Assessing the condition of Japanese banks: How informative are accounting earnings?

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Introduction and summary

There is little doubt about the current weak condition of Japanese banks. Although they were never as profitable as European or U.S. banks, Japanese banks grew rapidly in the 1980s, buoyed by a strong domestic economy and rapidly increasing asset prices. In 1980, only one Japanese bank made the list of the ten largest banks in the world, compiled by *The Banker* magazine. By 1990, the four largest banks, and six of the top ten, were Japanese. Moreover, the rapid growth of Japanese banks was not confined to domestic markets. According to statistics compiled by the Bank for International Settlements (BIS), the share of Japanese loans in total international claims outstanding was less than 20 percent in the early 1980s. By the end of the decade, Japanese banks accounted for over one-third of international bank assets (BIS, 1998). By 1990, the size and rapid expansion of Japanese banks had earned them the moniker "mighty giants" of Japan.

The tide that carried Japanese banks to the top ranks of international banks transformed into a series of tsunami in the 1990s. The first signs of trouble emerged with sharp declines in Japanese stock and land prices. As a result, Japanese banks, which had extensive equity holdings and loans collateralized by real estate, saw significant declines in the value of their assets and capital positions. The collapse of U.S. commercial real estate prices and the 1990–91 recession in the U.S. put further pressure on Japanese banks, which had invested heavily in this market. The response of the Japanese banks was to turn to new markets, the then rapidly growing South East Asian economies. The current Asian crisis and the unresolved asset quality problems in Japan have escalated the amount of problem assets at Japanese banks to dangerous levels.

Today, even the best performing Japanese banks are facing liquidity pressures and some are struggling to stay afloat. As of October 1998, the official amount of nonperforming loans at Japanese banks was $600 billion, while some private analysts put the amount of bad loans at over $1 trillion, representing roughly 20 percent of total loans outstanding. Moreover, according to some analysts, the Japanese banking system has a shortfall of ¥8 trillion in real net worth, even after the injection of ¥10 trillion to ¥25 trillion in public funds that is expected as a result of the ¥60 trillion rescue plan passed in October 1998 by the Japanese parliament. The impact of the crisis on the Japanese economy and other financial markets is significant—low rates of corporate investment and curtailed lending are, at least partially, the result of problems in banking.[1]

Of course, other countries have also faced financial crises.[2] Among the more notable was the thrift and banking crisis in the U.S. in the late 1980s and early 1990s, which resulted in the closure of 1,142 savings and loan (S&L) institutions and 1,395 commercial banks (Lindgren, Garcia, and Saal, 1996).[3]

Because banks are a source of funds for firms, have an important role in the transmission of monetary policy, and are an integral part of the payments system, the social costs of bank failures may be greater than those of other types of businesses. Previous studies on the determinants of bank profitability and the likelihood of bank survival have shown that certain bank characteristics are important in determining future bank performance.[4] Following this literature, I examine

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the relationship between the performance of Japanese banks in 1991–97 and their characteristics. In particular, I focus on three questions.

One, how does the accounting performance of Japanese banks relate to their financial characteristics? Although the banking crisis in Japan is well recognized, the precise financial condition of the banks and the amount of, and losses from, their nonperforming loans are uncertain. Differences between the disclosure, accounting, and regulatory rules in Japan and other industrial economies make it difficult to assess the exact condition of Japanese banks and compare them with other international banks. Furthermore, some analysts interpret recent Ministry of Finance (MoF) actions (such as allowing banks to value their security holdings at cost to avoid reporting valuation losses) as attempts to mask the true condition of the banks; as a result, they consider the reported results of Japanese banks to be of little or no value. If the patterns between bank performance and characteristics established in previous studies are also evident in the Japanese banking system, then even if the reported numbers are not accurate, they would still provide useful signals of bank performance.

Two, how does the stock market performance of banks relate to their financial characteristics? In particular, are the patterns between stock returns, which are less subject to potential maneuvering by banks, and financial characteristics consistent with those observed in the accounting returns? If Japanese accounting, disclosure, and regulatory practices obscure the true performance of Japanese banks, then the relationship between accounting earnings and bank characteristics might not be consistent with that observed in other countries. However, if market participants are aware of these practices and their impact on the condition of the banks, then market-based measures of bank performance, such as stock returns, would be little affected by these practices. As a result, any inconsistency we might observe with accounting returns would not be evident in stock returns.

Three, how are the stock market and accounting returns of banks related? Are the stock returns correlated with the accounting returns, or do shareholders dismiss the accounting results as meaningless? If accounting and disclosure practices of Japanese banks obscure their condition to such an extent that there is no additional information in their reported results, then there would be no significant relationship between accounting and stock returns.

Throughout the analysis, I explore potential differences in these relationships among different types of Japanese banks and over time. For the most part, press reports and other analyses of Japanese banks focus on the major banks (city, trust, and long-tern credit banks), which account for more than 70 percent of Japanese banking assets; however, their activities and characteristics differ significantly from those of regional banks. Furthermore, the activities of banks, underlying economic conditions, and regulatory practices have changed over time. These differences in bank characteristics and changes in the environment can potentially influence the relationships I examine.

The results using accounting measures of performance indicate that some measures of asset quality are significant determinants of Japanese banks' earnings; and the relationships I document are consistent with the results of previous studies. However, the accounting returns of Japanese banks exhibit some unexpected correlations with the market index, increases in the number of business bankruptcies, and bank capital. For instance, bank profitability, measured by return on equity (ROE), is negatively correlated with returns on the market index, indicating that banks are less profitable when the stock market is performing well. Further analysis shows that this and other puzzling results with accounting earnings might be the result of banks' loan loss provisioning practices. In particular, Japanese banks appear to increase their loan loss provisions when their core profits and stock market returns are high.

The results with banks' stock returns show that such income-smoothing does not affect their market performance. Specifically, when performance is measured by market returns, the puzzling results observed with accounting returns disappear and we observe correlations with the market index and the number of bankruptcies consistent with expectations.

Despite the potential problems with the reported earnings of Japanese banks, my results suggest that accounting returns provided market participants with useful information on banks' condition in 1991–94: Accounting and stock market returns are positively and significantly correlated during this period. However, the results also show that this relationship breaks down in 1995–97, implying that the usefulness of reported earnings has deteriorated in recent years.

As indicators of bank performance and characteristics, I use measures used by regulators and market participants to assess the financial condition of banks. My results suggest that Japanese accounting, disclosure, and regulatory practices might have driven a wedge between banks' accounting and stock returns in recent years. To the extent that such practices make it more difficult to assess the condition of banks, they introduce additional uncertainty to the market, potentially increasing the risk premium required by investors. The "Japanese premium"—the difference

between the interest rates paid by Japanese and other international banks in the interbank markets—might be considered a manifestation of this uncertainty.

Regulatory forbearance that allows economically insolvent institutions to continue operations and extends implicit or explicit guarantees to uninsured bank claimants transfers wealth from deposit insurance agencies, and hence taxpayers, to the shareholders and debtors of insured institutions. The results in previous theoretical and empirical studies indicate that as a bank nears insolvency, more of its value is derived from the value of subsidies and forbearance and the correlation between stock market returns and the value of the underlying assets declines. According to Brickley and James (1986) and others, a bank has (in addition to its tangible assets) a valuable intangible asset in the form of access to underpriced, fixed-premium deposit insurance and government forbearance programs that modify insolvency rules. The capitalized value of this intangible asset is embedded in the bank's stock market valuation, but is not reflected in accounting values. When most of the market value of an insured bank is in the form of this intangible asset, movements in common stock returns need not be correlated with movements in the value of the underlying assets. In recent years, Japanese regulators have delayed recognition of losses at banks and have been reluctant to take strict actions against troubled or insolvent institutions. Such regulatory forbearance might account for the lack of correlation between accounting and market returns of Japanese banks in 1995–97 when the deterioration in the banks' financial condition accelerated significantly. More recently, the MoF has taken a number of steps to shore up banks' reported capital base through accounting changes and injection of government funds and has extended government guarantees to all bank creditors through the end of March 2001. These actions evoke recollections of the initial response of regulators to the S&L crisis in the U.S.[5] Experience with that crisis tell us that regulatory forbearance can be a leaking lifeboat that imposes significant costs on the economy and healthy financial institutions, instead of the intended lifeline to pull troubled firms to safety.[6] If the financial revitalization laws passed by the Japanese parliament in October 1998 put an end to regulatory forbearance and allow orderly resolution of insolvent institutions, they might minimize the future adverse impact of the banking crisis on the economy.

Overview of Japanese banking[7]

Until the 1980s, functional segmentation, extensive regulations, restricted competition, government intervention, and isolation from international markets were the defining characteristics of Japanese financial markets. The Japanese banking system underwent a series of reforms in the late 1970s and 1980s (outlined in appendix 1); however, the current system retains some of its traditional characteristics.

To a certain extent, the markets are still segmented across banking functions. Until the passage of the 1992 Financial System Reform Law, different institutions conducted commercial, trust, and investment banking. Similarly, until recently, different banks provided short-term and long-term business loans. City and regional banks traditionally provided short-term financing to companies and were restricted to issuing short-term liabilities. City banks traditionally have focused on providing financing to large corporations and have relied on large corporate deposits and Bank of Japan credit for their funding. City banks were also among the first Japanese banks to expand overseas. The traditional business of regional banks, on the other hand, has been the provision of short-term loans to small- and medium-sized companies. Through their branch network in their home prefecture and close community ties, regional banks have relied primarily on deposits from their loan customers and individuals for funding.

Long-term business loans are provided by the long-term credit and trust banks. Until recently, only these institutions were allowed to issue long-term liabilities. On the asset side of the balance sheet, long-term credit banks provided commercial loans, while trust banks focused on trust loans. Regulations restricted long-term credit banks to issuing deposit liabilities only to their borrowers and restricted trust banks to raising funds through loan and money trusts. However, over time, deregulation and increased competition among financial institutions have blurred the lines separating the businesses of Japanese banks.

