UBS

Education Note

Understanding Bank Capital

Lead analyst
UBS Financial Services, Inc.
Dean Ungar, CFA

Asset Class: Equity

At a glance

This education note explains different capital measures used by regulators and analysts to assess the capital adequacy of US banking organizations.

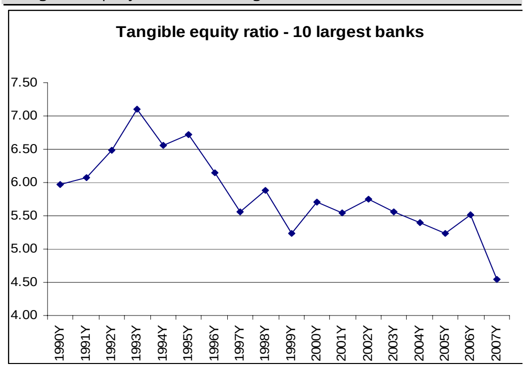
Capital adequacy moves onto the radar screen

Large write-downs of securities backed by subprime mortgages along with increasing loan losses resulted in losses or minimal earnings per share at a number of US banks in 2007. Overall, earnings for the sector were down approximately 25% during the year. And stormy days are far from over. The outlook for 2008 includes further increases in loan losses and additional credit costs as banks need to augment loan loss reserve levels.

The pressure on bank earnings has had an adverse effect on bank capital levels. The average Tier 1 capital ratio (Tier 1 capital/risk-weighted assets) for US banks with market capitalization (cap) of USD 1 billion or more declined from 11.2% as of 31 December, 2006 to 10.8% as of 31 December, 2007. For the top 10 largest banks, the Tier 1 ratio declined from 9.1% to 8.0% over the same period. Despite the decline, these ratios are well above the 6.0% level that regulators consider well-capitalized. In fact, as of year-end 2007, there was no bank with market cap of USD 1 billion or more with a Tier 1 ratio below 6.5%.

Chart 1

Tangible equity ratio – 10 largest banks



Source: SNL Financial, UBS WMR

However, Tier 1 capital, which is a regulatory measure of capital, is not the only capital measure used by analysts. Another important measure is the tangible equity ratio, which measures the ratio of tangible equity to tangible assets (assets and equity less goodwill and core-deposit intangibles). According to this measure, bank capital ratios for all banks with market cap of USD 1 billion or more have declined modestly from 7.23% to 7.18%, but the 10 largest banks declined from 5.52% to 4.54% at year-end 2007.

Past performance is no indication of future performance. The market prices provided are closing prices on the respective principle stock exchange. This applies to all performance charts and tables in this publication.

While there is no definitive guideline for a minimum tangible equity ratio, the decline in capital ratios at the largest banks raised the question of whether or not there were sufficient levels of capital at those institutions. It is undeniable that capital ratios have been declining over time, especially at the largest banks as shown in Charts 1 and 2. Indeed, several banks have taken steps to bolster their capital levels. These steps included the following: issuing preferred and trust-preferred securities; finding strategic investors such as sovereign wealth funds; cutting dividends; and selling assets.

Explaining Capital Measures

Given the trends in capital levels and concerns about whether these levels are sufficient, particularly at the largest banks, this is a good time to review the composition of the most commonly cited measures.

The most commonly used measures of capital adequacy, include the following:

- Tier 1 capital/risk-weighted assets
- Total regulatory capital/risk-weighted assets
- Tier 1 leverage ratio
- Tangible equity/tangible assets (tangible equity ratio)

Aside from tangible equity ratio, the other three measures are mandated by the regulators. The Tier 1 and Total capital ratios are risk-weighted measures, which we will define below. The Tier 1 leverage and tangible equity ratios are leverage measures. Our objective is to explain the different capital measures to enhance your understanding of bank capital, of the factors that impact bank capital and the information conveyed by changes in the levels and trends in bank capital ratios.

