The Rise of Deferred Tax Assets in Japan: The Case of the Major Japanese Banks

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Abstract

This paper describes the role that accounting for deferred taxes has played in the ongoing financial crisis among the major Japanese banks, as dramatized most vividly by the recent collapse of Resona Bank. I argue that deferred tax accounting: (1) has been used by the Japanese Government, including bank regulators, to help give the major banks collectively the *appearance* of financial well-being in spite of their economic difficulties, and (2) that managers of these banks have used deferred tax accounting to bolster their banks' regulatory capital levels when their economic circumstances deteriorate. I present evidence that is generally consistent with these arguments, supporting economists' views that accounting has played a role in helping the Japanese Government to postpone the politically difficult task of reforming the major banks.

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1. Introduction

This paper provides evidence on accounting for deferred taxes by the major Japanese banks from fiscal 1998, when deferred tax accounting was first adopted by the banks, through fiscal 2003. The main goal of the paper is to document the role of deferred taxes in the decade-long crisis in the Japanese banking sector. I argue that deferred taxes have been used by the Japanese Government and bank regulators at the Ministry of Finance ("MOF") and Financial Services Agency ("FSA") as a tool of *regulatory forbearance*; that is, to give the major Japanese banks the *appearance* of financial health when in fact many face economic difficulty. In addition, I argue that managers of the banks themselves use the discretion inherent in deferred tax accounting to practice *regulatory arbitrage*; that is, to manage reported levels of regulatory capital in such a way as to avoid falling below minimum capital thresholds. These practices have arguably helped the Government postpone the politically difficult task of reforming the banks.

Accounting researchers have argued for some time that accounting for deferred tax assets (hereafter "DTAs") provides managers with significant discretion, at least under US GAAP (e.g., Miller and Skinner, 1998; Schrand and Wong, 2003). This is because the realizability of DTAs depends on managers' assessments of their firms' ability to generate sufficient levels of future taxable income, which are highly subjective. Deferred taxes provide an especially difficult challenge for auditors because there is no objective evidence they can use to verify managers' estimates of the realizability of DTAs. Yet there is little clear evidence that managers of US firms use the discretion inherent in deferred tax accounting to manage reported earnings.[1]

Accounting for DTAs by Japanese banks offers a more powerful setting for investigating the extent to which deferred taxes can be used for earnings management purposes. First, beyond

[1] Recent research that finds evidence consistent with deferred tax accounting being used for earnings management purposes includes Schrand and Wong (2003) and Dhaliwal, Gleason, and Mills (2004).

the Japanese GAAP rules on realizability, there is no limit on the extent to which Japanese banks can use DTAs for regulatory capital purposes.[2] Most other countries limit the extent to which DTAs can be included in banks' regulatory capital; in the US the maximum is 10%. Second, Japanese deferred tax rules are broadly similar to those in the US in that recognition of DTAs depends on managers' assessments of their firms' future levels of taxable income. Third, when deferred tax accounting was adopted in Japan little accounting or auditing guidance was available, making it especially difficult for auditors to verify the reasonableness of the DTAs recognized by the banks.

The evidence that I report is consistent with deferred taxes being used as a tool of regulatory forbearance by Japanese bank regulators and as a tool of regulatory arbitrage by bank managers, although there are other plausible explanations. The evidence supports suggestions by economists that accounting has helped to prolong the Japanese banking crisis, increasing its cost to Japanese taxpayers.[3] Thus, Japan provides a cautionary tale for other countries where politics increasingly threatens the independence of accounting rule-making, as is the case recently in the US (with respect to stock options) and Europe (with respect to IAS 39).[4]

I present two types of evidence in the paper. In Section 2, I provide aggregate evidence from 1982 to 2003 on the financial performance of the major Japanese banks, their levels of regulatory capital, and the role of deferred tax accounting. This evidence shows that the bursting of the bubble in Japanese stock and real estate prices in the early 1990s and the subsequent economic malaise caused a steady decline in the profitability and financial strength of these

[2] The FSA is currently considering a change in this policy beginning in Fiscal 2005.
[3] For example, see Fukao (1998, 2000), Hoshi (2001), Hoshi and Kashyap (2001). Hoshi and Kashyap (2004) estimate that it will cost Japanese taxpayers at least ¥20 trillion to ¥40 trillion (about 4%-8% of GDP) to clean up the banks' problems.
[4] Increased political influence over the accounting rule-making would be one of the costs of conforming taxable income and financial reporting income, as has recently been proposed by some policymakers in Washington (see Hanlon and Shevlin, 2005). The evidence here supports these authors' argument that such influence is not likely to improve the informational role of financial reporting.

banks. During the first part of the 1990s, the banks were able to maintain necessary levels of regulatory capital by realizing gains on their large holdings of investment securities (primarily stocks). Because of the scale of these realizations, the banks' continuing economic problems, and the continuing decline in Japanese stock prices, this source of financial slack ran out in about 1998.

I argue that the pressure on the Government, banking regulators, and the banks to avoid a full-blown financial crisis contributed to the introduction of deferred tax accounting in Japanese banks. When first recognized in fiscal 1998, DTAs at the major Japanese banks totaled ¥6.6 trillion, or about 29% of bank equity. Almost all of the major banks would have fallen below required minimum capital levels without this accounting change. The recognition of DTAs in turn helped the Government to rationalize a contemporaneous ¥7.5 trillion capital injection into these banks. Deferred tax accounting continued to be an important source of regulatory capital for Japanese banks in the years after this, most notably in fiscal 2002 when the effect of mark-to-market accounting (adopted in fiscal 2001), large declines in equity prices, and large operating losses caused other components of bank capital to decline. In this year the major banks' DTAs totaled ¥7.5 trillion, or 60% of equity.

The collapse of Resona Bank arguably signaled the beginning of the end for DTAs in Japanese banks. Resona collapsed in May 2003 when its auditors refused to sign off on its DTAs, causing the bank to fall below minimum capital levels. The Government immediately stepped in to save the bank, injecting ¥1.96 trillion in new capital. These events triggered a public outcry and focused scrutiny on the role of DTAs in the banks. In the period after Resona

there has been a marked decline in the major banks' use of DTAs, although DTAs still represent a significant fraction of equity for some banks.[5]

I use data on the deferred tax positions of a sample of Japanese banks to investigate cross-sectional and time-series predictions derived from the underlying thesis that deferred tax accounting in Japan was, at least in part, driven by its role as a tool of regulatory forbearance and regulatory arbitrage in the banks. The evidence is generally consistent with this view. Among other things, I find that (1) the major Japanese banks were relatively aggressive in their initial recognition of DTAs, reporting net DTAs that were larger than those at the regional banks and US banks when they adopted deferred tax accounting in 1992 (US bank numbers per Schrand and Wong, 2003);[6] (2) this occurred in spite of the fact that the Japanese banks were consistently unprofitable at the time, both in absolute and relative terms; (3) the major Japanese banks would have fallen below minimum regulatory capital levels in fiscal 1998 without the inclusion of DTAs.[7] In addition, there is evidence of systematic changes in the deferred tax positions of the major Japanese banks after conditioning on variables that, under GAAP, should explain deferred taxes. These changes appear to be related to the banks' incentives to increase regulatory capital levels when they were put under pressure by external forces such as a declining stock market, the related effects of mark-to-market accounting, the bad loan problem, and a difficult economic environment. In other words, there are systematic changes in the deferred tax positions of the

[5] The ratio of net DTAs to Tier I capital was 49% for SMFG, one of the Japanese "megabanks," at March 31, 2005. SMFG's heavy reliance on DTAs was an issue in its recent battle with MTFG for control of UFJ, with opponents using its reliance on DTAs as evidence of its weak capital position.

[6] Japanese tax law, at least as it applies to banks, is more restrictive than that in the US and naturally generates larger gross DTAs. However, it is also the case that the Japanese banks' DTAs are less likely to be realized than those of US banks, implying that their *net* DTAs should be accounted for more conservatively. This is discussed further in Sections 3 and 4 below.

[7] Suda (2002) also investigates the role of deferred taxes in Japanese banks, and reports evidence consistent with the idea that managers of Japanese banks use deferred tax accounting for purposes of regulatory arbitrage. His sample period is limited to F1999-F2001 and excludes F1998, when deferred tax accounting was adopted by the banks. In addition, he does not examine the components of the banks' deferred taxes, looking only at their overall net deferred tax positions. Suda also investigates the stock price response to the banks' deferred tax accounting choices.

major banks that are not well explained by "fundamentals" but that seem related to regulatory incentives.

These results also have implications for studies that aggregate accounting data drawn from a large number of countries. Because Japan has a large and well-developed economy, these studies often include many Japanese firms.[8] Although accounting rules in Japan are often *ostensibly* similar to those in other countries (including the UK and US), actual accounting practice is sometimes quite different, making it difficult to meaningfully compare the numbers. Thus, Japan offers a clear example of the problem, discussed by Ball, Robin, and Wu (2003), among others, that it is not enough to have similar accounting rules across countries if other features of their economies – including political, regulatory, and cultural incentives – are not also similar.[9]

Section 2 provides aggregate evidence on the earnings performance and capital levels of the major Japanese banks from the early 1980s to fiscal 2003.[10] Section 3 develops empirical predictions, while Section 4 reports the empirical evidence on how the major Japanese banks used deferred taxes to bolster their reported levels of regulatory capital. Section 5 concludes.

2. Earnings and Capital of Major Japanese Banks, 1982-2003

This section describes the earnings performance and capital levels of the major Japanese banks over 1982-2003, including the role of deferred tax accounting beginning in the late 1990s. First, in section 2.1 I discuss how the banks began realizing gains on securities once profitability

[8] See, for example, recent papers by Lang, Ready, and Wilson (2004), Bushman, Piotroski, and Smith (2004), or Bushman and Piotroski (2004).