The regulations and laws governing banking operations are formulated, implemented, and enforced by the MoF. Until April 1998, when a new, independent Financial Supervisory Agency (FSA) was established, the MoF was the primary regulator of banks.[8] Although the MoF has the legal authority to license banks, enforce laws, and administer penalties for violations of laws and regulations, it relies primarily on administrative guidance for enforcement. Because one of the functions of the Bank of Japan is to ensure the safety and soundness of the financial system, it also has regulatory and supervisory purview over banks, albeit to a lesser extent than the MoF. Until the establishment of the FSA, both institutions conducted examinations of banks.

Other government institutions in the Japanese banking system include the Deposit Insurance Corporation, which insures bank deposits and collects

insurance premiums, and the Resolution and Collection Bank, which was established in 1995 to take over the assets of failed institutions.

Despite the deregulation of banking activities in recent years, Japanese banks have characteristics that reflect their traditional roles. Some of these characteristics are evident in table 1, which shows the aggregate balance sheets of four types of Japanese banks as of the fiscal year ending March 31, 1997.[9]

For banks that have traditionally provided long-term financing (long-term credit and trust banks), loans excluding loan loss reserves (gross loans) represent approximately 65 percent of total assets. Gross loans account for approximately 72 percent of the assets of city and regional banks that have traditionally provided short-term financing. However, despite the greater concentration of assets in loans, city and regional banks have smaller loan loss reserves (both as a percentage of assets and of loans) than long-term credit and trust banks. The differences in loan loss reserves might reflect differences in the composition of loan portfolios of these institutions. For instance, on March 31, 1997, the credit exposure of the three long-term credit banks to the riskier real estate, construction, and finance sectors was 44.43 percent of their domestic loan portfolio; loans to these three sectors represented 27.14 percent of the domestic loans at city banks.

The four types of banks invest roughly the same fraction of their assets in securities. However, major banks invest more in the equity of other companies,

TABLE 1

Balance sheets of U.S. and Japanese banks, March 31, 1997
(percent unless indicated)

	Japanese banks					U.S. banks	
	City	Long-term credit	Trust	Regional	All	All	Large[a]
Cash	1.90	0.76	0.57	1.67	1.57	6.60	7.09
Earning assets	94.35	91.28	96.73	96.59	94.97	87.13	86.13
Gross loans	72.44	65.53	65.40	72.64	71.02	59.74	59.66
Loan loss reserves	1.64	2.08	2.21	1.11	1.59	1.15	1.21
Net loans	70.81	63.45	63.18	71.53	69.43	58.58	58.45
Security holdings	14.16	21.18	19.67	19.11	16.93	17.52	14.77
Equity investments	6.61	7.36	7.83	2.70	5.67	0.48	0.47
Other earning assets	9.39	6.65	13.88	5.95	8.60	11.03	12.91
Fixed assets	0.54	0.31	0.54	1.06	0.67	1.40	1.30
Total liabilities	96.65	96.96	97.56	95.92	96.57	91.60	92.01
Total deposits	89.35	33.55	37.65	93.24	79.15	68.82	64.73
Demand deposits	21.39	2.35	2.92	22.93	17.88	12.29	12.10
Other liabilities	7.30	63.41	59.91	2.68	17.42	22.78	27.28
Equity capital	3.35	3.04	2.44	4.08	3.43	8.41	7.99
Total assets or total liabilities + capital[b]	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Number of banks[c]	10	3	7	96	117	9,451	404
Total assets ($ billions)[d]	3,218.00	654.87	723.31	1,917.35	6,513.54	4,641.73	3,653.53
Total assets/nominal GDP	0.78	0.16	0.17	0.46	1.57	0.59	0.46
Total banking assets, %	49.40	10.05	11.10	29.44	100.00	100.00	78.71
Loans loss reserves/ total loans, %	2.26	3.17	3.38	1.52	2.24	1.93	2.03

[a]Large banks in the U.S. are defined as those with more than $1 billion in total assets as of March 31, 1997.

[b]By Japanese accounting rules, loan loss reserves are recorded as a liability rather than as a contra-account for loans, which is the practice in the U.S. To make the Japanese and U.S. figures comparable, the Japanese numbers were recalculated per U.S. practices.

[c]The Japanese sample includes all banks for which there were 1997 data in Fitch-IBCA's *Bankscope* database and does not exclude any observations. The differences in the number of banks in this table and in the tables that follow arise from exclusion of extreme values and the requirement (by the nature of the analysis) that the banks in the following analysis have more than one year of data.

[d]Yen amounts are translated to dollars at ¥123.72/$, the rate that was in effect on March 31, 1997.

Note: Columns may not total to 100 percent due to rounding errors or missing categories.

Sources: Author's calculations based upon data from Federal Deposit Insurance Corporation, *FDIC Statistics on Banking*, available on the Internet at www.fdic.gov/databank/sob, 1998, and FitchIBCA, *Bankscope*, CD-ROM, 1998.

whereas regional banks invest more in Japanese public bonds. Equity investments account for less than 3 percent of regional banks' assets, but they represent approximately 7 percent to 8 percent of major banks' assets. The relatively greater investment in equity securities reflects the major banks' role in the industrial groups, the *keiretsu*, as major stockholders of group companies.[10]

Japanese banks also differ in how they fund their assets. Compared with major banks, regional banks fund a greater percentage of their assets with equity capital. Moreover, long-term credit and trust banks rely less on deposits (less than 40 percent of funding) than city and regional banks do (around 90 percent), reflecting the restrictions placed on deposit-taking at these long-term finance institutions.

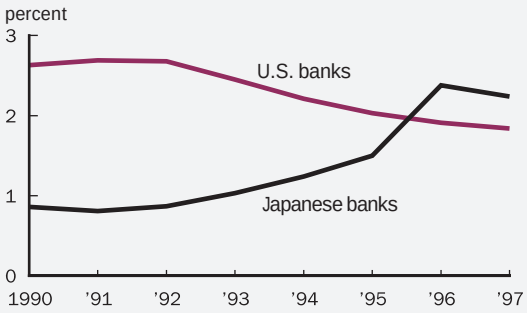
Not only do various Japanese banks have different characteristics, but they also differ from U.S. banks in terms of their activities and characteristics. Table 1 also shows the aggregate balance sheets of all commercial banks in the U.S. and the balance sheets of U.S. banks with more than $1 billion in assets. Although there are more than 9,000 banks in the U.S., bank assets in the U.S. total to $4.6 trillion, compared with $6.5 trillion in assets of 117 Japanese banks. Furthermore, bank assets represent more than 1.5 times the Japanese nominal gross domestic product (GDP), compared with 60 percent of nominal GDP in the U.S., reflecting the greater role of banks in the Japanese economy.

Japanese and U.S. banks also differ in the extent of leverage and composition of assets. Japanese banks are more than twice as leveraged as U.S. banks. While equity capital funds approximately 8 percent of U.S. bank assets, it funds less than 4 percent of Japanese assets. Japanese banks also invest more of their assets in loans than U.S. banks. Loans excluding loan loss reserves account for nearly 70 percent of Japanese bank assets, but less than 60 percent of U.S. bank assets. Loan loss reserves, as a fraction of both total assets and gross loans, are higher at Japanese banks, reflecting the differences in the conditions of the two banking markets. However, as figure 1 shows, Japanese banks' loan loss ratios surpassed those of U.S. banks only in 1997. In the early 1990s, U.S. banks' loan loss reserves covered 2.5 percent of their loans, compared with less than 1 percent coverage for Japanese banks. Japanese banks began to reserve for possible loan losses aggressively only in 1996.

While the total amount of securities investment is similar for Japanese and U.S. banks (approximately 17 percent of total assets), Japanese banks have significantly more equity investments (nearly 6 percent of assets) than U.S. banks (less than 0.5 percent of assets), which are generally prohibited from making such investments.

FIGURE 1

Loan loss reserves, percent of total loans



Sources: Author's calculations based on data from Federal Deposit Insurance Corporation, *FDIC Statistics on Banking*, available on the Internet at www.fdic.gov/databank/sob, 1998, and FitchIBCA, *Bankscope*, CD-ROM, 1998.

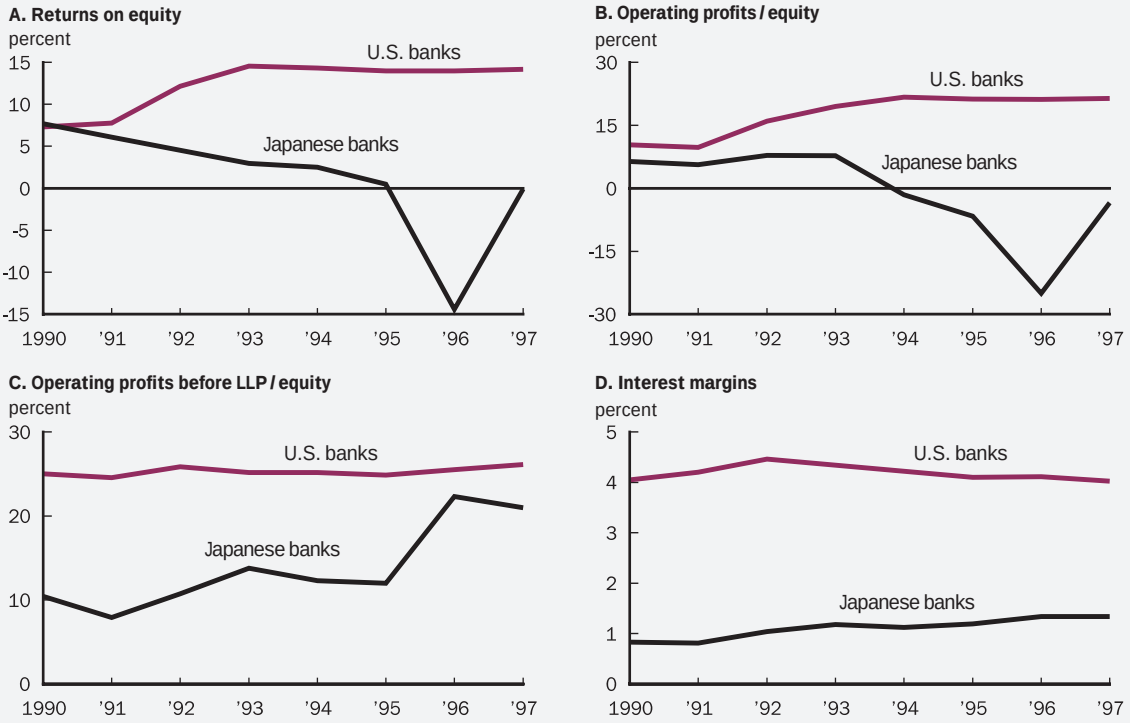
In addition, Japanese banks rely on deposits as a source of funds more than U.S. banks. Deposits fund nearly 80 percent of Japanese bank assets, but less than 69 percent of the total assets of U.S. banks. Other liabilities (such as fed funds purchases and other nondeposit liabilities) account for 27 percent of the assets of large U.S. banks, but only about 17 percent of the total assets of Japanese banks.