We will also discuss the imminent adoption of the Basle II capital rules for large, complex banking institutions, and the regulator's minimum capital guidelines and prompt corrective action requirements for undercapitalized banking organizations.

Role of capital
The primary function of capital, as described by the US regulators in the Bank Examination manual is "to support the bank's operations, act as a cushion to absorb unanticipated losses and declines in asset values that could otherwise cause a bank to fail, and provide protection to uninsured depositors and debt holders in the event of liquidation." Adequate and steady levels of capital promote public confidence in the banking system.

Risk-based capital
The Tier 1 and Total capital are risk-weighted measures. These measures were first adopted by US regulators in 1988 pursuant to the Basle I accord, which embodied an agreement by a number of regulators representing key countries to establish common, though not necessarily identical, international guidelines. The purpose of risk-based capital was to better reflect differences in the credit-risk profile among banks and to factor in off-balance sheet exposures into the assessment of capital adequacy. One objective of risk-based capital was to encourage banks to hold less risky assets by giving those assets more favorable capital treatment.

While it is not practical in this type of exercise to go through all the details of the risk-weighting process, the basics are straightforward. Under the current guidelines, balance sheet assets fall into one of four risk-weighing buckets: 0%, 20%, 50% and 100%. For example, cash is a 0% risk-weighted asset; it will always be 0 and never require any capital to be set aside. Conversely, an unsecured loan would get a 100% risk-weighting. In this case, the total amount of the loan would require a Tier 1 and Total capital charge at a minimum of 4% and 8%, respectively.

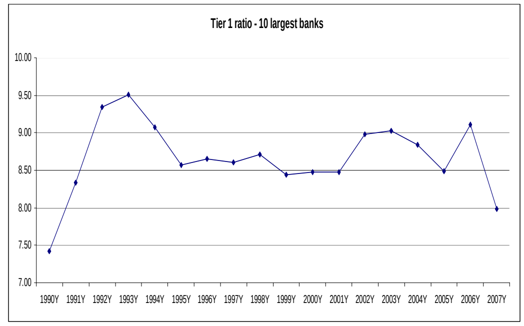
A representative breakdown of assets by regulator-determined risk weightings is listed below.

<u>0% risk-weighted assets</u>

- Cash
- All direct claims (including securities, loans and leases) that are directly and unconditionally guaranteed by the central governments of the Organization of Economic Cooperation and Development (OECD), which basically consists of 30 industrialized countries in Europe, North America and Asia.
- Claims unconditionally guaranteed by the US government of US government agencies. Ginnie Mae is a US government agency, but Fannie Mae and Freddie Mac are not.
- Local currency unconditional claims of non-OECD countries (with

Chart 2

Tier 1 risk-based capital ratio – 10 largest banks



Source: SNL Financial, UBS WMR

Chart 3

Regulatory capital adequacy thresholds

	Total risk-based	Tier 1 risk-based	Tier 1 leverage
Well capitalized	10% or more and	6% or more and	5% or more
Adequately capitalized	8% or more and	4% or more and	4% or more
Undercapitalized	Less than 8% or	Less than 4% or	Less than 4%
Significantly undercapitalized	Less than 6% or	Less than 3% or	Less than 3%
Critically undercapitalized	A tangible equity ratio of 2% or less.		

Source: Federal Reserve

Source: UBS WMR, as of 31 October 2007

some limitations).

<u>20% risk-weighted assets</u>

- Cash items in the process of collection
- Short-term claims on or guaranteed by US or foreign banks.
- Long-term claims on or guaranteed by US or OECD banks
- Claims conditionally guaranteed by the OECD, US or US agencies.
- Local currency conditional claims of non-OECD banks.
- Claims on or guaranteed by US government-sponsored agencies (mainly Fannie Mae and Freddie Mac).
- Claim guaranteed by the World Bank and other international development banks.
- Claims on certain qualifying broker-dealers, provided that it has one of the top three highest credit ratings from a recognized rating agency.