[9] The results are broadly consistent with those of Bradshaw and Miller (2005), who find that there are a large number of non-US firms (including Japanese firms) that claim to report under US GAAP but which actually report numbers quite different to those that otherwise similar US firms report.

[10] For background on Japanese banks, the history of the "main bank" system in Japan, and how the banks are regulated, including a discussion of how deregulation of the financial system and other economic changes have affected the banks over the last 20 years, see Aoki et al. (1994), Fukao (1998), and Hoshi and Kashyap (1999, 2001).

levels started to decline in the late 1980s, in a manner consistent with income smoothing. Section 2.2 reports on the extent to which these realized gains contributed to the banks' capital levels in the mid to late 1990s. Section 2.3 analyzes the components of bank capital from the mid-1990s onward in more detail to show how changes in accounting rules and bank regulations helped the banks maintain their regulatory capital levels. This analysis makes it clear that the way deferred tax accounting was implemented and practiced in Japanese banks played a key role in maintaining their levels of regulatory capital.

2.1 Earnings Performance of Major Japanese Banks, 1982-2003

Figure 1 plots the major Japanese banks' earnings before realized gains/(losses) (a measure of operating earnings), their gain (loss) realizations, and their pre-tax earnings. The realized gains (losses) are from the sale of land and investment securities, principally from the sales of shares. Data are from the Bank of Japan.

Over the period from F1982 to F1988 the major Japanese banks reported steady increases in earnings.[11] In F1989, however, there was a substantial decline in earnings before realized gains/losses, from ¥3.1 trillion in F1988 to ¥0.3 trillion in F1989. In the same year the banks reported realized gains from sales of real estate and securities of ¥2.8 trillion, largely from the sale of shares. This number is much larger than the realized gains (losses) reported in previous years and allowed the banks to report F1989 earnings at levels not far below those for F1988. Operating earnings for the banks were again weak in F1990, with earnings before realized gains/losses only marginally higher than in F1989. The banks again offset this poor operating

[11] Appendix 1 provides more detailed aggregate annual income statement numbers for the major banks, along with annual returns on the Nikkei 225 (cumulated over fiscal years), and the banks' overall stock of available unrealized gains on investment securities. Realized gains from the sale of stocks are available separately beginning in fiscal 1989 and make it clear that realized gains from sales of stocks are the primary source of realized gains during this period. References to years refer to fiscal years, which end in Japan on March 31. Thus, F1989 refers to the fiscal year ended March 31, 1990.

performance with large realized gains, this time of ¥1.8 trillion. This pattern continued in F1991 when losses before realized gains/losses of ¥0.1 trillion were offset by gain realizations of ¥2.1 trillion, which brought earnings up to an amount comparable to that for F1990.

These gains were realized during a time when Japanese equity prices decreased precipitously. The Nikkei 225 fell from around 39,000 in late 1989 to 17,269 by the spring of 1992. This led to a correspondingly sharp decline in the major banks' stock of unrealized gains on securities (shown in Figure 2).

The pattern of gain realizations continued over the next several years. In F1992, a small rebound in operating profits meant that realized gains were relatively small, at ¥0.5 trillion, compared to the previous three years. In F1993 and F1994, however, the banks recorded losses before realized gains/losses were considered of ¥1.5 trillion and ¥4.0 trillion. These losses were offset by realized gains of ¥2.2 trillion and ¥4.1 trillion, respectively, allowing the banks to report positive earnings in both years. The pattern of large gain realizations continued through most of the 1990s, even though operating performance and earnings before realized gains (losses) were poor. Earnings before realized gains (losses), in fact, was consistently and increasingly negative over F1993-F1998 as the banks were forced to recognize large loan losses. Realized gains over this period were consistently in the ¥2.0 to ¥4.3 trillion range.

The notion that managers of Japanese banks used gain realizations to smooth their banks' reported earnings during this period is supported by a negative correlation between earnings before realized gains/losses and the amounts of the gain realizations. Over the period from F1988 to F1997 the correlation between changes in earnings before realized gains/(losses) and the realized gains is -.53 (significant at .05). This evidence is similar to that of Barth, Beaver, and Wolfson (1990) who study US banks in the 1970s and 1980s. The tendency for managers of

Japanese banks to smooth earnings in this way has previously been noted by Shrieves and Dahl (2003) and Hoshi and Kashyap (1999), among others.[12]

The major banks' losses in the mid-1990s became so large that not even the continued realization of gains was able to prevent them from reporting large losses. The banks reported bottom-line losses of ¥3.6 trillion in F1995, ¥5.3 trillion in F1997, and ¥4.8 trillion in F1998. This raises the possibility that the gain realizations were used to supplement bank regulatory capital levels, which I discuss next.

2.2 Analysis of the Capital Strength of Major Japanese Banks, 1982-2003.

To analyze trends in the capital levels of the major Japanese banks, Figure 2 plots the banks' aggregate level of stockholders' equity (equity), their stock of available unrealized gains on securities, and the cumulative after-tax amount of realized gains on these securities for the period from F1982 through F2002.[13] For regulatory purposes the banks are required to maintain a minimum level of Tier I capital, which corresponds fairly closely to stockholders' equity.[14] The cumulative after-tax amount of realized gains shows the extent to which the banks rely on the gain realizations as a source of capital. Figure 3 plots the major components of stockholders' equity from F1993 through F2003. More detailed numbers are provided in Appendix 2 and Table 1.

[12] It is unlikely that the banks' large scale sales of securities during this period were motivated by liquidity needs. As discussed by a number of authors (e.g., Fukao, 1998; Hoshi and Kashyap, 1999; Shrieves and Dahl, 2003), the securities sold by the banks during this period were largely shares that represented the banks' long-standing holdings in the equity of their corporate lending customers, especially other group companies. To maintain these relationships and avoid possible retaliatory sales of the banks' own shares, the banks typically immediately bought back the shares they sold at current market prices. Given the tax consequences of these transactions (the gains were subject to capital gains tax at rates of about 50%), Shrieves and Dahl (2003) argue that these transactions actually resulted in net cash outflows to the banks. The general practice described here is known as *fukumi keiei* (hidden asset management). In November 2000 the JICPA passed a rule preventing the banks from recording gains on sales of stock that were repurchased shortly afterwards.

[13] Cumulative realized gains on securities are calculated by tax-effecting the gains (losses) assuming a tax rate of 40% and then cumulating, beginning with fiscal 1982.

[14] Tier I capital consists of common stock, preferred stock, capital surplus, minority interest, and retained earnings, net of any recorded goodwill.

Figure 2 shows that the major banks' equity grew steadily during the 1980s. During most of this period equity consisted of approximately equal amounts of paid-in capital and retained earnings. Gains on sales of investment securities played a relatively small role, and at the end of F1989 realized gains on securities represented less than 10% of total equity. At the same time, the banks had accumulated large unrealized gains on their holdings of investment securities. The stock of gains grew from about ¥9.6 trillion in F1982 (about 1.7 times equity) to ¥55 trillion in F1988 (about 3.6 times equity).

This picture changes dramatically in the first half of the 1990s. From F1990 through F1994 total equity for the banks stays virtually constant at ¥21 trillion, with little change in either paid-in capital or retained earnings. The constant level of retained earnings, however, is increasingly due to the large gain realizations documented above. On a cumulative, after-tax basis these gains totaled ¥8.3 trillion by F1994, and represented about 39% of equity and 72% of retained earnings. Over the next three years, from F1995 to F1997, the banks' large losses drained retained earnings, which fell from ¥11.6 trillion in F1994 to only ¥1.9 trillion in F1997 (see Figure 3). By F1997 cumulative realized gains of ¥15.2 trillion actually exceeded total equity of ¥13.6 trillion, meaning that the banks would have had negative equity without the realization of gains. In addition, total equity in F1997 had fallen to levels well below that of F1996.

Thus, by F1997 the major Japanese banks had reached a turning point. Consistently poor operating performance combined with a substantial decline in their stock of available capital gains had largely sapped them of their financial strength. The overall financial sector difficulties were highlighted by the collapse of a major bank (Hokkaido Takushoku Bank, a city bank) and two large securities firms (Sanyo Securities and Yamaichi Securities) in late 1997.

2.3 The Role of Deferred Tax Accounting

This financial crisis in 1997 caused the Government to pass an Emergency Economic Package. As part of this reform package the Government, through the MOF, revised banking regulations to allow banks to use the cost method to account for investments in marketable securities. Previously the lower-of-cost-or-market rule had been required. This made it easier for the banks to avoid reporting unrealized losses on their holdings of investment securities. The timing of this rule change was fortuitous – in the first half of F1998 (not shown in tables), for the first time in many decades, the banks had net unrealized losses on their holdings of investment securities.

In spite of the Government's actions, the situation continued to deteriorate during 1998 and the banks' aggregate retained earnings became negative in the first half of F1998 (see Table 1, which breaks down the banks' equity on a semiannual basis from F1997 through F2003). The worsening crisis forced the Government to take even more drastic steps, and in October it passed legislation that made public monies totaling ¥60 trillion (about 12% of GDP) available to inject capital into weak but solvent banks, to nationalize failing banks, and to protect bank depositors. Soon after this two more major banks – Long Term Credit Bank of Japan and Nippon Credit Bank – failed and were nationalized.[15]

Around this same time, the Government initiated two more accounting changes with applicability to Japanese banks, arguably to help stave off further financial crisis. First, in March 1998, the Government passed legislation that allowed financial institutions and certain large companies to voluntarily revalue their land holdings on a tax-free basis. According to Hoshi and Kashyap (2001, p. 276), this allowed these entities to record revaluation gains because in many

[15] Again, see Fukao (2000, 2003b) and Hoshi and Kashyap (2001, Section 8.1.4) for more details.

cases the land had been held for so long that even their post-crash values were above book value.[16]

The other significant accounting change was the introduction of deferred tax accounting. In June 1998, the Business Accounting Deliberation Council (BADC) issued an exposure draft proposing the introduction of deferred tax accounting. This decision followed closely after a Government ruling which changed the Commercial Code (the regulatory force behind Japanese GAAP) to allow deferred tax assets and liabilities to be recognized in financial statements.[17] This exposure draft was quickly followed by a final statement in October 1998. The statement was effective for fiscal periods beginning on or after April 1, 1999 (F1999) but allowed for early adoption.