Figure 2 shows the performance of Japanese banks relative to U.S. banks over the 1990–97 period. In 1990, when the U.S. was approaching the end of its banking crisis, U.S. and Japanese banks had similar ROEs and operating profits (figure 2, panels A and B). However, when Japanese and U.S. banks are compared in terms of narrower performance measures, such as operating profits before loan loss provisions and interest margins, U.S. banks were more profitable than Japanese banks even in 1990 (figure 2, panels C and D). Hence, it was the higher level of loan loss provisions at U.S. banks that made their performance in 1990 comparable with that of Japanese banks.

Since 1990, the performance of Japanese and U.S. banks has diverged significantly. During the 1990–97 period, U.S. banks improved their performance by most measures, while Japanese banks' performance deteriorated.[11] By 1997, Japanese banks were reporting negative ROEs, while U.S. banks were enjoying record levels of profitability. The differences are all the more remarkable when performance is measured by return on assets (ROA). During 1990–97, the average ROA for U.S. banks was 0.95 percent, compared with 0.04 percent for Japanese banks. (The relative performance of Japanese banks is poor even if they are put on a more equal footing with U.S. banks in terms of underlying

FIGURE 2

Performance of U.S. and Japanese banks



Notes: Panel A—return on equity is the ratio of net income to equity. Net income is the sum of operating profits, gains or losses on equity, and special items minus income taxes. Panel B—operating profits is the sum of net interest revenue and net income from other operations minus loan loss provisions. Panel C—operating profits before provisions is the sum of net interest revenue and net income from other operations. Panel D—interest margins are defined as the ratio of net interest revenue to total earning assets.

Sources: Author's calculations based upon data from Federal Deposit Insurance Corporation, *FDIC Statistics on Banking*, available on the Internet at www.fdic.gov/databank/sob, 1998, and FitchIBCA, *Bankscope*, CD-ROM, 1998.

economic conditions. For example, in 1987–91, when the U.S. was in the midst of a major banking crisis, U.S. banks averaged 7.4 percent ROE, versus 0.3 percent for Japanese banks in 1991–97.[12])

The stock returns of Japanese banks reflected their poor performance in 1990–97. As figure 3 shows, Japanese banks had negative stock returns in five of the eight years and underperformed the market in seven of the eight years. Figure 3 also shows the adverse impact of declining stock prices on the value of Japanese banks, which hold significant amounts of equity in other firms.

Table 1 and figure 2 show the differences in the characteristics of different Japanese banks and the poor performance of Japanese banks relative to U.S. banks. How do the characteristics of Japanese banks relate to their performance? Are the relationships between the performance and characteristics of Japanese banks similar to those observed in the U.S.? Next, I examine these issues in more detail.

Performance and financial characteristics

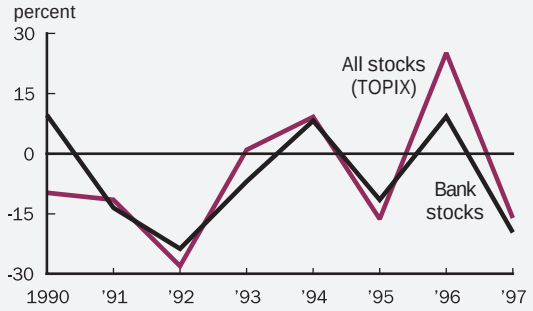
A number of studies have examined the performance of banks and related it to bank characteristics and activities. Because solvency of banking institutions is of particular importance to the stability of financial systems and because there were a large number of failures among banks and S&Ls in the U.S. during the 1980s, several studies have focused on factors that determine the profitability and solvency of depository institutions.[13]

Following this literature, I examine the ROE and the stock market performance of Japanese banks in 1991–97.[14] I relate these performance measures to bank characteristics that were found to be particularly important determinants of bank performance in previous studies: asset quality, capital ratio, liquidity, operational efficiency, and size.

The relationship between asset quality and bank earnings is closely related to the condition of the overall economy. Banks that invest in riskier assets

FIGURE 3

Japanese stock market performance



Notes: Returns on banks stocks are holding period returns and are calculated as the change in price from the end of the previous fiscal year plus dividends paid during the year divided by the price at the end of the previous fiscal year. Returns in the overall stock market are calculated as percentage changes in the Tokyo Stock Exchange TOPIX index over a fiscal year.

Sources: Author's calculations based upon data from the Tokyo Stock Exchange, database, 1998, and Bloomberg Financial, database, 1998.

are likely to have higher expected profits. However, higher asset risk implies lower realized profits when the economy is experiencing a series of negative shocks. Previous studies found that depository institutions in the U.S. that invested in riskier, or lower quality, assets performed worse than others during the 1980s and early 1990s. One would expect a similar result in Japan, that is, a negative relationship between measures of asset quality and realized performance of Japanese banks in 1991–97, when the Japanese economy was subject to adverse shocks. I measure asset quality and credit risk by the following variables: the ratio of equity investments to total assets, the ratio of loan loss provisions to loans, the ratio of net loans to total assets, the ratio of domestic loans to total loans, and the growth rate of assets (see box 1 for variable definitions).

The ratio of equity investments to total assets measures the banks' exposure to the performance of other firms through their equity investments. As general economic conditions deteriorate, the performance of banks with a relatively high fraction of their assets invested in the equity of other firms should be worse than that of banks with lower equity exposure. Furthermore, because equity securities are generally more risky than debt securities, banks with more equity investments may have lower realized profits when stock prices decline. On the other hand, if equity investments provide banks with more opportunities for diversification, then banks with high fractions of assets invested in equities would perform better than other banks.

The ratio of loan loss provisions to loans can be positively or negatively correlated with performance.

BOX 1

Definitions of variables

Annual stock returns—annual holding period returns calculated as the change in stock price plus dividends paid in the current period over the previous period's stock price.

BIS capital ratio—total risk-weighted capital-asset ratio as defined by the BIS.

Business bankruptcies—annual change in the number of business bankruptcies, in percent.

Domestic loans/total loans—Domestic loans divided by total (gross) loans.

Equity investments/TA—equity investments at book value divided by total assets, in percent.

Gross loans/TA—loans before loan loss reserves divided by total assets, in percent.

Growth of TA—annual growth rate of total assets, in percent.

Interest margin—net interest revenue divided by earning assets (loans plus investments), in percent.

Liquidity—demand deposits divided by bank deposits plus cash plus securities in the trading account; ratio of short-term liabilities to short-term assets, an inverse measure of liquidity.

Loan loss provisions/loans—Loan loss provisions (transfers to reserves, loan charge-offs, loss on sale of loans to CCPC, write-off/down of sovereign risk, loss shouldered for customers, transfer to reserve for other credit losses, write-down of other assets) divided by banking loans (excludes trust loans).

Market return—annual change in the Tokyo Stock Exchange TOPIX index, in percent.

Net loans/TA—net loans divided by total assets, in percent.

Overhead ratio—personnel and noninterest expenses divided by earning assets (loans plus investments), in percent.

ROE—net income divided by total book-value capital. Net income includes operating profits, gains/losses on sale of equity investments, valuation losses on equity investments, special items, and income taxes.

SIZE—total assets in logarithms.

TA—total assets in trillions of yen.

If banks with riskier assets provision more than other banks, then loan loss provisions measure credit risk, and are likely to be negatively correlated with realized profits. On the other hand, if banks that perform better, or banks with more conservative management, provision more for loan losses, then one would expect a positive relationship between loan loss provisions and performance.[15] Empirical evidence on U.S. banks shows that loan loss provisions and loan loss reserves are negatively correlated with future bank performance.[16]

The ratio of net loans to total assets measures the banks' credit risk, and the ratio of domestic loans to total loans measures their domestic exposure. During the sample period, loan quality, particularly the quality of loans made to Japanese borrowers, was one of the largest sources of risk to bank profitability. Consequently, one would expect banks with higher ratios of loans to total assets and banks with more domestic loans in their portfolio to have poorer performance than other banks.

I also measure asset quality with the annual growth rate of assets. During the U.S. thrift crisis, some institutions tried to grow out of their problems by expanding rapidly. Furthermore, additions to assets at fast-growing institutions may increasingly involve riskier assets. As a result, one might observe a negative relationship between asset growth and realized profits. On the other hand, if regulators are providing sufficient discipline, they may restrain the growth of institutions that are in financial trouble and allow only strong-performing banks to expand. Alternatively, banks that grow relatively more may previously have had good performance and/or expect to have good performance in the future. In that case, one would observe a positive relationship between growth and profitability.

