model with MES and RW to predict a firm's SES. The last two columns include BVA and MVE. BVA is the value of book assets and MVE is the market value of equity at June 30, 2007.

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V. Conclusion

This study provides an examination of ex ante leverage ratios and their predictive ability of banks systemic expected shortfalls, based on the theoretical constructs in Acharya et al. (2010). The call for regulatory reforms to ensure that banks hold enough quality capital which are commensurate with their risk exposures has led to the utilization of risk-weighted assets and Tier 1 capital. On the other hand, Acharya et al. (2010) considers only a quasi-market leverage ratio which is largely based on market perceptions of leverage. This study finds that a risk-weighted measure based on balance sheet measures is far superior in predicting a bank's capital shortfall during the systemic event in 2007-2008. I consider an alternative leverage ratio - the ratio of total assets to total equity. This balance sheet measure does not have any explanatory power for SES. When considering a sub-sample of the largest BHCs in the sample, the risk-weighted measure exhibits even greater predictability while all measures and control variables are no longer significant. Overall, the results show that the balance sheet measure of risk-weighted assets to Tier 1 capital is a superior metric for predicting systemic expected shortfall when compared to a market-based approach.

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Table 1: Summary statistics

	Mean	Median	Std. dev.	Min	Max
SES	-42.61%	-46.42%	33.63%	-99.32%	61.81%
MES	1.24%	1.23%	0.99%	-0.87%	4.11%
ES	3.14%	3.10%	0.88%	1.26%	6.53%
Vol	22.79%	22.84%	6.36%	8.84%	43.47%
Beta	1.00	0.93	0.41	0.31	2.24
Asset	14.80	14.43	1.54	12.37	21.52
LVG	7.45	7.03	2.62	1.07	19.63
RW	9.15	9.30	1.90	1.12	17.10
A2E	11.16	10.89	2.62	1.33	19.02

This table provides the summary statistics for 322 BHCs. SES is the realized shortfall from July 2007 through December 2008. MES is shortfall conditional on the market return in its 5% left tail. ES is the shortfall conditional the stock return in its 5% left tail. Vol is the standard deviation of daily stock returns. Beta is the estimate of the coefficient in a regression of a firm's daily stock return on the market's daily return. MES, ES, Vol, and Beta are measured from July 1, 2006 through June 30, 2007. Asset is the natural logarithm of total book assets. LVG is the book value of liabilities plus the market value of equity all divided by the market value of equity. RW is the ratio of risk-weighted assets divided by Tier 1 capital. A2E is assets divided by equity. Assets, LVG, RW, and A2E are measured on June 30, 2007.

Table 2: Correlation matrix

	SES	MES	ES	Vol	Beta	Asset	LVG	RW	A2E
SES	1.00								
MES	0.25	1.00							
ES	0.04	0.47	1.00						
Vol	0.07	0.49	0.96	1.00					
Beta	-0.24	0.90	0.71	0.64	1.00				
Asset	0.02	0.34	-0.34	-0.35	-0.02	1.00			
LVG	-0.18	-0.25	0.06	0.03	0.10	-0.14	1.00		
RW	-0.22	0.02	-0.18	-0.20	-0.14	0.39	0.15	1.00	
A2E	-0.02	-0.13	0.05	0.03	-0.06	-0.08	0.61	0.35	1.00

This table reports the Pearson correlations for all variables. Variable definitions are described in Table 1.

Table 3: Determinants of SES (full sample)

	SES	SES	SES	SES	SES	SES	SES
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MES	-0.09***	-0.08***	-0.09***	-0.09***	-0.08***	-0.12***	-0.13***
	(-4.67)	(-4.02)	(-4.89)	(-4.65)	(-4.35)	(-4.52)	(-4.87)
LVG		-0.02**			-0.01	-0.01	-0.01
		(-2.18)			(-1.57)	(-1.10)	(-0.94)
RW			-0.04***		-0.04***	-0.04***	-0.04***
			(-4.27)		(-3.98)	(-3.76)	(-3.71)
A2E				0.00			

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				(0.16)			
Vol						-0.95**	
						(-2.29)	
Asset						-0.02	-0.02
						(-1.18)	(-1.39)
ES							-0.08***
							(-2.76)
Observations	322	322	322	322	322	322	322
Adjusted R-squared	0.061	0.072	0.109	0.058	0.113	0.122	0.128

This table reports the cross-sectional regressions of determinants of realized SES (cumulative stock returns during the crisis from 2007Q3 to 2008Q4). Variable definitions are described in Table 1. T-statistics are reported in the parenthesis. (***), (**), and (*) indicate significance at the 1%, 5%, and 10% two-tailed levels.

Table 4: Determinants of SES (large banks)

VARIABLES	SES (1)	SES (2)	SES (3)	SES (4)	SES (5)	SES (6)	SES (7)
MES	-0.01	-0.02	-0.07	-0.01	-0.08	-0.03	-0.03
	(-0.09)	(-0.18)	(-0.73)	(-0.07)	(-0.78)	(-0.24)	(-0.23)
LVG		-0.01			0.00	0.01	0.01
		(-0.54)			(0.33)	(0.60)	(0.86)
RW			-0.05***		-0.06***	-0.05***	-0.06***
			(-3.67)		(-3.60)	(-2.80)	(-3.08)
A2E				-0.01			
				(-0.67)			
Vol						-0.81	
						(-0.63)	
Asset						-0.02	-0.02
						(-0.74)	(-0.90)
ES							-0.14
							(-1.49)
Observations	50	50	50	50	50	50	50
Adjusted R-squared	-0.021	-0.036	0.189	-0.033	0.174	0.151	0.185

This table reports the cross-sectional regressions of determinants of realized SES (cumulative stock returns during the crisis from 2007Q3 to 2008Q4) for large banks with over $1 billion market capitalization on June 30, 2007. Variable definitions are described in Table 1. T-statistics are reported in the parenthesis. (***), (**), and (*) indicate significance at the 1%, 5%, and 10% two-tailed levels.