The effect of these two new accounting rules is shown in Figures 3 and 4 and Table 1. The land revaluation reserve appears in equity for the first time in F1998 at an amount of ¥1.4 trillion, or a little over 10% of total SE at the previous year-end.

The introduction of deferred tax accounting had an even larger effect on the banks' equity. In total, net DTAs of ¥8.9 trillion were recognized by Japanese banks at the F1998 year-

[16] As originally instituted, the revaluation credits were booked to liabilities rather than equity. In March 1999, however, the law was amended to require the gains to be booked to equity. See Kawamura (1998b). Apart from its timing, the fact that this law only applied to financial institutions and certain other large companies supports an interpretation that the new accounting treatment was motivated by a desire on the part of regulators to support the capital levels of the banks. More specifically, the law applied to the major banks and to certain large industrial firms which also happened to have relatively large, valuable holdings of land. Many of the companies to which the Act applied had loans outstanding to the major banks and were in economic difficulties themselves (for example, many textiles firms were at the time facing increased competition from Chinese competitors). The law reduced the possibility that the banks would have to record provisions to reflect these borrowers' economic difficulties.

[17] Prior to this, the Commercial Code had apparently been interpreted to imply that deferred tax assets and liabilities could not be recognized in financial statements because they did not meet the legal definition of assets and liabilities (see Kawamura, 1998a). Notice that the BADC was an advisory committee to the MOF (and later the FSA) rather than an independent standard-setting body.

end. Of this amount, the major banks recognized DTAs of ¥6.6 trillion, close to half of total equity at the previous fiscal year-end (see Figure 4 and Table 1).[18]

Two other features of the banks' adoption of deferred taxes are consistent with its use by regulators as a forbearance tool. First, because the deferred tax effects are (almost without exception) run through income and then into retained earnings, DTAs represent part of the more stringently defined Tier I capital. In most other countries, bank regulators place limits on the extent to which DTAs can be included in Tier I capital. In the US, for example, DTAs are limited to 10% of regulatory capital (e.g., Schrand and Wong, 2003). There is no such limit in Japan.

Second, because the rule was adopted so quickly after its issuance, little guidance was available to accountants or auditors regarding how the new rule should be applied. Audit guidance from the JICPA only became available later, in November 1999 (see Appendix 3).

Together, these two new components of equity accounted for about 35% of bank equity at the F1998 year end, with DTAs playing the major role. The other major factor affecting bank equity at the F1998 year end was a large capital injection by the government. For the major banks the amount of this injection totaled ¥7.3 trillion, of which ¥6.1 trillion increased equity (again, see Figure 3).[19] Without the accounting changes and the injection of capital, bank capital at the end of F1998 would have been only ¥8.7 trillion, considerably lower than the already low ¥13.6 trillion at the previous year-end.

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[18] Although the banks were not required to adopt the new deferred tax rule until F1999 almost all of the banks adopted the rule early in F1998 immediately after its passage. According to the Bank of Japan (1999), 134 banks adopted the rule early at the March 1999 year end and only four regional banks did not adopt the rule at this time.. Some argue that bank regulators allowed the banks to implement deferred tax accounting early and for regulatory purposes as part of an implicit deal with the banks, who at the time were being forced by the regulators to address their non-performing loan problems. In this view DTAs were used to facilitate a "soft landing" by the banks – to cushion the financial blow of having to resolve their NPL problems.

[19] The capital injections took the form of Government purchases of preferred stock (included as part of Tier I capital) and subordinated debt (included as part of liabilities). See Fukao (2000) and Nakaso (1999).

It seems likely that the two accounting changes helped justify the Government's injections of capital. In particular, the Bank Recapitalization Act provided for capital injections to "healthy" banks, presumably meaning those that at least met minimum capital requirements.[20] Without the increases in reported capital attributable to deferred taxes, most of the major banks would have fallen short of this mark (see Section 4), making it difficult for the Government to justify the capital injections.

After initial adoption in F1998, the level of DTAs declines over the next four semiannual periods, from ¥6.6 trillion (29% of equity) in F1998 to ¥5.3 trillion (22%) in F2000 (see Figure 4 and Table 1). I provide evidence in Section 4 that many of the major banks reduced their net DTAs in F1999, perhaps because of the audit guidance that became available in November 1999.

The introduction of mark-to-market accounting for investment securities in F2001 had a significant effect on the major banks' deferred tax positions. Over the period from early 2000 to early 2002 the Nikkei fell by approximately one-half. This resulted for the first time in many decades in overall unrealized losses on the banks' holdings of investment securities; see Appendix 2. As required under mark-to-market accounting, these losses were recorded as part of equity. Largely because of the associated tax effect, DTAs increased from ¥5.3 trillion in F2000 to ¥8.0 trillion in F2001 (see Section 4).[21] Because the banks' large net losses caused retained earnings to decline in this year, DTAs doubled as a fraction of equity – from 22% in F2000 to 44% in F2001. In terms of total amount, F2001 was close to the peak for DTAs, which decline to ¥7.8 trillion at F2002. However, because other components of bank equity declined in F2002,

[20] The injection of capital was a sensitive political issue given the contentious environment surrounding the passage of the two laws in 1998; Fukao (2003b) labeled it as a "disorderly atmosphere." See Hoshi and Kashyap (2001, pp. 277-280) for details.

[21] Under accounting rules for mark-to-market accounting, the cumulative unrealized gains or losses on investment securities are recorded as a separate component of stockholders' equity; that is, they do not affect net income or retained earnings. These cumulative gains and losses are, however, recorded in equity net of tax effect, creating deferred tax liabilities (in the case of gains) and deferred tax assets (in the case of losses).

DTAs increased to 60% of bank equity in that year, which was to be their peak. These numbers make it clear that many of the major Japanese banks would have been insolvent without the inclusion of DTAs in equity.

Two major, and likely related, events occurred in F2002 which arguably marks the beginning of the end for DTAs in the major Japanese banks. First, Mr. Heizo Tenaka was appointed as financial services minister and head of the FSA. In the fall of 2002, Mr. Takenaka introduced the "Takenaka Plan," a package of measures designed to address the banking sector's ongoing problems. One of these measures admonished auditors to more strictly enforce rules governing the recognition of DTAs. Second, in the spring of 2003 one of the largest Japanese banks, Resona, collapsed after its auditors failed to agree to its (arguably) aggressive recognition of DTAs. The forced write-off of the disputed DTAs reduced its capital to below the required regulatory minimums. This collapse was a major event in Japan, triggering an immediate emergency meeting of the Government's Financial Service Management Council, headed by Prime Minister Koizumi, and a subsequent massive injection of public funds (¥1.96 trillion) into the bank, amid much public consternation.

The Japanese Government's response to the collapse of Resona was largely to try and ensure that the Banks' problems do not create a more general financial crisis. This involved characterizing Resona's problems, including its deferred tax situation, as unique.[22] The fallout from the collapse of Resona thus potentially helps explain the overall decline in the DTAs of the major banks since F2002. Since that time, the major banks have taken two actions with respect

[22] Tani (2003) reports that in a meeting of a committee of the Diet in late May 2003, Mr. Takenaka took pains to make clear that the actions taken with regard to Resona did not represent a crisis in any way. An article in the *Nikkei Weekly* ("Banks need stricter asset assessment," May 26, 2003) indicates that "In a bid to prevent Resona's case from sending the financial system into a tailspin, the government is using extreme caution in discussing the issue. Authorities have even prepared a list of acceptable and taboo words, which suggests using "public support" instead of "nationalization," or speaking of "Resona's reconstruction" rather than "Resona's failure." *The words that government officials refuse to utter, as if they have been gagged, relate to accounting rules on deferred tax assets*…" (emph. added).

to their DTAs: (1) increased their justification for existing of DTAs, often through elaborate and lengthy disclosures; (2) reduced their DTAs to levels that are easier to justify.

The numbers shown in Figure 4 are consistent with an overall decline in the magnitude of DTAs after F2002 (see also Table 1). DTAs for the major banks decline from ¥7.8 trillion in F2002 to ¥5.5 trillion in F2003, and the ratio of DTAs to equity falls from 60% to 33%. Part of this decline is likely due to the increase in net unrealized gains that occurred during the year, since these generate deferred tax liabilities (hereafter DTLs) that reduce net DTAs. This is unlikely to explain the entire decline, however, a prediction that I test in Section 4.

3. Empirical Predictions for Bank-Level Analysis

A great deal of research addresses the economic problems of Japanese banks during the 1990s and the associated problems in the Japanese financial system. However, there is relatively little research that addresses the role that accounting plays in this crisis.

While the trends described in Section 2 are generally consistent with the idea that DTAs were used by the Government and bank regulators as part of a systematic policy of regulatory forbearance toward the major Japanese banks, they tell us little about whether managers of these banks actually took advantage of the latitude available to them under the rules defining regulatory capital to practice regulatory arbitrage. In the remainder of the paper I provide a more conventional cross-sectional approach to more formally investigate this argument.

Section 3.1 first provides some predictions about Japanese bank managers' regulatory capital incentives over the period from F1998 to F2003. Section 3.2 then discusses Japanese GAAP rules for deferred taxes as well as on relevant aspects of Japanese tax law.