In theory, performance can be positively or negatively related to capital ratios.[17] For instance, in perfect and competitive capital markets, higher capital ratios would reduce risk and expected return on equity (but would not change the weighted average cost of funds). Moreover, because interest payments are tax deductible, relying more on equity and less on debt reduces after-tax earnings, generating a negative relationship between earnings and capital. However, other factors may lead to a positive relationship between the capital and earnings of banks. Because banks retain a portion of their earnings, over time more profitable firms would have higher retained earnings, hence more capital, than less profitable firms. Furthermore, equity capital provides a cushion against losses, lowering bankruptcy costs. In imperfect capital markets, banks with more capital and lower bankruptcy costs are likely to have lower interest costs and higher profitability than other banks. In addition, when deposit insurance is present and regulators have the authority to close insolvent institutions, banks with profitable investment opportunities have an incentive to be well capitalized (Buser, Chen, and Kane, 1981; Keeley, 1990; and Demsetz, Saidenberg, and Strahan, 1996). All these factors point to a positive relationship between bank performance and capital-asset ratios. Empirical evidence indicates that banks with higher capital-asset ratios are indeed more profitable and less likely to fail than more leveraged banks. In this article, I measure the capital position of Japanese banks by the ratio of capital to risk-weighted assets, as defined by the BIS capital accord.

Profitability is also related to liquidity. More liquid banks are better able to meet adverse shocks and are likely to face lower cost of funds in imperfect capital markets, increasing their profitability. On the other hand, liquid assets have lower expected returns than illiquid assets, so banks with more liquid assets might have lower expected earnings. In addition, banks choose the level of liquidity of their assets. Therefore, if a bank expects to face adverse shocks in the future, it may choose to hold more liquid assets to cushion itself against such shocks. In that case, one would observe a negative relationship between profitability and liquidity, since banks that expect lower profits would increase their liquidity. In short, the relationship between liquidity and profitability is ambiguous in theory and is determined by the data. Empirical evidence points to a positive relationship between liquidity and performance of banks in the U.S. I measure liquidity by the ratio of short-term liabilities to short-term assets, whereby banks with higher ratios are less liquid than others.[18]

Operational efficiency, measured by the overhead ratio, is also likely to be a key determinant of bank profitability. To the extent that banks with high overhead ratios are less efficient, one would expect these banks to perform worse than banks with lower overhead expenses. However, the overhead ratio is an imperfect measure of efficiency and may also reflect differences in banks' product mix. For instance, nontraditional bank businesses may generate greater profits, but require more overhead expenses than traditional banking. In that case, one would observe a positive relationship between profitability and overhead ratios. In general, previous studies have found that banks with high overhead expenses perform worse than other banks.

I also include size, measured by total assets, as a control variable. Previous studies found that large banks perform better than small banks.

In addition to these bank characteristics, I explore the relationship between bank performance and measures of aggregate economic activity. In particular, I focus on stock market returns and the number of business bankruptcies.[19] As economic conditions deteriorate, the number of bankruptcies increases. As creditors, banks are directly affected by bankruptcies. Hence, one would expect an increase in the number of bankruptcies to be associated with higher loan defaults and lower bank profits.

As noted above, Japanese banks have significant investments in the equity of other firms. Therefore, returns on the overall stock market affect the performance of banks, not only as an indicator of aggregate economic conditions, but also through their impact on the valuation of banks' investments. As a result, one would expect bank performance to be positively correlated with returns in the stock market. Clearly, banks with a relatively high fraction of their assets in equity securities should benefit more from stock price increases than other banks. To explore this relationship, I interact the return on the market index with the ratio of equity investments to total assets. If an increase in the market index has a greater positive impact on the performance of banks with more equity investments, then the coefficient on the interaction term would be positive.

My analysis is based on accounting results for city, trust, long-term credit, and regional banks in 1991–97 from FitchIBCA's (1998) *Bankscope* database. My initial analysis showed some extreme values of ROA, ROE, and growth rate of assets, which were attributable to mergers or insolvency. To avoid influencing the results by including these extreme values, I deleted observations in the top and bottom 1 percentile of the distribution of ROA, ROE, and the growth rate of total assets.[20] The final sample contains 555 observations for 88 banks.

The data also include daily stock prices of city, trust, and regional banks for 1991–97 from Bloomberg (1997).[21] Annual holding-period returns are constructed using daily stock prices and dividend payments as reported in the various editions of the *Japan Company Handbook* (Toyo Keizai, Inc., 1991–98).

The top panel of table 2 shows the mean values, the standard deviations, and the minimum and maximum values of the variables for the entire sample. The average reported earnings and stock returns reflect the poor performance of Japanese banks during this period. Despite the exclusion of extreme values from the sample, profitability varies greatly across banks and over time. For instance, ROE ranges from –49.21 percent to 9.40 percent, indicating that while some banks performed very poorly, others reported large, positive profits. Similarly, banks differed in the amount of their loan loss provisions. Although the mean value for provisions was 0.59 percent, some banks had no loan loss provisions, while others had provisions as high as 9.61 percent of loans. There are also differences in the asset composition and operational efficiency of banks. For instance, net loans ranged from 45.14 percent to 82.07 percent of total assets, while equity investments ranged from 0 percent to 9.32 percent of total assets. In summary, the sample statistics suggest that differences in banks' characteristics across institutions and over time might be significant.

The statistics in the bottom panel of table 2, the mean values for different bank types and different time periods, present further evidence of differences in bank characteristics. Major Japanese banks differ significantly from regional banks and characteristics of Japanese banks changed significantly in the latter part of the sample period. In particular, major banks performed significantly more poorly than regional banks in 1991–97. The average ROE for major banks during this period was –0.40 percent, compared with 3.17 percent for regional banks. Other variables also show significant differences in the characteristics of major and regional banks, which were foreshadowed by the statistics presented in table 1. Namely, major banks invest less in loans but more in equities than regional banks. Furthermore, major banks are more liquid and have lower interest margins and overhead expenses than regional banks. Regional banks also provision less for possible loan losses. There are, however, no significant differences in the capital ratios of major and regional banks.

The last two columns in the bottom panel of table 2 show the mean values of the variables in 1991–94 and 1995–97, respectively. These statistics indicate that bank characteristics changed significantly over time. While there was no significant difference in bank stock returns in the two periods, ROEs were significantly lower in the later part of the sample period.

Over time, Japanese banks also increased their percentage of assets invested in loans and equity securities. The increase in the ratio of domestic to total loans reflects the aggregate decline in the banks' international loans. Furthermore, liquidity of Japanese banks declined significantly in 1995–97, which may reflect the higher costs of liquidity for Japanese banks in interbank markets. Lastly, banks raised their capital ratios and their provisioning for loan losses in 1995–97. Below, I explore the relationship between bank characteristics and performance more systematically.

TABLE 2

Summary statistics
(percent unless indicated)

	All banks			
	Mean 1991–97	**Standard deviation 1991–97**	**Min 1991–97**	**Max 1991–97**
Interest margin	1.58	0.59	–0.19	2.53
ROE	2.34	7.45	–49.21	9.40
Annual stock return[a]	–7.30	16.34	–50.01	58.17
TA, ¥ trillion	9.63	14.85	0.96	80.84
Growth of TA	0.33	12.58	–56.21	123.81
Equity investments/TA	3.12	1.83	0.00	9.32
Net loans/TA	67.04	6.55	45.14	82.07
Domestic loans/total loans	92.15	16.82	26.51	100.00
Liquidity	2.06	1.52	0.12	15.28
Overhead ratio	1.29	0.34	0.33	1.98
Loan loss provisions/loans	0.59	0.92	0.00	9.61
BIS capital ratio	9.26	0.81	7.28	13.61

	Mean values for:			
	Major banks 1991–97	**Regional banks 1991–97**	**All banks 1991–94**	**All banks 1995–97**
Interest margin	0.70	1.85**	1.47	1.72**
ROE	–0.40	3.17**	4.41	–0.25**
Annual stock returns[a]	–9.26	–6.85	–8.32	–5.96
TA, ¥ trillion	31.17	3.17**	9.95	9.24
Growth of TA	–0.31	0.52	–0.10	0.86
Equity investments /TA	5.97	2.27**	2.93	3.36**
Net loans /TA	64.04	67.94**	65.77	68.64**
Domestic loans /total loans	68.14	99.34**	91.13	93.43
Liquidity	0.87	2.41**	1.58	2.66**
Overhead ratio	0.80	1.43**	1.26	1.32
Loan loss provisions /loans	1.29	0.38**	0.24	1.02**
BIS capital ratio	9.18	9.28	9.14	9.41**
N (N= 555)	128	427	309	246
Number of banks	20	68	87	85

**indicates differences in means across bank types or subperiods that are significant at the 1 percent level.
[a]Excludes stock returns for long-term credit banks.
Note: For variable definitions, see box 1.
Source: Author's calculations from FitchIBCA, *Bankscope*, CD-ROM, 1998.

Determinants of accounting performance

Table 3 shows the parameter estimates when banks' ROEs are regressed on their characteristics.[22] Appendix 2 describes my methodology in more detail. Banks' performance over a given period is related to their characteristics at the beginning of the period; hence, the results show the predictive power of current bank characteristics for future performance.

Are the patterns observed in the Japanese banks' accounting earnings and characteristics consistent with those in other countries? The results in table 3 indicate the answer to this question is mixed.