<u>50% risk-weighted assets</u>

- Residential and multi-family mortgages that were made in accordance with prudent underwriting standards are performing in accordance with their original terms and are not 90 days or more past due or in non-accrual status, and meet several other conditions.
- Privately issued mortgage-backed securities, subject to certain conditions.
- Municipal revenue bonds.

<u>100% risk-weighted assets</u>

- All assets not assigned to the above categories are included here. This includes the majority of loans.

In addition to the risk-weighting of assets, off-balance sheet obligations are also included in the risk-weighting process. First, an on-balance sheet credit equivalent amount is calculated. This is accomplished by applying a conversion factor 0%, 10%, 20%, 50% or 100% to the face amount of the off-balance sheet obligation. Then, the resulting on-balance sheet equivalent is assigned a credit risk weighting as above, depending on the obligor, guarantor, collateral or external credit ratings.

Basle II accord

The Basle I methodology, with its standard risk-weighting methodology, had increasingly come to be viewed as neither nimble nor precise enough in assessing credit risk. In November 2007, the US regulators approved final rules to implement the Basle II accord, which applies to institutions with USD 250 billion or more in assets or USD 10 billion in foreign exposure. Under Basle II, only the method of calculating risk-weighted assets will change. The components of Tier 1 capital, discussed below, will not change.

Therefore, beginning April 1, 2008, these institutions will be required to use internal systems to determine both credit-risk weightings and operational risk. These banking organizations will conduct parallel runs, subject to review by the regulators, for at least one year. Upon receiving regulatory approval, the banks will complete three transitional periods. During these periods, the banks will be subject to floors, limiting the permissible reduction in Tier 1 capital. Also, the regulatory framework will maintain the existing Tier 1 leverage ratio and prompt corrective action framework, both of which are discussed below.

Banking organizations that are not required to adopt the Basle II standards will continue to operate under the existing standard. The regulatory agencies do intend to issue a proposed rule that would provide an option for non-required banks to adopt an updated standardized approach under the Basle II program.

Tier 1 Capital
Minimum requirement: 4% of risk-weighted assets

Risk-weighted assets represent the denominator of the Tier 1 capital ratio. The numerator is Tier 1 capital, which the regulators also refer to as "core capital elements." To qualify as Tier 1 capital, the item must be fully paid up, unsecured and subordinated to all senior indebtedness. The following are the components of Tier 1 capital:

<u>Non-restricted Tier 1 capital elements</u>

- Common stockholder's equity, net of treasury stock, including:
    - Common stock and related surplus
    - Retained earnings
    - Cumulative effect of foreign currency translation.
- Non-cumulative perpetual preferred stock (including related surplus) with no maturity date
- Minority interests related to common equity or non-cumulative perpetual preferred stock
- Less goodwill, other intangible assets and some other items
- Less net unrealized gains on equity securities and net unrealized gains (losses) on available-for-sale debt securities.

<u>Restricted Tier 1 capital elements</u> (restricted to 25% of total Tier 1 capital)

- Cumulative perpetual preferred stock
- Minority interest-related to cumulative perpetual preferred stock
- Minority interest-related common equity or perpetual preferred stock issued by a consolidated subsidiary that is neither a US depository institution nor a foreign bank.
- Trust-preferred securities.

Total Capital
Minimum requirement: 8% of risk-weighted assets

Total capital consists of Tier 1 capital plus the following items, which are called Tier 2 capital:

- Loan loss reserves up to 1.25% of risk-weighted assets
- Perpetual preferred stock with an original term of 20 years or more (including related surplus)
- Hybrid capital instruments, perpetual debt and mandatory convertible debt
- Term-subordinated debt and intermediate-term preferred stock (and related surplus), limited to 50% of Tier 1 capital, net of goodwill and other intangibles
- Limited unrealized holding gains on equity securities (up to 45% of the unrealized gain)

Tier 1 leverage ratio
Minimum requirement: generally 3% of adjusted average consolidated assets

With the risk-based guidelines, the regulators are attempting to relate the appropriate level of capital mainly to the amount of credit risk incurred by the organization. The Tier 1 leverage ratio was instituted at the same time to complement the risk-based measures. The purpose of the Tier 1 leverage ratio requirement is to put a constraint on the degree to which a banking organization can leverage its equity base.