3.1 Bank managers' regulatory arbitrage incentives

Regulatory arbitrage occurs when bank managers exploit their discretion over the way that regulatory capital is calculated to manage reported capital levels, usually to satisfy the necessary regulatory thresholds.[23] In Japan, Ito and Sasaki (2002) show that in the early 1990s, at the time that BIS rules were adopted in Japan, bank managers responded by issuing subordinated debt and curtailing new loan activity, both of which helped them to meet Tier II capital requirements.[24] This was necessary in the face of the sharp declines in the value of the banks' portfolios of investment securities that also occurred in the early 1990s and that would otherwise have led to sharp reductions in the banks' Tier II capital. Shrieves and Dahl (2003) show that over the period from 1989 to 1996 managers of Japanese banks timed the realization of securities gains and managed reported loan loss provisions in such a way as to smooth reported income and bolster their banks' regulatory capital levels in the face of increasing economic difficulties, consistent with the discussion in Section 2.

The main prediction that I investigate is that managers of Japanese banks exploit their discretion over deferred tax accounting to practice regulatory arbitrage in the late 1990s when, as Section 2 shows, a combination of related factors had largely exhausted the banks' more conventional sources of regulatory capital. Because of this, I argue that other incentives that usually affect bank managers' reporting choices – principally tax incentives and financial reporting incentives – became relatively less important and that deferred tax accounting was,

[23] A number of papers investigate how managers of US banks trade off the incentives provided by regulatory capital regulations, tax incentives, and financial reporting incentives. For example, see Moyer (1990), Scholes, Wolfson, and Wilson (1990), Beatty, Chamberlain, and Magliolo (1995), and Collins, Shackelford, and Wahlen (1995).

[24] Under the BIS rules there are two types of bank capital, referred to as Tier I and Tier II. Tier I capital essentially comprises paid-in capital and retained earnings. Tier II capital includes items such as subordinated debt and convertible bonds as well as loan loss provisions. A risk-based capital ratio is computed by dividing these amounts by risk-weighted assets. Under BIS rules Tier I capital ratio must be at least 4% of risk-weighted assets while the sum of Tier I and Tier II capital must be at least 8% of this same amount, with Tier II capital limited to 100% of Tier I capital. One of the country-specific adjustments made to BIS rules in Japan was that 45% of the unrealized gains on holdings of investment securities were included in Tier II capital.

thanks to the related changes in regulatory and accounting rules, the most cost effective tool available to managers of these banks.[25]

The specific regulatory arbitrage argument that I test is that Japanese banks' deferred tax accounting choices are driven by bank managers' incentives to increase reported levels of Tier I capital in the face of shortages in other components of that capital. This leads to the general cross-sectional prediction that the relative level of banks' net DTAs is inversely related to Tier I capital levels (or more precisely, the ratio of Tier I capital to risk-weighted assets) before considering net DTAs, other factors held constant.

A second general prediction is that, at least initially, regulatory arbitrage is more likely to be practiced by managers of the major Japanese banks than by those of the regional banks. If the primary motivation for the Government's implicit policy of regulatory forbearance is to prevent a financial crisis and associated consequences for the real economy, Government officials are likely to be most concerned about potential collapse of the major banks, which are larger and more visible and for which the consequences of failure (for both depositors and corporate borrowers) would be more severe. As described in Section 2, when in early 1999 the Government chose to inject capital into the banking sector, it did so almost exclusively for the major banks.[26],[27]

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[25] Shrieves and Dahl (2003) report that managers of Japanese banks were willing to incur relatively large tax costs to achieve financial reporting and regulatory capital objectives; these authors find that the banks incurred capital gains taxes at rates close to 50% in realizing capital gains on their holdings of investment securities, apparently to smooth income and boost regulatory capital levels. It is arguably the case that the usual earnings management incentives (income smoothing, managing earnings to meet or beat thresholds, etc.) are relatively less important to corporate managers in Japan where corporate governance is relatively weak.

[26] Some anecdotal support for this is provided by the different ways in which the Government responded to the collapse of Resona Bank and to an apparently similar collapse of Ashikaga Bank, one of the larger regional banks, later in 2003. In both cases there were concerns about the viability of the banks, and associated concerns about the realizability of their deferred tax assets. While Resona Bank received a large capital injection but was then effectively allowed to continue in operations (albeit with a different management team and board), Ashikaga Bank was immediately nationalized wiping out its shareholders.

[27] Moodys consistently gives the major Japanese banks a relatively high credit rating, in spite of reports in which it makes it clear that it understands the severity of their financial problems. One of its explicit ratings assumptions for

This argument is not simply a size-based argument. Historically in Japan the various types of banks – the city banks, long-term credit banks, trust banks, regional banks, and *sogo* (now known as second-tier regional banks) performed different economic functions and served different types of customers (see Hoshi and Kashyap, 2001). The city banks lent mainly to large corporate customers and operated large branch networks, usually in urban areas. The traditional importance and visibility of the major city banks arguably makes their survival an important political symbol. In contrast, the regional banks typically operate in one or two prefectures, limiting their significance and visibility.

Next, I predict that the relative extent to which the major Japanese banks managed their regulatory capital levels through the use of DTAs varies over the sample period as a function of the overall regulatory/political environment. In particular, I expect DTAs to play a relatively more important role upon the major banks' adoption of deferred tax accounting in F1998 if part of the motivation for introducing this accounting rule at this time was to avoid further declines in the major banks' regulatory capital and justify capital injections. Thus, I expect to observe that the banks' DTAs were higher in F1998 than in other years, and that this tendency is especially strong for the major banks.

Finally, I predict that the regulatory and political climate changed after F2002 to reduce the major Japanese banks' reliance on DTAs. In particular, it is arguably the case that after the collapse of Resona Bank in the spring of 2003, the costs of using DTAs to manage levels of regulatory capital increased as more participants in the Japanese capital markets and political process became aware of how DTAs had been used and began to view them as a tool of abuse. Moreover, as discussed in Section 2, the Government, bank regulators, and the banks themselves

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these banks is that the Japanese Government will continue to practice regulatory forbearance toward these banks, preventing them from failing. See, e.g., Moody's (2002) at which time the Japanese "megabanks" had a single A rating.

were keenly interested in showing that Resona's situation (including its use of DTAs) was unique, and that the other banks were not in similar danger of collapse. This gave the banks' managers incentives to reduce their banks' reliance on DTAs. Once again, I expect this tendency to be stronger for the major Japanese banks.

3.2 Japanese GAAP rules for deferred tax assets and the relevant tax law

In general terms, the Japanese accounting rule for deferred taxes (described further in Appendix 3) is similar to SFAS-109 in the US in that it requires recognition of both deferred tax assets and liabilities and requires a valuation allowance to be set to reflect the extent to which any resulting DTAs are not realizable. However, the original rule issued in F1998 was brief and lacked detailed implementation guidance. My understanding is that this led to considerable diversity in how the rule was implemented in practice.[28] This flexibility increases the likelihood that deferred tax accounting was used for regulatory arbitrage purposes.

Perhaps the most crucial part of deferred tax accounting is the determination of the appropriate level of the valuation allowance, which reduces an entity's net deferred tax position to its net realizable value. US GAAP states that a valuation allowance is to be recognized "if, based on the weight of available evidence, it is *more likely than not* (a likelihood of more than 50 percent) that some portion or all of the deferred tax assets will not be realized" (FASB, 1992, para. 17 (e), emph. in original). Japanese GAAP does not have an analogous clear statement on how the appropriate level of the valuation allowance should be determined. Instead, as discussed in more detail in Appendix 3, in November 1999 the JICPA issued guidance regarding the evidence necessary to justify the realizability of DTAs. This guidance became the *de facto*

[28] Given this lack of guidance, Japanese auditors tended to look overseas for help in implementing deferred tax accounting in Japan. It was apparently the case that the rule was more likely to be implemented consistent with US practice if the bank's auditor had a big five affiliation. Accountants in Japan were more likely to look to US GAAP than UK GAAP because US GAAP was better suited to the recognition of the DTAs generated by the relatively stringent Japanese tax laws.

standard, and operated by classifying entities into five categories based on their current taxable income and past earnings "stability." Entities with sufficient taxable income and/or "stable" past profitability (the first two categories) are permitted to recognize DTAs in full. However, because of their economic problems during this period most of the major Japanese banks could not be included in either of these categories and fell instead into the third category. For entities in this category the rule requires that DTAs be limited to an amount that can be justified based on a schedule of the timing and amount of temporary difference reversals, subject to the limitation that the associated DTAs not exceed the tax benefits of total taxable income expected over the next five years. Thus, the crucial factor became whether the banks could project sufficient taxable income over the next five years.

Japanese tax law, at least as it pertains to banks, is generally more stringent than that in the US. One of the most significant differences is that loan losses are not tax deductible for banks in Japan until the bad loans are actually disposed of, meaning that the borrower goes bankrupt (a rare occurrence in Japan) or the loan is sold.[29] This naturally leads to relatively large temporary differences due to loan-losses for the Japanese banks, and so to relatively large DTAs. To the extent that Japanese banking regulators forced the banks to recognize non-performing loans in their financial statements during this period, relatively large DTAs were automatically generated.

There are two other main sources of deferred taxes for Japanese banks during this period. First, under Japanese law tax losses can be carried forward for up to five years (there is no carryback provision). These rules are also more restrictive than those in the US, where tax losses can carried back two years and forward 20 (previously, five and 15), subject to certain

[29] Moreover, the secondary market for loans in Japan is less well-developed than in the US, making it more difficult for banks to dispose of problem loans.

restrictions. As under US GAAP, tax loss carryforwards automatically generate DTAs. However, it then becomes a matter of managerial judgment as to whether these DTAs are realizable and to what extent a valuation allowance is necessary. Previous research in the US shows that managers often set the valuation allowance to track the extent of loss carryforwards included in DTAs, indicating that their realizable value is low and/or that managers are generally conservative in making this accounting choice.[30] This tendency should, if anything, be stronger in Japan given its more restrictive carryforward rules.[31]

Second, after mark-to-market accounting for investment securities was adopted in Japan in F2001, the tax effects of the associated unrealized gains (losses) included in equity resulted in associated deferred tax liabilities (assets). Given the magnitude of the banks' stock holdings, these deferred tax components are likely to be both relatively large and volatile.