For some characteristics, the relationship with earnings is consistent with patterns observed in the U.S. In particular, loan loss provisions and the ratio of net loans to total assets are negatively correlated

TABLE 3

Returns on equity and bank characteristics

	All banks 1991–97	Major banks 1991–97	Regional banks 1991–97	All banks 1991–94	All banks 1995–97
Intercept	0.257	20.384	8.616	**10.762*****	**–30.066**
Size	0.705*	0.158	0.064	–0.011	1.323
Growth of TA	0.000	0.003	0.000	**0.000**	**0.401***
Net loans/TA	–0.123**	–0.028	–0.122**	–0.080***	–0.181
Domestic loans/total loans	0.933	4.427	1.850	**1.641*****	**9.090***
Overhead ratio	1.448	0.559	1.441	0.099	3.311
Liquidity	–0.300	–1.444	–0.053	0.220**	–0.409
Loan loss provisions/loans	–0.914***	**–0.388**	**–2.459*****	0.316	1.076
BIS capital ratio	–0.199	–0.120	0.220	–0.162	0.839
Equity investments/TA	–1.878***	**–4.417*****	**–1.690*****	**–0.377*****	**–2.565*****
Market return	0.133***	**1.632*****	**0.023**	**–0.051*****	**0.290***
Market return x equity investments/TA	–0.097***	**–0.341*****	**–0.052*****	**–0.014*****	**–0.114*****
Business bankruptcies	–0.039	0.049	–0.025	–0.064***	–0.608
$\bar{R}^2$	0.39	0.61	0.24	0.46	0.49
N	555	128	427	309	246
Market return	–0.157***	**–0.464*****	**–0.092*****	–0.090***	0.020
Equity investments/TA	–1.464***	–1.211*	–1.431***	**–0.286*****	**–2.664*****

Parameter estimates when the market return and the ratio of equity investments to total assets are included in regressions without an interaction term.

*, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Notes: For variable definitions, see box 1. Parameter estimates that are in bold indicate that there are significant differences across bank types or subperiods at the 5 percent level.

Source: Author's calculations from FitchIBCA, *Bankscope*, CD-ROM, 1998.

with earnings, indicating that banks with higher credit risk performed worse than others. These measures of asset quality are particularly strong determinants of performance for regional banks, but are less informative for major banks. Recall that, compared with regional banks, major banks hold a smaller fraction of their assets in loans; thus, these banks' performance may be more sensitive to fluctuations in other sources of income, such as fee income and earnings from security portfolios.

Banks with greater investments in equity securities performed worse than others. This result shows that when economic conditions were deteriorating, the equity investments of Japanese banks exposed them to greater risk and reduced their earnings. As shown in the last row of columns 4 and 5 of table 3, the negative impact was significantly worse in the 1995–97 period.

The relationship between profitability and other bank characteristics is statistically weaker. Profitability is significantly correlated with liquidity, size, and growth rate of assets in only some specifications. Furthermore, in contrast to the positive significant relationship observed between bank earnings and capital in other studies (for example, Berger, 1995, and Demirgüç-Kunt and Huizinga, 1997), Japanese banks' earnings are not significantly related to their capital ratios. At first glance, this result suggests that BIS capital ratios have no impact on Japanese banks' earnings. However, this conclusion is at odds with anecdotal evidence which indicates that capital management was of particular importance to Japanese banks during this period. For instance, between 1992 and 1995, Japanese banks sold ¥2.7 trillion of subordinated debt to meet BIS capital requirements and some major banks issued convertible securities to raise capital. Furthermore, comments by MoF officials and analysts suggest that the retrenchment of Japanese banks from international lending is at least partially motivated by their need to increase capital ratios. It is unlikely that significant efforts by Japanese banks to manage their capital positions had no impact on their earnings.[23] If capital management was important for Japanese banks during the sample period, then the impact of capital ratios on bank earnings would not be measured accurately by the current analysis which treats capital ratios as exogenous variables that are

not influenced by bank characteristics. One would need to take into account the factors that affect banks' capital management decisions before examining the impact of capital on earnings. This type of analysis is beyond the scope of this article.

Some of the relationships shown in table 3 are inconsistent with our expectations and patterns observed in the U.S. Specifically, higher returns in the Tokyo Stock Exchange, which imply more favorable economic conditions, are associated with poor bank performance. In addition, the coefficient estimates for the interaction term between stock returns and equity investments indicate that the negative correlation between stock returns and earnings is stronger for banks with more equity investments, particularly for major banks and in the 1995–97 period. These results are in direct contrast to our expectations. Further analysis, however, revealed that the result was evident only for measures of performance that include loan loss provisions. There is a positive correlation between pre-provision profits and stock returns. These results suggest that Japanese banks provision more when economic conditions are good.[24] The correlations between loan loss provisions in the current period and other bank characteristics and economic conditions, shown in table 4, point to a similar conclusion. Specifically, banks provision more when they have higher core earnings (operating profits before loan loss provisions) and when the stock market performs well. Furthermore, banks with higher equity investments provision more than other banks. These correlations, and the results with other performance measures, are consistent with analysts' assessment of the income-smoothing behavior of Japanese banks. The results are also consistent with Moody's (1997, 1998) reports that to maintain their capital positions in recent years, Japanese banks have sold their equity securities to offset credit expenses.[25]

In addition, loan loss provisions are positively correlated with the fraction of assets invested in loans, indicating that banks with higher credit risk provision more. However, there is a strong negative correlation between loan loss provisions and the increase in the number of business bankruptcies in the current period. This result is puzzling and gives further evidence that Japanese banks' provisioning practices do not conform with conventional wisdom.

Lastly, the well-known credit quality problems associated with Japanese borrowers in the 1990s suggest a negative relationship between ROE and the fraction of total loans allocated to domestic borrowers. The results in table 3 indicate that, in contrast to our expectations, domestic loans were associated with higher profitability in 1991–94. However, during 1995–97 this relationship loses statistical significance.

Determinants of stock market performance

The consistency of the results in the previous section with those in other banking studies was mixed. Some of these results might be due to efforts by Japanese banks to manage their regulatory capital and to fund their credit expenses through sale of

TABLE 4

Correlations of loan loss provisions with other bank characteristics and economic indicators

	All banks 1991–97	Major banks 1991–97	Regional banks 1991–97	All banks 1991–94	All banks 1995–97
Total assets	0.25***	–0.21**	0.17***	0.33***	0.33***
Gross loans/TA	0.11**	0.13	0.34***	0.09	–0.03
Domestic loans/total loans	–0.36***	–0.07	0.09*	–0.40***	–0.63***
BIS capital ratio	0.05	0.25***	–0.01	0.26***	–0.10
Equity investments/TA	0.60***	0.64***	0.40***	0.58***	0.67***
Loan loss provisions/loans in the previous period	0.49***	0.36***	0.45***	0.10*	0.47***
Operating profits before LLP/equity	0.49***	0.57***	0.44***	–0.02	0.46***
Market return	0.31***	0.47***	0.36***	0.39***	0.30***
Business bankruptcies	–0.26***	–0.38***	–0.29***	–0.33***	0.31***
N	555	128	427	309	246
Number of banks	88	20	68	87	85

*, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

Note: For variable definitions, see box 1.

Source: Author's calculations from FitchIBCA, *Bankscope*, CD-ROM, 1998.

securities during favorable market conditions. If such actions are transparent to investors, and analysts' reports and anecdotal evidence suggest that they are, then the puzzling results between bank characteristics and market measures of performance would not exist. Market participants would dismiss the reported numbers as irrelevant and rely on other indicators of banks' condition (for instance, analysts' reports). In that case, market measure of performance, such as bank stock returns, would not be related to accounting profits; and the relationship observed between stock returns and bank characteristics would differ significantly from the relationship observed with accounting profits.[26]

To explore this issue further, I relate the stock returns of banks to the bank characteristics used above. The results, reported in table 5, suggest that while those accounting relationships that were consistent with our expectations are also evident for stock returns, the puzzling results with accounting earnings disappear when performance is measured by stock market returns. Specifically, banks with more loans and equity investments and banks with higher loan loss provisions have lower stock returns. Furthermore, size and profitability are positively correlated, particularly for major banks. These results are consistent with the results in the previous section and with the results of other banking studies.

However, in contrast to the results in table 3, the results in table 5 indicate that stock returns are positively correlated with the market index. This result implies that market participants perceive the negative correlation of the market index with reported earnings as an accounting artifact and see a positive impact from an increase in the index on banks' future cash flows.

Another difference between reported accounting profits and stock returns is their relationship with the change in the number of bankruptcies. ROE is only weakly correlated with bankruptcies (the only significant correlation is in 1991–94) and the results in table 4 show a puzzling negative correlation between loan loss provisions and bankruptcies. In contrast to these relationships with accounting results and consistent with expectations, there is a strong negative

TABLE 5

Stock returns and bank characteristics

	All banks[a] 1991–97	Major banks[a] 1991–97	Regional banks 1991–97	All banks[a] 1991–94	All banks[a] 1995–97
Intercept	–15.222	148.245*	–13.818	–22.373	4.704
Size	1.818*	**7.216****	**–0.133**	1.808	0.071
Growth of TA	–0.001	–0.023	–0.001	–0.001	–0.131
Net loans/TA	–0.212*	–0.334	–0.089	–0.084	–0.394**
Domestic loans/total loans	2.360	5.465	30.955	2.941	13.714
Overhead ratio	–4.119	–0.081	–4.894	–6.256	–2.996
Liquidity	–0.365	–3.683	–0.434	–0.797	0.672
Loan loss provisions/loans	–3.343***	–2.497***	–4.163***	0.073	–3.090***
BIS capital ratio	–0.325	2.182	0.335	0.362	1.052
Equity investments/TA	–1.526**	–4.061***	–1.914**	–1.566*	–0.105
Market return	0.334***	**2.196*****	**0.697*****	0.485**	0.488*
Market return x equity investments/TA	0.071***	–0.204**	–0.104**	0.081*	0.067***
Business bankruptcies	–0.280***	–0.159	–0.226***	–0.104	–1.041
$\bar{R}^2$	0.48	0.73	0.42	0.43	0.56
N	472	88	384	267	205
Market return	0.534***	**0.986*****	**0.460*****	0.687***	0.659**
Equity investments/TA	–1.803***	–2.460**	–1.385	–2.090**	–0.059

Parameter estimates when the market return and the ratio of equity investments to total assets are included in regressions without an interaction term.