For this ratio, Tier 1 capital is the same as defined above. The denominator is average total consolidated assets, less goodwill and several other adjustments.

Tangible equity ratio
Minimum requirement: None officially (not a regulatory measure)

While the regulatory ratios are of great value to investors, they are difficult to calculate without access to all the numerous adjustments. By contrast, the tangible equity ratio is easy to calculate and estimate. The numerator is comprised of total equity less goodwill and core deposit intangibles, while the denominator is total assets less goodwill and core deposit intangibles.

This ratio, like Tier 1 leverage, measures the degree of leverage the organization is incurring. The tangible equity ratio tends to be lower than the other measures, making it a useful substitute.

Prompt corrective action
In 1992, pursuant to the FDIC Improvement Act of 1991 ("FDICIA"), the regulators established five categories of capital adequacy (as outlined in Chart 3).

Any banking organization that is undercapitalized or worse is subject to a variety of regulatory actions. These include the requirement to submit a capital restoration plan to the regulators, closer supervision and restrictions on capital distributions and asset growth, among other things. Prompt corrective action proceedings have been rare in recent years, especially among the larger banks.

Appendix 1

Tier 1, total capital, total equity, tangible equity for banks covered by WMR (as of December 31, 2007)

Company Name	Ticker	Tier 1 Capital ($000)	Total Risk Based Capital ($000)	Total Equity ($000)	Tangible Equity ($000)
Bank of America Corporation	BAC	83,264,703	133,627,320	146,803,000	64,034,000
JPMorgan Chase & Co.	JPM	88,746,000	132,242,000	123,221,000	74,155,000
Citigroup Inc.	C	89,226,000	134,121,000	113,598,000	62,541,000
Wells Fargo & Company	WFC	36,674,000	51,638,000	47,628,000	33,805,000
US Bancorp	USB	17,539,000	25,925,000	21,046,000	11,818,000
Wachovia Corporation	WB	43,528,000	70,003,000	76,872,000	31,631,000
SunTrust Banks, Inc.	STI	11,424,866	16,994,112	18,052,518	10,817,455
BB&T Corporation	BBT	9,084,497	14,232,933	12,632,000	6,949,000
Washington Mutual, Inc.	WM	NA	NA	24,584,000	16,909,000
M&T Bank Corporation	MTB	3,831,402	6,263,301	6,485,256	3,040,267
Hudson City Bancorp, Inc.	HCBK	3,991,206	4,021,831	4,611,307	4,448,974
New York Community Bancorp, Inc.	NYB	2,321,764	2,414,558	4,182,313	1,633,572
Zions Bancorporation	ZION	3,596,234	5,547,973	5,292,800	3,133,794
Countrywide Financial Corporation	CFC	15,362,994	17,031,228	14,655,871	14,270,595
Cullen/Frost Bankers, Inc.	CFR	1,070,786	1,353,125	1,477,088	918,714
Bank of Hawaii Corporation	BOH	734,461	848,217	750,255	715,296
East West Bancorp, Inc.	EWBC	992,507	1,167,299	1,171,823	807,998
Signature Bank	SBNY	443,485	461,721	425,756	425,756
Dime Community Bancshares, Inc.	DCOM	277,621	277,721	268,852	213,214
Bank of the Ozarks, Inc.	OZRK	263,043	282,600	190,829	184,952

Source: SNL Financial, company reports

Appendix 2

Risk-weighted assets, total assets, tangible assets for banks covered by WMR (as of December 31, 2007)