This analysis suggests that Japanese banks, especially before the introduction of mark-to-market accounting, will naturally have relatively large gross DTAs given the magnitude of their loan losses and tax loss carryforwards. The recognition of these DTAs is automatic. The more difficult and subjective accounting question is whether and to what extent these DTAs should be reduced by a corresponding valuation allowance. Thus, the predictions discussed in Section 3.1 relate to the banks' *net* deferred tax positions, after considering the effect of the valuation allowance.

[30] See, e.g., Miller and Skinner (1998) or Schrand and Wong (2003). The former paper finds a strong relation between the valuation allowance and extent of tax loss carryforwards for a sample of industrial firms while the latter paper, which examines US banks, finds that the existence of tax loss carryforwards is related to the use of a valuation allowance but that the extent of the loss carryforwards do not explain the magnitude of the valuation allowance.

[31] Some Japanese accountants have called for the Government to allow carrybacks and/or liberalize the rules on carryforwards as a means of "solving" the DTA problem in Japanese banks. See, for example, "CPA figurehead defends role, integrity of profession" (*Nikkei Weekly*, May 26, 2003).

4. Empirical Evidence

4.1 Sample selection and evidence on the adoption of deferred taxes

To generate a sample of banks with available data for F1998, the year in which deferred tax accounting was adopted by most Japanese banks, I first identify all Japanese banks on the *Compustat* Global Financial Services database. I then sort these banks by total assets and choose the largest 100 banks. This procedure captures the major Japanese banks as well as most of the regional banks.[32] Because the tests require financial statement detail on DTAs, I then gathered financial statements for these banks, requiring at least a detailed balance sheet. If available, deferred tax footnote information was also collected.

Ninety-three banks have financial statement detail sufficient to ascertain the amount of net DTAs recognized in F1998. Of these banks, three regional banks (Aomori, Michinoku, and Higo) did not adopt deferred tax accounting until F1999, and so are removed from this part of the analysis. In addition, I omit Bank of Tokyo-Mitsubishi, whose shares were already listed in New York at this time and which consequently used US GAAP for its financial reporting, as well as Mitsubishi Trust & Banking for the same reason. I also remove Long Term Credit Bank from this analysis because it failed in late 1998, distorting its numbers. These exclusions left 87 banks; eight city banks, one long term credit bank, six trust banks, and 72 regional banks.

Table 2, panel A reports basic descriptive statistics on the size, profitability, and deferred tax positions of these banks in F1998. The primary source of financial statement data is the *NEEDS* database from *Nikkei* (Nihon Keizai Shimbun, America, Inc.). As we might expect, these are large banks, with mean (median) total assets of ¥7,550 billion (¥2,730 billion). The

[32] This initial set includes the nine large city banks in existence at that time, three long-term credit banks (IBJ, Long Term Credit/Shinsei, and Nippon Credit/Aozora), the major trust banks, as well as many of the regional banks (including both the tier one and tier two regional banks). According to the Bank of Japan (1999), there were a total of 144 Japanese banks at this time, including 64 regional banks and 61 "Tier 2" regional banks.

evidence suggests that Japanese banks adopted deferred tax accounting by recognizing relatively large net DTAs.[33] 86 banks recognize net DTAs on their balance sheets in March 1999 and most did so in amounts that are large relative to equity and assets – mean (median) net DTAs is ¥95 billion (¥25 billion) compared to mean (median) equity of ¥317 billion (¥114 billion). Net DTAs represent a mean (median) 33.5% (21.3%) of equity and 1.0% (0.9%) of total assets.

Table 2, Panel A also reports three measures of current and past bank profitability: current return-on-assets (ROA), average ROA over the three prior years, and the number of bottom-line losses reported by the bank over the four prior years. The profitability numbers make it clear that the Japanese banks recognized relatively large net DTAs in spite of relatively large current and previous losses. Mean (median) ROA in F1998 is -.39% (-.37%) and 55% of the banks report losses. In addition, mean (median) average past ROA is -.14% (-.08%). This evidence has two interpretations. Because GAAP requires the tax benefits of tax loss carryforwards to be treated as DTAs, banks with losses naturally have larger gross DTAs. The fact that banks with greater loan losses are likely to be less profitable also suggests that lower levels of profitability are likely to be associated with higher levels of gross DTAs. On the other hand, to the extent that lower past profitability raises doubts about an entity's ability to generate sufficient levels of future taxable income, lower past profitability reduces the realizable value of the entity's DTAs and so should lead to a higher valuation allowance and lower *net* DTAs.

Panel B of Table 2 presents a more detailed analysis of the banks' deferred tax numbers based on footnote-level deferred tax disclosures. The banks' gross DTAs are substantial, with a mean (median) of ¥102 billion (¥25 billion). Conversely, only 30 of the banks report DTLs, which have a mean (median) of only ¥0.8 billion (0). In addition, only 16 of the 87 banks report a valuation allowance, and the mean (median) allowance is only ¥5.5 billion (0). The small/non-

[33] Net DTAs means gross DTAs net of both deferred tax liabilities and any valuation allowance.

existent valuation allowances for these banks suggest that these banks' managers recognize net DTAs in a relatively aggressive manner.

Schrand and Wong (2003) provide evidence on the deferred tax numbers for 235 US banks upon their adoption of deferred tax accounting in 1992, upon adoption of SFAS-109 (FASB, 1992). They find that DTAs tend to outweigh DTLs for US banks as well. As in Japan, this is largely due to differences between the book and tax treatments of loan losses. As noted above, however, this temporary difference is larger for Japanese banks given the more stringent deductibility requirement of Japanese tax law. Schrand and Wong report that while all of the banks in their sample report DTAs, 98% also report DTLs and that these typically represent 60-70% of DTAs, while most Japanese banks reports no DTLs and those that do report DTLs that are small (Panel B of Table 2).[34] The differences in the extent of these banks' DTLs presumably result from differences in the banks' book-tax situations. Larger levels of DTLs relative to DTAs increase the likely realizability of the DTAs, reducing the need for a valuation allowance. This makes it harder to understand why the Japanese banks have little or no valuation allowances.

Panel B of Table 2 shows that the principal source of the Japanese banks' DTAs is the temporary differences attributable to the banks' loan loss provisions, which comprises a mean (median) 65% (68%) of DTAs. Tax loss carryforwards represent the next most important component and account for a mean (median) 9% (0%) of DTAs. These numbers are similar to those for the US banks. Schrand and Wong (2003) report that, on average, the temporary

[34] The numbers for the Bank of Tokyo-Mitsubishi, which uses US GAAP, are quite different to those of the other major Japanese banks. It reports net DTAs that are generally smaller than those of the other Japanese banks (about .5% of total assets and 14% of equity), has a valuation allowance that represents about 19% of its DTAs and recognizes DTLs that represent 47% of DTAs. The main source of BTM's DTLs are its unrealized gains on investment securities, which were not recognized at this time under Japanese GAAP. BTM uses Japanese GAAP numbers for purposes of calculating its regulatory capital ratios (unfortunately, I could not find footnote level data for BTM's Japanese GAAP numbers).

difference related to loan loss provisions accounts for about 60% of DTAs while tax loss carryforwards represent around 5% of DTAs.

Schrand and Wong (2003) report that 39% of their sample banks report a valuation allowance which averages about 11% of the underlying gross DTAs. Only 16 Japanese banks (19%) report a valuation allowance, which average around 2% of DTAs. Unlike differences between the underlying DTAs and DTLs, these differences are harder to explain as being due to differences in the tax laws, and support the prediction that managers of Japanese banks were relatively aggressive in their initial recognition of net DTAs.[35]

Table 3 provides evidence on how the deferred tax positions, Tier I capital ratios, and profitability of the major banks compare to those of the regional banks. Because the regional banks are smaller, this partition also divides the sample by size. The results show that the major banks report larger gross DTAs than the regional banks (differences in medians but not means significant). As shown in the bottom of the table, the major banks have larger past and current losses, which generate larger tax loss carryforwards and so naturally lead to larger gross DTAs. Consistent with this, a mean (median) 20% (15%) of the major banks' gross DTAs are due to tax loss carryforwards compared to 6% (0%) for the regional banks (differences highly significant). These findings suggestss that the major banks' DTAs are less realizable than those of the regional banks, which should lead to a higher valuation allowance. In fact, the major banks do report a somewhat higher valuation allowance, although the differences are arguably small in magnitude: the mean (median) valuation allowance is 10% (1%) of gross DTAs for the major banks compared to 1% (0%) for the regional banks. After taking the valuation allowance into

[35] At least three factors support the view that Japanese banks should have recognized a relatively large valuation allowance at this time: (1) their relatively poor past profitability, which is usually taken as evidence of poor prospects for future profitability, (2) the relatively restrictive Japanese tax laws, which make it hard for the banks to realize actual tax benefits, and (3) the relative dearth of offsetting DTLs, which also make it hard to realize the tax benefits of DTAs.

account, however, the major banks still report larger *net* DTAs than the regional banks. These differences are large in relation to total assets – the major banks report net DTAs which represent a mean (median) of 1.6% (1.3%) of total assets versus 0.9% (0.7%) for the regional banks, differences that are significant at the one percent level. These differences are also evident, but somewhat smaller, when deflated by equity, presumably because the major banks are more highly levered: net DTAs represent a mean (median) 34% (29%) of equity for the major banks compared to 33% (16%) for the regional banks (only the difference in medians is significant). Overall then, while the major banks' larger past losses help explain their larger gross DTA positions, they also mean that these DTAs are less likely to be realized, which should lead to lower *net* DTA positions. The fact that, if anything, the opposite is true suggests that the major banks' managers are being aggressive in the deferred tax accounting choices by setting relatively low valuation allowances.