*, **, and *** indicate significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

[a]Excludes stock returns for long-term credit banks.

Notes: For variable definitions, see box 1. Parameter estimates that are in bold indicate that there are significant differences across bank types or subperiods at the 5 percent level.

Source: Author's calculations from FitchIBCA, *Bankscope*, CD-ROM, 1998, and Bloomberg Financial, database, 1998.

relationship between stock returns of banks and increases in the number of bankruptcies. These results suggest that although banks' reported accounting earnings exhibit no strong association with bankruptcies, shareholders take into account the adverse impact of bankruptcies on banks' asset quality and earnings.

Accounting and stock returns

Our results up to this point indicate that reported earnings and stock returns of Japanese banks are related to size and measures of asset quality in similar ways. However, the results also point to some differences in the behavior of accounting and market measures of performance. Given the differences in the two measures of performance, how do they relate to each other?

To answer this question, I examine the relationship between stock market and accounting returns directly. I first estimate the market model for Japanese bank stocks by regressing individual bank returns on the market index. I then modify the market model by including the return on equity as an additional explanatory variable. If shareholders dismiss accounting earnings as uninformative, one would expect the coefficient on ROE to be insignificant.

First, as reported in the top panel of table 6, for the entire sample, the coefficient on the market index is positive. The coefficient is less than one, indicating that when the overall stock market increases by 1 percent, bank stock returns increase by less than 1 percent. However, there are significant differences in how the stock returns of major and regional banks move with the market. A 1 percent increase in the market index moves the stock returns of major banks by more than 1 percent and those of regional banks by less than 1 percent. Major banks own significantly greater amounts of equity securities than regional banks. Thus, a movement in the stock market affects not only income from their operations, but also the value of their equity investments, magnifying the impact of changes in the market index.

Second, when the market model is augmented with ROE, the coefficient on ROE is positive and statistically significant. In addition, the fraction of the variance in bank stock returns explained by the model, $\bar{R}^2$, increases in most specifications when accounting returns are included as explanatory variables. Therefore, for all the potential biases in the reported results of Japanese banks, shareholders do not dismiss accounting earnings as meaningless.

However, the correlation between banks' stock market and accounting returns has decreased over time; accounting returns are not significantly correlated with stock returns in the 1995–97 period. Higher reported earnings in later years did not translate into higher returns in the stock market as they had in the earlier part of the 1990s, which implies that accounting profits became less informative over time. This result suggests that measures taken by banks to shore up their reported earnings and capital are not seen by market participants as significant determinants of banks' market performance and, instead, drive a wedge between the banks' accounting and market returns, disconnecting the two measures of performance.

These results are consistent with the results of other studies of U.S. banking showing that regulatory forbearance decreases the correlation between the

TABLE 6

Stock market and accounting performance of Japanese banks

	All banks[a] 1991–97	Major banks[a] 1991–97	Regional banks 1991–97	All banks[a] 1991–94	All banks[a] 1995–97
Intercept	–4.393**	–3.278**	–4.478**	–3.442**	–4.676**
Market return	0.614**	**1.021****	**0.530****	**0.757****	**0.515****
$\bar{R}^2$	0.40	0.58	0.36	0.41	0.42
Intercept	–4.819**	–2.246	–5.346**	**–9.944****	**–4.643****
Market return	0.643**	**1.208****	**0.557****	**0.818****	**0.538****
ROE	0.217**	0.499**	0.313**	**1.150****	**0.128**
$\bar{R}^2$	0.40	0.61	0.38	0.43	0.42

** indicates significance at the 5 percent level.

[a]Excludes stock returns for long-term credit banks.

Notes: For variable definitions, see box 1. Parameter estimates that are in bold indicate that there are significant differences in the parameter estimates at the 5 percent level across bank types or subperiods.

Source: Author's calculations from FitchIBCA, *Bankscope*, CD-ROM, 1998, and Bloomberg Financial, database, 1998.

market value of equity and the value of net assets in place.[27] The market value of a bank's equity is the sum of the value of its net assets in place and the value of deposit insurance subsidies and regulatory forbearance. Accounting profits, on the other hand, only reflect earnings from assets in place. As a bank nears economic insolvency, the value of regulatory subsidies and forbearance increases and shareholders derive more of their value from subsidies rather than assets in place. Except for the unlikely situations where the value of assets in place is perfectly correlated with changes in the value of subsidies, an increase in the value of subsidies and regulatory forbearance leads to a decline in the correlation between market returns and value of assets in place.

The reluctance of Japanese regulators to force recognition of loan losses and to impose penalties on the shareholders of failing institutions is undoubtedly valuable to banks' shareholders. As the condition of the banks deteriorated significantly in the later part of the 1990s, the value of subsidies and forbearance to shareholders might have increased significantly, potentially accounting for the lack of correlation between market and accounting returns of Japanese banks in 1995–97.

Conclusion

Economic malaise, ever-increasing problem loans, high credit expenses to provision for problem loans, and low core profitability have taken their toll on Japanese banks. In this article, I have examined the performance of Japanese banks in recent years and related it to variables used by regulators and analysts to assess the condition of banks. The results show significant differences between the performance and characteristics not only of Japanese and U.S. banks, but also of different Japanese banks and over time. The results also show that although most measures of bank asset quality are correlated with accounting returns in line with expectations and the results of other banking studies, other variables that were found to be important determinants of bank performance in the U.S. and elsewhere are not significantly related to the performance of Japanese banks. Moreover, accounting profits are correlated with other bank characteristics and economic variables in puzzling ways. Additional evidence suggests that these puzzling or inconsistent results may be due to income smoothing by banks. Specifically, Japanese banks appear to increase their loan loss provisions when their core earnings and the returns on the market are high. However, such actions do not appear to affect the stock returns of banks; the returns are positively correlated with the return on the market index. My analysis shows that although there might be problems with the reported earnings of Japanese banks, accounting returns still provided useful information to market participants regarding the values of bank shares in the early 1990s. However, the significance of this information has decreased in recent years.

These results may reflect an increase in the value of regulatory forbearance to bank shareholders. Since the end of the period analyzed in this article, the MoF has introduced a number of measures that indicate an increase in regulatory forbearance. As outlined in appendices 1 and 3, accounting changes have enabled banks to increase their regulatory capital, government purchases of banks' preferred stock and subordinated loans have injected capital to institutions experiencing financial difficulties, and government guarantees have been extended to all bank creditors through the end of fiscal year 2001. Regulators typically forbear to give ailing institutions time to recover. However, experience tell us that forbearance imposes significant costs on the economy by transferring wealth from the deposit agencies, and hence taxpayers, to bank shareholders and by increasing the cost of resolving insolvent institutions. To the extent that the recent financial revitalization laws resolve the insolvent institutions and encourage solvent banks to deal with their problems in a timely manner, they should greatly improve the health of the Japanese financial system.

APPENDIX 1

Developments in Japanese financial markets

Between 1952 and 1973, the Japanese economy exhibited remarkable strength, averaging 10 percent real growth per year. Financial institutions in general, and banks in particular, were instrumental in achieving this strong performance. By acting as conduits of funds from the household sector to the corporate sector, they financed exports and business investment that fueled the economy. The goal of financial regulations during this period was to provide a stable financial environment conducive to growth. Regulation of interest rates kept the cost of funds low for banks and corporations. The positive slope of the yield curve ensured profits for banks engaged in maturity transformation and fostered a culture in which banking profits increased with size. Segmentation of the financial markets across functions, restrictions on portfolio activities of banks, and controls over foreign exchange transactions and international capital flows provided a stable system with restricted competition. The collateralization requirements on all debt issued and other restrictions on security issuance meant that banks were the primary source of external funds for corporations.

The policies of the high-growth period became unsustainable, however, after the collapse of the Bretton Woods system of fixed exchange rates and the first oil crisis in 1973. As the government deficit ballooned, it became harder for banks to absorb government bonds without a secondary market for these securities. The development of secondary markets in government bonds enabled investors to circumvent interest rate regulations on deposits, while soaring inflation increased the cost of these regulations. Increased international trade and globalization of financial markets provided further impetus for change and Japanese financial markets underwent a series of reforms. By the mid- to late 1980s, Japanese financial markets were substantially liberalized. Regulations on interest rates were gradually reduced, more financial instruments for savings were allowed, restrictions on security issues were relaxed, and portfolio activities of banks and other financial institutions were expanded. For example, the Foreign Exchange Law of 1980 allowed Japanese corporations to finance their operations with foreign currency denominated loans. This gave Japanese businesses an alternative source of funding, which increased the competitive pressures on Japanese banks. At the same time, however, the law allowed Japanese banks to borrow and lend freely in foreign currencies, giving them entry into new markets. Japanese banks took full advantage of this opportunity to expand their international operations, including those in the U.S. By 1990, Japanese banks had become the largest foreign lenders to U.S. companies and financed most of the record levels of Japanese direct investment in the U.S. commercial real estate. In the meantime, soaring stock and land prices in Japan during the second half of the 1980s boosted banks' unrealized gains on equity holdings and enabled them to increase loans collateralized by property. By some private estimates, 50 percent to 70 percent of new lending by Japanese banks in 1985–90 was collateralized by real estate.

With the collapse first of stock prices, then of land values in the early 1990s, the first cracks in the system appeared. Because a portion (up to 45 percent) of unrealized gains on banks' security holdings counts as tier two capital under the BIS rules, the decline in stock prices put significant pressure on banks' capital ratios. As early as mid-1991, press reports pointed to difficulties faced by Japanese banks in meeting BIS capital requirements. Regulators responded by allowing banks to issue subordinated and perpetual debt. In addition, banks sold loans and shifted lending from low-margin markets (such as European and U.S. lending) to higher margin segments (such as corporate lending and leasing in Southeast Asia).