Company Name	Ticker	Risk Weighted Assets ($000)	Total Assets ($000)	Tangible Assets ($000)
Bank of America Corporation	BAC	1,212,833,792	1,715,746,000	1,632,977,000
JPMorgan Chase & Co.	JPM	1,051,879,104	1,562,147,000	1,513,081,000
Citigroup Inc.	C	1,253,320,960	2,187,631,000	2,136,574,000
Wells Fargo & Company	WFC	483,420,896	575,442,000	561,619,000
US Bancorp	USB	212,592,112	237,615,000	228,387,000
Wachovia Corporation	WB	592,065,024	782,896,000	737,655,000
SunTrust Banks, Inc.	STI	164,931,872	179,573,933	172,338,870
BB&T Corporation	BBT	100,052,856	132,618,000	126,935,000
Washington Mutual, Inc.	WM	NA	327,913,000	320,238,000
M&T Bank Corporation	MTB	56,012,796	64,875,639	61,430,650
Hudson City Bancorp, Inc.	HCBK	13,006,416	44,423,971	44,261,638
New York Community Bancorp, Inc.	NYB	19,186,080	30,579,822	28,031,081
Zions Bancorporation	ZION	47,515,700	52,947,414	50,788,408
Countrywide Financial Corporation	CFC	133,064,977	211,730,061	211,344,785
Cullen/Frost Bankers, Inc.	CFR	10,746,626	13,485,014	12,926,640
Bank of Hawaii Corporation	BOH	7,089,846	10,472,942	10,437,983
East West Bancorp, Inc.	EWBC	11,083,095	11,852,212	11,488,387
Signature Bank	SBNY	2,992,589	5,845,172	5,845,172
Dime Community Bancshares, Inc.	DCOM	2,195,657	3,501,175	3,445,537
Bank of the Ozarks, Inc.	OZRK	2,230,309	2,710,875	2,704,998

Source: SNL Financial, company reports

Appendix 3

Tier 1 ratio, Total capital ratio, Tier 1 leverage ratio, Tangible equity ratio for banks covered by WMR (as of December 31, 2007)

Company Name	Ticker	Tier 1 Ratio (%)	Total Capital Ratio (%)	Tangible Equity/ Tangible Assets (%)	Tier 1 leverage (Bank, BHC Only) (%)
Bank of America Corporation	BAC	6.87	11.02	3.92	5.04
JPMorgan Chase & Co.	JPM	8.44	12.57	4.90	6.02
Citigroup Inc.	C	7.12	10.70	2.93	4.03
Wells Fargo & Company	WFC	7.59	10.68	6.02	6.83
US Bancorp	USB	8.25	12.19	5.17	7.93
Wachovia Corporation	WB	7.35	11.82	4.29	6.09
SunTrust Banks, Inc.	STI	6.93	10.30	6.28	6.90
BB&T Corporation	BBT	9.08	14.23	5.47	7.24
Washington Mutual, Inc.	WM	8.56	12.34	5.28	NA
M&T Bank Corporation	MTB	6.84	11.18	4.95	6.59
Hudson City Bancorp, Inc.	HCBK	24.62	24.83	10.05	NA
New York Community Bancorp, Inc.	NYB	12.10	12.58	5.83	NA
Zions Bancorporation	ZION	7.57	11.68	6.17	7.37
Countrywide Financial Corporation	CFC	NA	NA	6.75	NA
Cullen/Frost Bankers, Inc.	CFR	9.96	12.59	7.11	8.37
Bank of Hawaii Corporation	BOH	10.36	11.96	6.85	7.04
East West Bancorp, Inc.	EWBC	8.95	10.53	7.03	8.73
Signature Bank	SBNY	14.82	15.43	7.28	7.75
Dime Community Bancshares, Inc.	DCOM	11.23	11.92	6.19	NA
Bank of the Ozarks, Inc.	OZRK	11.79	12.67	6.84	9.80

Source: SNL Financial, company reports

Appendix

If the date of this report is not current, the investment opinion and contents may not reflect the analyst's current thinking.

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