Table 3 also shows that the major banks' Tier I capital positions were weaker in this period than those of the regional banks. These differences are both large (around 140-180 basis points) and statistically significant, and are consistent with the notion that managers of the major banks made aggressive deferred tax choices to help address their banks' relatively weak capital positions. This regulatory arbitrage argument is addressed more formally in Table 4, which reports cross-sectional regressions to explain the banks' gross and net deferred tax positions, along with their valuation allowance choices. These regressions control for the effect of the nature of the banks' DTA components (fraction due to loan losses and tax loss carryforwards), their size (total assets) and include a regional bank dummy. To proxy for managers' regulatory arbitrage incentives, the banks' March 1997 Tier I capital ratio (labeled BIS) is also included.

The results of the Table 4 regressions are consistent with the regulatory arbitrage view. First, the results of the gross DTA regression show that the relative extent of tax loss carryforwards, the regional bank dummy, and size are all significant and that the regression explains around 40% of the cross sectional variation in the banks' gross DTA positions. Because this variable is less discretionary, the lack of significance on BIS variable is not surprising – we do not expect managers' regulatory arbitrage incentives to operate on this variable. The results also show that banks with relatively more carryforwards have larger gross DTAs, that (conditional on size) regional banks have lower gross DTAs, and that (conditional on bank type) larger banks have smaller gross DTAs. The results of the valuation allowance and net deferred tax regressions are consistent with the regulatory arbitrage view. In the valuation allowance regression, the BIS variable is significantly positive, indicating that banks with weaker capital positions have lower valuation allowances; GAAP rules would normally require the reverse. The regression also shows that the valuation allowance increases with the relative magnitude of tax loss carryforwards, as expected under GAAP and consistent with prior research. Finally, the bottom-line net DTA tax regressions also provide evidence consistent with the regulatory arbitrage view – here the BIS variable is reliably negative, implying that banks with weaker capital positions have relatively larger net deferred tax positions, a finding that again seems to run opposite to what GAAP would normally require. Overall then, the results of analyzing the banks' deferred tax positions in F1998, when deferred tax accounting was first available, are consistent with the regulatory arbitrage view.

To investigate the hypothesis that the banks' net DTA recognition decisions were driven by regulatory capital incentives, I would ideally be able to calculate F1998 Tier I capital before the inclusion of net DTAs and any capital injections by the Government. Unfortunately, these

data are only available for a limited set of banks, precluding large scale tests. For the 15 major banks that received capital injections from the Government in early 1999, however, I was able to compute Tier I capital before inclusion of net DTAs and the capital injections.[36] For these banks I find evidence that is consistent with the regulatory arbitrage argument – for 12 of the 15 banks, Tier I capital would have fallen below the 4% minimum without inclusion of net DTAs, and all of the 15 banks would have fallen below the 8% minimum without the inclusion of net DTAs.

4.2 Evidence on the banks' deferred tax accounting practices, F1998 to F2003

Table 5 reports on Japanese banks' net DTAs from F1998 through F2003, the last fiscal year currently available. Panel A presents the annual levels of net DTAs while Panel B presents changes, both deflated by lagged total assets. To help assess reasons for variation in these amounts, Table 6 reports on the main components of the banks' DTAs as well as measures of past and current profitability. I again present results for the sample overall as well as for the major/regional bank partition.[37]

Panel A of Table 5 shows that, as a fraction of total assets, overall deferred taxes stay approximately flat from F1998 through F2001 before increasing in F2002 and declining in F2003, trends roughly consistent with those discussed in Section 2. The aggregate numbers, however, mask differences between the two groups of banks. As shown above, the major banks had larger DTAs upon adoption in F1998, a difference that becomes smaller in F1999, increases again in F2000, and that disappears in subsequent years. It is clear, however, that DTAs remain large in economic terms, at just over 1% of total assets, throughout the period, before declining in F2003.

[36] Data on regulatory capital and capital injections are from Fukao (2000) and Nakaso (1999). The only regional bank included in this set is the Bank of Yokohama, the largest of the regional banks at the time.

[37] The composition of these groups changes through time due to bank failures and, more importantly, bank mergers. At the beginning of the period there were nine city banks as well as various trust banks, but over the sample period these banks coalesced into the five major bank groups that exist today (Mizuho, SMFG, MTFG, UFJ, and Resona).

Panel B of Table 5 reports year-to-year changes in deferred taxes. While there is little overall change in deferred taxes during F1999, deferred taxes at the major banks decline in this year while those at the regional banks increase. These differences are consistent with the idea that the major banks overstated their net DTAs in F1998, and subsequently reversed part of this overstatement. Changes in the underlying determinants of net DTAs (Table 6) do not provide any obvious explanation for the relative changes, lending credence to this explanation.[38] Profitability improved for both sets of banks in this year.

Overall net DTAs fell during F2000, driven mainly by relatively large declines at the regional banks. This was the year that mark-to-market accounting was adopted (early) by most regional banks, which at the time had net unrealized gains on their holdings of investment securities. These unrealized gains generate corresponding DTLs (see Table 6), which reduce net DTAs. Only one city bank adopted mark-to-market accounting in this year, which likely explains why the major banks were not similarly affected, a proposition that I investigate more thoroughly below.[39] In F2001 overall net DTAs increase, again likely because of the effects of mark-to-market accounting. The Nikkei 225 fell 15% during this year, reducing the banks' unrealized gains (or increasing unrealized losses) and decreasing the corresponding DTLs (or increasing DTAs) and thus overall net DTAs.

F2002 saw little change in overall net DTAs, although there are some significant changes in the components of the banks' DTAs. According to Bank of Japan (2003), in this year temporary differences arising from the banks' large loan loss provisions began to reverse (the banks disposed of bad loans), lowering DTAs. This decline was approximately offset, however,

[38] In fact, it is arguably the case that the realizability of the major banks' DTAs improved in F1999, as indicated by a decline in the proportion of DTAs due to tax loss carryforwards.

[39] The fact that the major banks had largely exhausted their supply of unrealized gains by this time likely helps explain their decision not to adopt this rule early. See Bank of Japan (2001) for a discussion of the early adoption of mark to market accounting by the regional banks.

by an increase in tax loss carryforwards (the major banks in particular reported increased losses in this year) and by increased unrealized losses on investment securities (the stock market fell 27% during the year). For the major banks, especially, this represented a significant change in the nature of their DTAs: for the first time tax loss carryforwards represented a larger fraction of gross DTAs (mean 39%, median 42%) than the portion due to loan losses (mean 31%, median 33%). In contrast, the regional banks' gross DTAs were still largely due to loan losses (mean 59%, median 62%) rather than to tax loss carryforwards (mean 6%, median 0%). The substitution of tax loss carryforwards for loan losses at the major banks would normally lower the realizability of their DTAs, and arguably should result in lower net DTAs. The fact that this did not happen supports the view that the major banks' net DTAs were again set at a relatively aggressive level.

F2003 saw a relatively large across-the-board decline in net DTAs, especially for the major banks, consistent with the prediction that a more rigorous regulatory environment, including increased pressure on and from auditors, led to more conservative accounting for DTAs. Other factors changed as well, however, offering potential alternative explanations. First, the stock market saw a strong increase during the year, with the Nikkei 225 up 47%. This naturally reduces net DTAs by reversing unrealized losses/increasing unrealized gains on investment securities (for the major banks, however, there is little evidence of this in Table 6, perhaps because many of these banks had reduced their stockholdings by this point). Second, continued resolution of the banks' bad loan problems may have occurred during the year, so that more of the loan losses differences reversed. There is some evidence in Table 6 to support this explanation: for the major banks the fraction of DTAs due to loan losses declines. Third, bank profitability improved in this year. Again, however, this cannot explain the decline unless it led

to the increased utilization of tax loss carryforwards. The evidence in Table 6 does not support this explanation either, however, as tax loss carryforwards increase as a fraction of the major banks' DTAs. I attempt to sort out these explanations in the regressions below.

The results to this point are generally consistent with the prediction that managers of the major banks systematically managed their banks' net DTAs in a manner consistent with the regulatory arbitrage argument. However, because many factors are at play, including changes in bank profitability, the banks' disposal of problem loans, the effect of unrealized gains and losses on investment securities, and so on, I next present multivariate evidence on the determinants of the banks' deferred taxes.

Table 7 reports correlations and multivariate regressions of both levels and changes in the banks' net deferred taxes on their determinants. Spearman rank correlations for levels and changes of net DTAs are presented in Panels A and B, while OLS regressions are presented in Panels C and D.

Correlations between the levels of deferred taxes and their determinants (Panel A, Table 7) are fairly stable across sample years and support the view that less profitable banks report higher levels of net DTAs. The correlations show that the relative level of net DTAs is not related to the relative level of loan loss provisions, is positively related to the relative level of tax loss carryforwards (correlations of .4 to .6), is positively related to the relative level of unrealized gains (losses) on investment securities (correlations of .7 to .9), is negatively related to average past ROA (correlations of -.6 to -.8), and is positively related to the number of losses in the past four years (correlations of .6). These results, like those in Table 3, demonstrate a fairly strong negative relation between past bank profitability and levels of net DTAs. While this relation is to some extent natural – larger past losses generate more loss carryforwards and so higher gross

DTAs – the fact that the correlation holds for *net* DTAs also supports a regulatory arbitrage interpretation. Put differently, this result implies that some of the Japanese banks effectively used deferred tax accounting as a way of capitalizing past losses (as tax loss carryforwards) into their regulatory capital. While this is legitimate to the extent that these losses will actually generate future tax savings, the sustained poor performance of many large Japanese banks in this period raises doubts about their ability to generate sufficient taxable income within the five year carryforward period.