Early in the decade, declines in land prices were welcomed by regulators. In fact, the MoF restricted the growth of real estate lending in 1990 to discourage speculative land deals. Anecdotal evidence suggests that banks responded by shifting their real estate lending to affiliates. Sharp declines in land prices throughout the 1990s, however, reduced the value of the collateral on loans and led to a significant deterioration of asset quality at nonbank affiliates of banks, such as housing loan companies. In 1993, parent banks and other creditors restructured their loans to the housing loan companies (the jusen), in order to provide liquidity to these firms. Additional declines in land prices, however, deteriorated the condition of the jusen further. In December 1995, the government announced the liquidation of seven housing loan companies and the Housing Loan Administration was established in July 1996 to takeover the assets of the failed jusen.

The decline in land prices also had significant adverse effects on the quality of loans at the banks. In January 1993, the Cooperative Credit Purchasing Company (CCPC) was established to purchase bad loans and collateral backing such loans from the banks. However, because the CCPC was funded by the banks themselves, the plan was met with skepticism by analysts from the outset. To date, the operations

of the CCPC have not stemmed the deterioration in asset quality or have brought a decisive resolution to the problem. The deterioration in the condition of Japanese financial institutions in the 1990s and the regulators' response to the problem were evidenced by the failure of several nonbanks and assisted mergers of insolvent small banks with stronger banks in the 1991–95 period. The details of the assisted mergers indicate that there were no losses to depositors and very little penalties imposed on shareholders of failed banks (Cargill, Hutchison, and Ito, 1997).

In November 1997, for the first time since World War II a major Japanese bank, Hokkaido Takushoku Bank, failed. Today banks continue to face continual downgrading of their ratings, severe liquidity pressures, higher funding costs in interbank markets, and declines in their stock prices. Regulators have responded by guaranteeing all deposits, including interbank deposits, through 2001 and giving unofficial guarantees on other bank liabilities. In January 1998, the government announced a ¥30 trillion program that increased the funds available to the Deposit Insurance Corporation and injected ¥1.8 trillion of funds to shore up banks' capital base. In April 1998, prompt corrective action regulations were implemented that required fuller disclosure of nonperforming loans and more adequate provisioning for problem loans. However, the implementation of some of the prompt corrective action regulations have been delayed, and in 1998 the MoF implemented certain accounting changes aimed at increasing regulatory capital of banks (see appendix 3). In June 1998, the Financial Supervisory Agency took over the supervision of banks from the MoF. Also in June 1998, the government announced the "total plan," designed to resolve the crisis. A modified version of this plan became law in October 1998. The ¥60 trillion bail-out package involves the injection of public money into banks on a voluntary basis to increase their capital base, as well as the nationalization of insolvent banks. On the first day the law came into force, nationalization of the Long-Term Credit Bank of Japan (LTCB), which had been rumored to be insolvent for a number of months, was announced. The initial announcements indicated that all deposits, debentures, derivative contracts, interbank deals, and subordinated debt of the bank would be honored. The plan also called for the Deposit Insurance Corporation to purchase the shares of the LTCB, which last traded at ¥2.

APPENDIX 2

Relationship between accounting profits, stock returns, and financial characteristics of Japanese banks

In the first part of the analysis, I relate the accounting profits of Japanese banks to a set of variables that describe the banks' characteristics and a set of variables that measure aggregate economic activity. Specifically, I estimate the following equation, using ordinary least squares (OLS), and report the results in table 3:

$$1) \quad ROE_{i,t} = \alpha + \beta R_{m,t} + \theta X_{i,t-1} + \gamma Z_t + \phi Y_{i,t-1} + \varepsilon_{i,t},$$

where $ROE_{i,t}$ is return on equity for bank i in fiscal year t; $R_{m,t}$ is the return in the Tokyo Stock Exchange in period t, as measured by changed in the TOPIX index; $X_{i,t-1}$ is a vector of characteristics of bank i, calculated using information from fiscal year $t-1$; Z_t is a set of measures for aggregate economic activity in fiscal year t; $Y_{i,t-1}$ is $R_{m,t}$ multiplied by bank i's ratio of equity investments to total assets in fiscal year $t-1$; and $\varepsilon_{i,t}$ is an error term.

Similarly, banks' stock returns are correlated to their characteristics by estimating the following equation using OLS:

$$2) \quad R^S_{i,t} = \alpha^S + \beta^S R_{m,t} + \theta^S X_{i,t-1} + \gamma^S Z_t + \phi^S Y_{i,t-1} + \varepsilon^S_{i,t},$$

where $R_{i,t}{}^S$ is the stock market return of bank i in period t and the S superscript indicates that parameter estimates are for stock returns. The results from the estimation of equation 2 are reported in table 5.

The interaction terms in equations 1 and 2 make it difficult to determine the correlation between profitability and the ratio of equity investments to total assets. To simplify the presentation of the results, I reestimated equations 1 and 2 without the interaction terms. The coefficient estimates for TOPIX and equity investments from the "simplified" regressions are reported as the last two rows in tables 3 and 5.

Lastly, in table 6, I report the results from the OLS estimation of the following traditional and "augmented" market models:

$$R^s_{i,t} = \alpha + \beta_1 R_{m,t} + \mu_{i,t}$$
$$R^s_{i,t} = \alpha' + \beta_1' R_{m,t} + \delta ROE_{i,t} + \eta_{i,t},$$

where $\mu_{i,t}$ and $\eta_{i,t}$ are error terms.

APPENDIX 3

Differences in Japanese and U.S. accounting practices

Some of the significant differences in the disclosure and accounting rules in Japan and the U.S. are summarized below.

***Nonperforming loans*:** In the U.S., loans that are past due more than 90 days plus nonaccrual loans are considered nonperforming. In Japan, the definition of nonperforming loans has changed in recent years to become more inclusive and more in line with U.S. standards. Previously, only loans to bankrupt companies and loans past due more than 180 days were considered nonperforming. However, since March 31, 1996, nonperforming loans have also included loans to assisted companies and loans restructured to have an interest rate below the official discount rate. On March 31, 1998, the definition was expanded to include loans past due more than 90 days and all restructured loans. Despite these changes, however, loans with partial interest payments, loans sold to the Cooperative Credit Purchasing Company, nonperforming loans of subsidiaries, and other loans for which the bank may ultimately be held responsible are excluded from the definition of nonperforming loans.

Also effective April 1, 1998, each bank is required to self-assess its asset quality, dividing its credit exposures into the following four categories:[1] category I—exposures with no credit concerns are classified; category II—"credit exposures on which each bank has judged adequate risk management on an exposure-by-exposure basis will be needed," but where the classification standard "varies significantly depending on their respective management practices," (Japan, Ministry of Finance, 1998); category III—exposures on which the banks have serious concerns and are likely to incur losses, but cannot determine the timing and amount of such losses; and category IV—credit exposures that are noncollectible or of no value.[2] On January 12, 1998, the Ministry of Finance (Japan, MoF, 1998) announced that 12.3 percent of Japanese banks' total loans are classified in categories II through IV. The bulk of the classified assets, 10.4 percent of total loans, are in category II.

Loan loss provisions and reserves: U.S. accounting rules require banks to maintain an allowance for loan losses based on probability of collection and expected future cash flows. Additional provisions are made through periodic charges to operating expenses and, thus, are fully tax-deductible. Loan loss reserves are treated as a contra account on the assets side of the balance sheet and, therefore, are deducted from gross loans and total assets. Until April 1, 1998, Japanese banks maintained three types of loan reserves. General reserves for loan losses were maintained at the maximum tax deductible level of 0.3 percent of total loans outstanding. The portion of loans determined to be irrecoverable was reserved under specific reserves, of which only 50 percent is tax deductible. Banks could provision more than the tax deductible amount with approval from the MoF. Analysts point out that because loan loss reserves received a less favorable tax treatment in Japan and because banks were not required to increase provisions when the present value of the loan declined below its face value, Japanese banks did not fully provision for possible loan losses. Some of these concerns were addressed by the implementation of prompt corrective action (PCA) regulations, effective April 1, 1998. Under the PCA regulations, Japanese banks are expected to make adequate provisions based on their self-assessment of problem loans as outlined above. Lastly, most banks maintain specific foreign loan reserves equal to 35 percent of loans to specific countries where transfer risk may be material. However, only 1 percent of the outstanding loan amount is tax deductible. Reserves are classified as liabilities and total loans and total assets are reported gross of reserve amounts. Furthermore, unlike U.S. banks, which can establish a loss contingency reserve only when an event is probable and the amount of losses can be established, Japanese banks are allowed to establish discretionary reserve accounts; transfers to and from such reserves might allow Japanese banks to smooth their reported income.[3]

***Charge-off policy*:** Under U.S. accounting practices, once the extent and timing of losses arising from a loan can be determined, expected losses are recognized through loan charge-offs. In Japan, loans are charged off only when the debtor is in bankruptcy and there is no hope of recovery, and banks need a special MoF ruling to take loans off their books.

***Valuation of securities*:** In the U.S., banks' security holdings are classified under three separate categories and methods of valuation. Japanese banks classify their security investments as either for trading or investment purposes; however, the classification does not affect the valuation method. Listed securities are valued at either the lower-of-cost-or-market (LOCOM) value or at historical cost. Under the LOCOM method, market value increases above cost are not recognized and unrealized losses are recognized under valuation reserves. Unlisted securities are generally valued at cost; if the condition of the security issuer

deteriorates significantly, then the securities valuation is reduced accordingly. The difference between the market and book value of security holdings is referred to as "latent revaluation reserves," or more commonly as "hidden reserves."