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Table 5: Statistics for Individual BHCs

Company Name	SES (%)	Ave. Loss ($m.)	RW	MES	Fitted	BVA ($b.)	MVE ($b.)
National City Corporation	-94.69	-314.54	15.24	1.33%	1	141	19
M&T Bank Corporation	-47.11	-172.77	13.48	1.34%	4	58	12
Wachovia Corporation	-89.41	-1367.20	13.39	1.34%	5	720	98
Suntrust Banks, Inc.	-66.08	-330.83	13.35	1.02%	2	180	31
Zions Bancorporation	-68.52	-91.61	12.78	1.02%	3	49	8
Comerica Incorporated	-67.40	-111.45	12.71	1.05%	6	59	9
Citigroup Inc.	-87.01	-4069.40	12.64	1.61%	14	2220	254
Wilmington Trust Corporation	-46.96	-32.97	12.52	1.13%	7	11	3
Regions Financial Corporation	-76.51	-338.08	12.52	1.42%	13	138	23
Fifth Third Bancorp	-79.54	-280.13	12.30	1.25%	10	101	21
Keycorp	-75.72	-176.02	12.29	1.12%	9	94	14
Pnc Financial Services Group, Inc.	-33.01	-287.51	12.11	1.21%	12	126	25
Jpmorgan Chase & co.	-35.85	-2979.08	11.94	1.77%	22	1460	166
Tcf Financial Corporation	-51.23	-44.70	11.91	1.27%	15	15	4
U.S. Bancorp	-24.65	-490.32	11.75	0.80%	8	223	57
Bank of America Corporation	-71.45	-3048.50	11.74	1.33%	18	1540	217
Wells Fargo & Company	-16.98	-1443.70	11.67	1.21%	16	540	118
First horizon National Corp	-73.03	-76.77	11.52	1.48%	21	38	5
Associated Banc-Corp	-36.27	-48.78	11.14	1.14%	19	21	4
Citizens Republic Bancorp, Inc.	-84.03	-23.86	11.00	1.71%	30	13	1
Bok Financial Corporation	-25.07	-24.37	10.96	0.68%	11	19	4
Colonial Bancgroup, Inc., the	-91.82	-51.07	10.94	1.31%	23	24	4
East West Bancorp, Inc.	-58.94	-18.17	10.64	0.76%	17	11	2
Bb&t Corporation	-33.70	-318.26	10.60	1.31%	25	128	22
Metlife, Inc.	-46.84	-729.33	10.54	1.55%	33	553	48
Sterling Financial Corporation	-69.55	-28.33	10.36	1.96%	41	12	1
Huntington Bancshares Inc.	-66.09	-70.63	10.27	1.21%	26	36	5
Webster Financial Corporation	-67.86	-36.83	10.25	1.39%	32	17	2
Fulton Financial Corporation	-33.33	-29.86	10.22	1.10%	24	15	2
City National Corporation	-36.67	-31.15	10.19	0.87%	20	16	4
Umpqua Holdings Corporation	-38.50	-36.48	10.16	2.32%	184	8	1
Northern Trust Corporation	-19.50	-192.64	9.95	1.42%	36	60	14
South Financial Group, Inc., the	-81.06	-21.15	9.87	1.04%	27	14	2
Cullen/Frost Bankers, Inc.	-5.78	-39.94	9.86	1.20%	31	13	3
Whitney Holding Corporation	-46.18	-23.98	9.64	1.06%	29	11	2
Commerce Bancshares, Inc.	-3.62	-32.09	9.39	0.91%	28	16	3
Popular, inc.	-67.89	-77.03	9.38	1.51%	40	47	4
Capital One Financial Corporation	-59.50	-351.72	9.20	1.16%	37	146	33
Bancorpsouth, Inc.	-5.77	-32.83	9.13	1.53%	45	13	2
Synovus Financial Corp.	-73.29	-131.44	8.91	1.30%	42	33	10
State Street Corporation	-42.75	-413.53	8.71	1.91%	46	112	23
First Bancorp	1.00	-17.05	8.18	1.83%	47	18	1
Prosperity Bancshares, Inc.	-10.79	-23.02	8.09	1.72%	204	6	1
First Community Bancorp	-53.19	-17.33	7.96	1.10%	163	5	2
New York Community Bancorp, Inc.	-30.91	-42.87	7.80	0.81%	43	30	5
First Citizens Bancshares, Inc.	-21.55	-8.61	7.66	0.48%	38	16	2
Provident financial services, Inc.	-3.83	-19.84	7.25	1.74%	228	6	1
Charles Schwab Corporation, the	-26.50	-465.94	6.58	2.00%	49	49	26
Newalliance Bancshares, Inc.	-12.49	-27.27	5.09	1.55%	258	8	2
Franklin Resources, Inc.	-52.42	-511.46	1.12	1.68%	272	9	33

This table reports individual banks which have over $1 billion in assets as of June 30, 2007. SES is the realized shortfall from July 2007 through December 2008. Ave. Loss is the average day-to-day loss in market capitalization during days in which the market return was in its 5% left tail. RW is the ratio of risk-weighted assets to Tier 1 capital. MES is shortfall conditional on the market return in its 5% left tail. Fitted is the ranking of firms based on the fitted values of SES on MES and RW based on all 322 BHCs in the sample. BVA is the value of book assets and MVE is the market value of equity at June 30, 2007.

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