Panel B of Table 7 reports correlations between changes in net DTAs and their determinants. These results paint a somewhat different picture to those in Panel A, and are not as stable across years. Changes in net DTAs are positively related to changes in the proportion of DTAs due to loan loss provisions (correlations of .3 to .8, significant in four of the five years), generally unrelated to changes in the proportion due to tax loss carryforwards, and modestly positively correlated with changes in the extent of the unrealized gains (losses) on investment securities. In contrast to the levels results, changes in net DTAs are generally positively related to past profitability and negatively related to past losses (these relations hold in three of the five years). Thus, there is some evidence here that changes in the banks' net DTAs are positively related to changes in their realizability. There is also evidence that that changes in net DTAs are negatively related to current profitability, suggesting that banks increase DTAs in years when they are less profitable (or losses are larger), perhaps to offset adverse changes in regulatory capital.

I report the results for levels regressions in Panel C of Table 7. Three specifications are used: one that uses the three DTA components as regressors, one that uses the current and average past ROA measures as regressors, and another that uses all of these variables. The

results are generally consistent with the correlations reported in Panel A, and so are discussed briefly. In most years the coefficients on the components variables are positive, although only the net unrealized gain (loss) variable is consistently significant (at the 1% level) followed by the loss carryforwards variable (which is usually significant at the 5% level). The second specification generally shows that the average past ROA variable is negative and significant, again suggesting that less profitable banks report higher levels of net DTAs. This result, however, sometimes disappears in the third specification when the components variables are also included, perhaps because of multicollinearity. The current profitability variable is negative and significant in F2001 and F2002, suggesting that less profitable banks report higher net DTAs in these years. All of these results are robust to the inclusion of an intercept dummy for regional banks (not reported in tables), indicating that cross-sectional differences in the level of DTAs for major versus regional banks tend to disappear once I control for differences in these other factors (thus, the differences evident in Table 3 are completely explained by these determinants). These regressions have R-squareds that increase from 45% in F1998 and 23% in F1999 to over 80% in F2001 to F2003. The large increase in explanatory power is due to the introduction of the unrealized gain (loss) on investment securities variable, which is highly significant.

Panel D of Table 7 reports on changes specifications of the regressions. Here I also include a regional bank intercept dummy because the results in Table 5 indicate that there are significant differences between changes in deferred taxes for the two groups of banks. Overall, the results show that changes in the banks' net DTAs are well explained by changes in their determinants, with R-squareds for the full model that vary from 57% to 88%. All three of the components variables are positive and significant at conventional levels in most regressions.

Any significance on the average past ROA variable tends to go away once the components variables are also included in the regressions. This is also true of the current ROA variable.

The regression intercepts are negative and statistically significant in both F1999 and F2003. Because the regression also includes an incremental intercept for regional banks, these intercepts measure average changes in net DTAs for the major banks, and because the regressions control for other changes, I further interpret these intercepts as capturing changes attributable to regulatory arbitrage in the major banks. In this light, and consistent with the arguments in Section 3.1, the evidence suggests that managers of the major banks reduced net DTAs in F1999 and F2003. Conversely, there is evidence that these managers increased net DTAs in F2001 and F2002. This is also consistent with regulatory arbitrage because in both years the major banks suffered large losses that put pressure on Tier I capital levels.

Finally, Table 8 provides evidence on the valuation allowances recorded by the Japanese banks. This evidence shows a clear upward trend in the use and size of the valuation allowance. As noted earlier, only a few banks recorded valuation allowances upon adoption of deferred tax accounting in F1998 and those that did recorded allowances that were small, averaging less than 5% of DTAs. Over time, however, the banks' use of the valuation allowance increases. All of the major banks were recording a valuation allowance by F2002, and the average valuation allowance increased from around 10% of gross DTAs in F1998 to 40% in F2002 and 42% in F2003. Increases were also evident among the regional banks, although they were slower and smaller. Around three-quarters of the regional banks had a valuation allowance by F2003, but these still averaged only about 11% of gross DTAs.

I have also conducted analyses of the determinants of the banks' valuation allowances (not reported in tables). These analyses generally show that the level of the banks' valuation

allowances are positively related to the extent of tax loss carryforwards, negatively related to the extent of loan losses, and negatively related to past profitability. As discussed above, these relations are expected under GAAP because these variables measure the realizability of the underlying DTAs. However, as the numbers in the previous tables (all of which report DTAs *net* of the valuation allowance) indicate, the major banks' relatively large valuation allowances, especially evident in more recent years, are not nearly sufficient to offset their overall tendency to aggressively recognize DTAs. For example, in F2002 the major banks' net deferred taxes increased by about half of one percent of total assets, in spite of a significant concurrent increase in the valuation allowance, from 22% to 37% of gross DTAs. Thus, while the major banks set their valuation allowances in a manner that, *in relative terms*, is increasingly conservative and apparently consistent with GAAP, this has little effect on their overall net deferred tax positions, which remained relatively aggressive.

5. Conclusion

This paper provides evidence consistent with the view that managers of the major Japanese banks have used their banks' DTAs to artificially boost regulatory capital levels in the face of persistent economic difficulties, including bad loan problems, poor operating performance, and declines in Japanese equity prices. This practice was implicitly condoned by the Government and tax regulators, who allowed DTAs to be included in the banks' regulatory capital. I argue that deferred tax accounting was introduced in Japan at a time when other alternative sources of regulatory capital, most notably the banks' unrealized gains on investment securities, had largely been exhausted. The evidence is consistent with economists' suggestions

that accounting has played a role in allowing the Government to postpone meaningful bank reform.

In many ways this is a cautionary tale that illustrates the problems that can arise when politicians and regulators have a significant influence over accounting standard-setting. Although standard-setting in the US and Europe is relatively free of political or regulatory intervention, threats to independence continue, most recently in accounting for stock-based compensation in the US and in the ongoing debate about IAS 39 (derivatives) in Europe. In Japan, Government policy has a large effect not only on the rules themselves but also on how those rules are applied. In the case of the Japanese banks, GAAP rules for deferred tax assets are *ostensibly* similar to those in the US and were adopted as part of a mandate to make Japanese accounting rules "fair, free and global." My evidence, however, makes it clear that their actual result is quite different, and that deferred tax accounting was practiced in such a way as to bolster the banks' regulatory capital as their economic circumstances worsened.

Appendix 1
Annual Earnings Performance for the Major Japanese Banks, F1982-F2002, as well as Annual Stock Market Returns, and Unrealized Gains on Investment Securities.

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Operating Profit (Loss)	1,405	1,482	1,481	1,645	2,627	3,099	3,162	2,012	1,566	2,151	3,019
Earnings before realized gains (losses)	1,413	1,477	1,467	1,635	2,482	3,058	3,101	310	520	(115)	743
Realized gains (losses)	(187)	(86)	37	38	(145)	64	653	2,773	1,793	2,116	543
Earnings before taxes	1,226	1,391	1,504	1,673	2,337	3,122	3,754	3,083	2,313	2,001	1,286
Provision for taxes:											
Current	718	746	833	885	1275	1,769	784	870	1,042	1,060	780
Deferred	-	-	-	-	-	-	-	-	-	-	-
	718	746	833	885	1,275	1,769	784	870	1,042	1,060	780
Net Income (loss)	508	645	671	788	1,062	1,353	2,970	2,213	1,271	941	506
Realized gains on stocks	nr	nr	nr	nr	nr	nr	nr	2,849	1,961	2,419	862
Nikkei 225 annual return			15%	26%	36%	22%	25%	-9%	-12%	-26%	-4%
Cumulative unrealized gain on investment securities	9,575	15,774	18,194	25,939	40,340	47,385	55,371	44,721	34,958	17,269	17,792

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Operating Profit (Loss)	2,937	2,507	4,532	4,369	3,514	1,852	3,033	3,122	3,086	2,924
Earnings before realized gains (losses)	(1,417)	(3,997)	(6,765)	(3,518)	(9,510)	(9,086)	(2,635)	(1,626)	(5,799)	(3,445)
Realized gains (losses)	2,205	4,069	3,680	3,449	4,323	1,983	4,730	2,073	8	(1,302)
Earnings before taxes	788	72	(3,085)	(69)	(5,187)	(7,103)	2,095	447	(5,791)	4,747
Provision for taxes:										
Current	340	192	481	78	159	198	343	129	34	66
Deferred	-	-	-	-	-	(2,455)	880	115	(1,737)	(331)
	340	192	481	78	159	(2,257)	1,223	244	(1,703)	(265)
Net Income (loss)	448	(120)	(3,566)	(147)	(5,346)	(4,846)	872	203	(4,088)	(4,481)
Realized gains on stocks	2,485	4,318	3,731	3,767	4,357	2,171	6,309	3,027	1,472	796
Nikkei 225 annual return	3%	-16%	33%	-16%	-8%	-4%	28%	-36%	-15%	-28%
Cumulative unrealized gain on investment securities	20,386	9,002	16,523	8,753	2,737	2,816	7,477	258	(1,407)	771

All amounts in billions of Japanese yen. All data from Bank of Japan website, *Financial Statements of Japanese Banks*, http://www.boj.or.jp/en/stat/stat_f.htm. These data are also published in the Bank of Japan Quarterly Bulletin, usually in the November issue of each year. I define the set of major Japanese banks in the same way as the Bank of Japan. The set includes the seven city banks (Mizuho, Bank of Tokyo-Mitsubishi, UFJ, SMBC, Resona, Mizuho Corp., and Saitama Resona), the five large trust banks, as well as two long term credit banks, Shinsei Bank and Aozora Bank. This set is defined at the end of fiscal 2002. At the end of fiscal 1999, the set of major banks was defined as the nine city banks then in existence, the seven largest trust banks, and the three long-term credit banks. Operating profit (loss) is calculated as operating income less operating expenses. For 1989 and thereafter, realized gains (losses) are realized gains on stocks less realized losses on stocks plus realized gains on real estate less realized losses on real estate. These numbers are not separately reported before 1989, so I use "temporary" income net of "temporary" expenses instead during 1982 to 1988. These categories include the aforementioned realized gains and losses as well as other items. Realized gains on stocks is shown separately in the table for 1989 and thereafter (not reported before 1989). Deferred tax accounting was adopted in 1998. nr = not reported. The Nikkei 225 annual return is calculated over the annual fiscal period, from April 1 to the following March 31. Thus, the 1993 return is for the year ended March 31, 1994.