***BIS capital requirements*:** Similar to banks in other countries, Japanese banks with international operations are required to achieve a minimum total capital ratio of 8 percent, based on standards issued by the BIS.[4] Within certain guidelines, regulators in individual countries are allowed to determine what constitutes capital. Consequently, there are differences across countries in how banks can satisfy the capital adequacy requirements. For instance, under U.S. regulations, unrealized gains on securities do not count as capital, but Japanese banks can use up to 45 percent of hidden reserves as tier two capital. Low profitability, high credit expenses for problem loans, and unfavorable conditions in capital markets have put Japanese banks' capital position under pressure. In order to provide some relief to banks, the MoF recently introduced certain measures. For example, since January 1998, Japanese banks have been allowed to value securities at cost and avoid reported valuation losses; however, if a bank chooses this valuation method, it cannot use any portion of its unrealized gains as tier II capital for BIS capital requirements. International accounting standards generally do not allow higher-of-cost-or-market valuation for securities, which in effect the MoF rule does. Again, effective January 1998, banks can value real estate at market values, and 45 percent of the valuation reserves count as tier two capital. Most of the major countries, with the exception of Germany and the U.S., also allow such valuation reserves to count toward regulatory capital. In addition, in March 1998, under its stabilization program, the government purchased ¥1.8 trillion of banks' preferred stock and subordinated debt. All three measures have increased Japanese banks' regulatory capital base. In addition, starting this year, if the maturities and the other contractual features of loans and deposits from the same customer meet certain requirements, banks are allowed to net loan assets with the deposits of the same customer. As a result, the risk-weighted assets of banks are reduced, increasing their BIS capital ratios.

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[1]These categories are for disclosure purposes; for internal purposes, Japanese banks typically classify their assets into five categories: pass, special mention, substandard, doubtful, and bankrupt.

[2]The classified exposures include off-balance-sheet guarantees as well as loans, and the reserved and collateralized portion of each exposure is classified in category I, independent of the borrower's financial condition. Because of these and other details of the classification standards, the classified assets of a bank cannot be linked directly to its disclosed nonperforming loans.

[3]In addition to these reserves for possible loan losses, Japanese banks maintain reserves for expected losses on trading account securities, government bonds, futures, and securities transactions.

[4]Although the BIS capital adequacy requirements were established only for banks with international operations, regulators in the U.S. require all banks to maintain the minimum BIS capital ratios. However, Japanese banks with only domestic operations are exempt from the BIS requirements. In recent years, Japanese banks that experienced difficulties meeting the BIS requirements have sold their international operations and, thus, are subject only to the 4 percent capital requirement placed on banks with no international presence. For instance, on March 31, 1998, the MoF announced that the number of "internationally operating banks" declined from 80 institutions to 45 institutions and the number of "domestically operating banks," which are subject to the 4 percent capital requirement, increased from 67 institutions to 102 institutions.

NOTES

[1]For more evidence on the economic impact of declining asset prices and bank health, see Gibson (1995 and 1996); Kang and Stulz (1997); Peek and Rosengren (1997); and Kaufman (1998).

[2]For instance, a recent study notes that in 1980–96, over 130 countries experienced serious banking problems (Lindgren, Garcia, and Saal, 1996).

[3]For an overview of the S&L and banking crisis in the U.S., the resulting regulatory changes, and an assessment of the regulatory reform, see Benston and Kaufman (1998) and references therein.

[4]For a concise review of the literature, see chapter three of Lindgren, Garcia, and Saal (1996) and references therein.

[5]For instance, just as the MoF allows Japanese banks to avoid reporting valuation losses on security portfolios, in the 1980s the Federal Home Loan Bank Board allowed S&Ls to defer recognition of losses on asset sales. For details of the regulatory accounting practices allowed by S&L regulators, see Benston and Kaufman (1990), Barth (1991), and Ashley, Brewer, and Vincent (1998).

[6]The cost of regulatory forbearance in the U.S. has been studied by Eisenbeis and Horvitz (1994), Brinkmann, Horvitz, and Huang (1996), Kane and Yu (1996), and others.

[7]For a more detailed description of the Japanese financial markets and regulatory developments, see Suzuki (1987), Cargill and Royama (1988), Tatewaki (1990), Frankel and Morgan (1992), Cargill, Hutchison, and Ito (1997), and Craig (1998).

[8]In addition to its regulatory function in the banking industry, the MoF has other, broader responsibilities, such as regulation of other financial institutions, setting fiscal policy, collecting taxes and custom duties, drawing and allocating the government budget, floating government bonds, and overseeing foreign exchange transactions.

[9]The banks in table 1 do not represent all banks in Japan, only the largest ones. Second tier regional banks and institutions that specialize in financing of small businesses and agriculture are not included.

[10]Keiretsu are one of the most distinguishing features of Japanese organizational structure. Keiretsu are groups of companies that maintain long-term relationships with each other through cross shareholdings and customer-supplier relationships. Financial institutions (typically a city bank, a trust bank, and insurance companies) form the nexus of keiretsu and provide debt and equity financing to group firms. Previous studies found that keiretsu firms differ from other Japanese firms in significant ways. (For a description of keiretsu relationships, see Nakatani (1984), Sheard (1989), Genay (1991), Aoki and Patrick (1994), and the references therein.) For instance, keiretsu firms recover from financial distress faster than other Japanese firms (Hoshi, Kashyap, and Scharfstein, 1990), and they may be less cash constrained in their investments (Hoshi, Kashyap, and Scharfstein, 1991; and Hall and Weinstein, 1997). In addition, corporate governance practices appear to be different in keiretsu: Banks play a more central role in the governance of keiretsu firms through their board representation (Kaplan and Minton, 1994), and the shareholders of financial institutions in the keiretsu respond differently to risk from the shareholders of other financial firms (Genay, 1993). However, there is also evidence that keiretsu relationships involve significant costs (Gibson, 1996; Kang and Stulz, 1997; and Weinstein and Yafeh, 1998). Although anecdotal evidence suggests keiretsu relationships are weakening, these groups and their financial institutions continue to be major players in the Japanese economy.

[11]The slight decline in interest margins at U.S. banks during this period reflects aggressive price competition in U.S. business lending markets. Hence, the relatively greater profitability of U.S. banks during 1990–97 is due mostly to higher fee and other income.

[12]Similarly, according to statistics reported by Demirgüç-Kunt and Huizinga (1997), Japanese banks earned, on average, 0.10 percent return on assets (ROA) in 1988–95. Over the same period, banks in the rest of the G7 countries earned 0.53 percent ROA.

[13]For some examples of this literature and other banking studies that form the basis of the following discussion, see Brewer and Garcia (1987), Berger, King, and O'Brien (1991), Kuester and O'Brien (1991), Thomson (1992), Cole (1993), Berger (1995), Brewer, et al. (1997), Demirgüç-Kunt and Huizinga (1997), and references therein.

[14]Lack of sufficient numbers of Japanese bank failures precludes me from analyzing the determinants of the solvency of Japanese banks.

[15]I relate current bank performance to characteristics measured at the end of the previous period. Therefore, although ROE is negatively correlated with loan loss provisions in the current period by definition, there might be a positive relationship between current ROE and previous loan loss provisioning.

[16]There is also evidence that nonperforming loans reported by U.S. banks are important predictors of future bank performance and are significantly related to stock market value of banks' equity. For Japanese banks, definition of what constitutes a nonperforming loan is less inclusive and has changed several times in recent years (see appendix 3); as a result, it is more difficult to measure the impact of nonperforming loans on Japanese bank performance.

[17]For a detailed discussion of the relationship between earnings and capital, see Berger (1995) and Brewer et al. (1997).

[18]I also used other measures of liquidity and capital (such as book value of capital to total assets and BIS tier one capital ratio). The results with these alternative measures were qualitatively similar to those reported in the article.

[19]In the following analysis, I also used other measures of economic activity, such as the change in the yen-dollar exchange rate, changes in short-term and long-term interest rates, changes in term structure, and dummy variables for years. The results with respect to bank characteristics were similar to those reported in the article. The results also indicated that Japanese banks face some interest rate and foreign exchange risk. In particular, depreciation of the yen is associated with lower bank earnings and stock returns. Changes in the term structure are also negatively correlated with bank earnings. Specifically, increases in the short-term gensaki rate (the three-month, riskless rate) are associated with higher bank earnings, whereas increases in the long-term (ten-year bell-wether bond) rates are negatively correlated with bank earnings. Monthly stock returns of banks, when significant, exhibit a similar relationship with changes in the short- and long-term interest rates. However, there are significant differences in the interest rate sensitivity of Japanese banks in the pre- and post-1995 periods and across bank types. The evidence with respect to long-term interest rates is consistent with the results reported in Broussard, Kim, and Limpaphayom (1998), which looks at the sensitivity of Japanese banks in the 1975–94 period.

[20]Excluding these observations does not qualitatively affect the results presented here.

[21]Stock prices for the three long-term credit banks were unavailable; hence these banks are excluded from the analysis of stock returns reported in table 6.

[22]The following results on accounting profits remain qualitatively the same if one uses ROA, rather than ROE.

[23]There is some evidence, for example, that the cost of issuing convertible bonds was significant for Mitsubishi Bank (Ammer and Gibson, 1996).

[24]The results with other measures of accounting profitability are available from the author upon request.

[25]The statistics in table 2 indicate that Japanese banks have increased their equity investments in recent years. Although this might appear inconsistent with anecdotal evidence on equity sales, it is consistent with other anecdotal evidence that suggests that banks repurchased their equity stakes in other companies to maintain long-term relationships. Japanese banks accumulated their equity stakes over a long period, beginning at the end of World War II. Consequently, it is very likely that banks repurchased these shares at higher prices than they originally paid. In that case, the ratio of equity investments to total assets in table 2, reported as the lower of cost or market value, would increase.

[26]The largest shareholders of banks are other financial institutions and, for keiretsu banks, nonfinancial firms in the group (Genay, 1993). To the extent that these shareholders are better informed about the banks than other market participants, they would be less likely to be misled by the reported numbers. If the top shareholders trade on their information, or signal this information to the market in other ways, the correlations of stock returns with bank characteristics would reflect the market's information and would differ from those observed with accounting earnings.

[27]For example, see Brickley and James (1986), Kane (1985, 1986), Pyle (1986), Thomson (1987a and 1987b), and Unal and Kane (1990).

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