Appendix 2
Major Components of Stockholders' Equity for the Major Japanese Banks, F1982-F2003, as well as Net Deferred Tax Assets, Unrealized Gains on Investment Securities, and Certain Data on the Effect of Realized Gains.

Panel A: Annual Data, F1982 to F2003

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Components of Stockholders' Equity:											
Earned Surplus	3924	4414	4889	5475	6299	7417	8944	10213	11160	11773	11953
Paid-in Capital	1598	1691	1734	1966	2195	3770	6365	9350	9419	9439	9440
	5522	6105	6623	7441	8494	11187	15309	19563	20579	21212	21393
Land Revaluation Reserve	-	-	-	-	-	-	-	-	-	-	-
Unrealized Gain (Loss) on AFS Sec.	-	-	-	-	-	-	-	-	-	-	-
Total Stockholders' Equity	5522	6105	6623	7441	8494	11187	15309	19563	20579	21212	21393
Deferred Tax Assets	-	-	-	-	-	-	-	-	-	-	-
Unrealized Gains (Losses)	9575	15574	18194	25939	40340	47385	55371	44721	34958	17269	17792
Realized Gains (Losses)	-187	-86	37	38	-145	64	653	2773	1793	2116	543
Cumul.net of tax real. gains/(losses)		-164	-142	-119	-206	-167	224	1888	2964	4234	4559

Appendix 2 (Cont.): Annual Data, F1982 to F2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Components of Stockholders' Equity:											
Earned Surplus	12079	11638	7870	7451	1933	2590	3789	4358	858	-898	1492
Paid-in Capital	9578	9805	9855	10671	11626	18848	18702	18027	16971	13572	13013
	21657	21443	17725	18122	13559	21438	22491	22385	17829	12674	14505
Land Revaluation Reserve	-	-	-	-	-	1399	1404	1327	1072	853	619
Unrealized Gain (Loss) on AFS Sec.	-	-	-	-	-	-	-	446	-894	-520	1635
Total Stockholders' Equity	21657	21443	17725	18122	13559	22837	23895	24158	18007	13007	16759
Deferred Tax Assets	-	-	-	-	-	6648	5731	5279	7997	7848	5493
Unrealized Gains (Losses)	20386	9002	16523	8753	2737	2816	7477	258	-1149	-378	NA
Realized Gains (Losses)	2205	4069	3680	3449	4323	1983	4730	2073	8	-1302	NA
Cumul.net of tax real. gains/(losses)	5882	8323	10532	12601	15195	16385	19222	20467	20471	19690	NA

All amounts in billions of Japanese yen. All data from Bank of Japan website, *Financial Statements of Japanese Banks*, http://www.boj.or.jp/en/stat/stat_f.htm. These data are also published in the Bank of Japan Quarterly Bulletin, usually in the November issue of each year. I define the set of major Japanese banks in the same way as the Bank of Japan. The set includes the seven city banks (Mizuho, Bank of Tokyo-Mitsubishi, UFJ, SMBC, Resona, Mizuho Corp., and Saitama Resona), the five large trust banks, as well as two long term credit banks, Shinsei Bank and Aozora Bank. This set is defined at the end of fiscal 2002. At the end of fiscal 1999, the set of major banks was defined as the nine city banks then in existence, the seven largest trust banks, and the three long-term credit banks. For 1989 and thereafter, realized gains (losses) are realized gains on stocks less realized losses on stocks plus realized gains on real estate less realized losses on real estate. These numbers are not separately reported before 1989, so I use "temporary" income net of "temporary" expenses instead during 1982 to 1988. These categories include the aforementioned realized gains and losses as well as other items.

Appendix 3: Deferred Tax Accounting in Japan

The Japanese GAAP rule for tax effect accounting, "Accounting Standards for Tax Effect Accounting" was issued by the Business Accounting Deliberation Council (BADC) in 1998. The rule itself, at the equivalent of about five pages of English text, is relatively brief, consistent with the proposition that Japanese GAAP for deferred taxes gave only very basic accounting guidance, at least initially.[40]

The rule states that, consistent with conventional deferred tax accounting under the asset-liability method, DTAs and liabilities are to be recognized based on temporary differences between the accounting and tax bases at which assets and liabilities are recognized on the balance sheet. In addition, net operating loss carryforwards are to be treated in the same manner as temporary differences, and thus give also rise to DTAs.

With regard to the realizability of DTAs, the rule states only that temporary differences are to be recognized as DTAs or liabilities "unless they are not expected to be collected or paid in future accounting periods" and that the "collectability (sic) of DTAs is to be reviewed annually" (para. 2.1). An "Interpretive Note" appended to the rule provides a little more detail, stating that "(a) deferred tax asset may be recognized only to the extent that an underlying temporary difference is expected to result in a reduction in taxable income, and tax payments, for the accounting period in which the temporary difference reverses; no deferred tax asset may be

[40] This discussion is based on an English translation of certain Japanese GAAP rules (FASF, 2002), available from the Financial Accounting Standards Foundation (FASF) of Japan, which oversees the Accounting Standards Board of Japan (ASBJ). These bodies were set up in 2001, and are the Japanese equivalents of the US standard-setting organizations (the Financial Accounting Foundation, or FAF, and the Financial Accounting Standards Board, or FASB, respectively). The BADC was the predecessor to the ASBJ. I have also checked this information to that provided by Yoshinori Kawamura of Waseda University, on his unofficial web site Accounting News in Japan http://www2g.biglobe.ne.jp/~ykawamur/. Mr. Kawamura provides English translations of many Japanese GAAP rules and related interpretations and releases. This summary is also based on discussions with officials at the ASBJ and with several Japanese CPAs

recognized beyond this limit" (Note 5). Unlike the US rule, there is no specific discussion about the circumstances under which DTAs should be reduced to their realizable value.[41]

More guidance about how to interpret this rule was provided by the Japanese Institute of CPAs (JICPA) in November 1999, eight months *after* the first set of financial statements using deferred tax accounting were issued.[42] This statement provides specific guidance about how to assess the realizability of DTAs. Similar to the US rule, the statement makes the realizability a function of the company's past profitability and taxable income. To do this, the interpretation places companies into one of five categories:

1. Companies with sufficient taxable income to fully cover their temporary differences in every year (four or more consecutive years including the current year). These companies are permitted to fully recognize their DTAs with no limitations.
2. Companies with "stable" profitability over the period (the three previous years plus the current year) but without sufficient taxable income to fully cover their temporary differences. These companies also fully recognize their DTAs based on a schedule indicating the timing and amount of temporary difference reversals.
3. Companies with "unstable" profitability whose taxable income is insufficient to fully cover the temporary differences. These companies can recognize DTAs based on a schedule indicating the timing and amount of temporary difference reversals, subject

[41] The US rule devotes about two pages to a discussion of the conditions under which a valuation allowance for deferred tax assets is needed. The general principle is that a valuation allowance is to be recognized "if, based on the weight of available evidence, it is *more likely than not* that some portion or all of the deferred tax assets will not be realized (emph. in original)." The statement then provides detailed discussion and examples of the types of evidence that should be considered in making this judgment. In US GAAP, "more likely than not" connotes a relatively low threshold for recognition of the allowance, as compared to the use of a term such as "probable" which is read to imply a probability higher than 50%.

[42] "Judgment on Recoverability of Deferred Tax Assets," Auditing Committee Report No. 66, JICPA, November 1999. This discussion is based on a Bank of Japan (August 2002 Quarterly Bulletin, p. 30) summary of the statement and an English translation of the statement made for me by Yoshiko Imai-Suga.

to a ceiling equal to their estimated taxable income over a period over which taxable income can be "rationally" or "reasonably" forecast ("generally five years").

4. Companies with "large" loss carryforwards (unless those are due to "extraordinary factors") at the end of the period. DTAs can be recognized to the extent of the taxable income "definitely" expected over the next fiscal year, i.e., a one year limitation on DTAs. (If the tax loss carryforwards are due to unusual events such as restructurings, the company may record DTAs using the category 3 rule.)
5. Companies that have recorded loss carryforwards for the past three or more consecutive years and that are expected to record loss carryforwards again in the next year. DTAs cannot be recognized.

In practice, it turns out that Category 3 was the one into which most Japanese banks were classified by their auditors, at least in the years after deferred tax accounting was initially adopted, and that the deferred tax asset rule for that category became the *de facto* audit standard for the banks. This fact, combined with the fact that Japanese tax law allows companies to carry losses forward for five years but no longer, made five years a very important threshold in deferred tax accounting for Japanese banks.

The JICPA issued further guidance on accounting for DTAs in January 2001.[43] Among other things, this document provided more specific guidance on the criteria to be used in assessing the amount, if any, to be deducted from DTAs (para. 21). There are three main criteria: (1) the "sufficiency of taxable income, based on earning capacity". The words "it is expected, and highly probable" are used three times in this section to describe estimates of future

[43] "Practical Guidelines on Accounting Standards for Tax Effect Accounting in Non-Consolidated Financial Statements," Accounting System Committee, JICPA, January 2001, as translated by the FASF (2002). A closely related document with much very similar wording was also released at this time ("Practical Guidelines on Accounting Standards for Tax Effect Accounting in Consolidated Financial Statements").

taxable income of sufficient amount to realize the reversal of temporary differences and/or tax loss carryforwards; (2) the existence of tax planning; (3) the "sufficiency of taxable temporary differences." These criteria are similar to those listed in SFAS-109 under US GAAP.

Finally, in February 2003, the chair of the JICPA, Mr. Akio Okuyama, sent a letter to the heads of all of the major audit firms in Japan.[44] The letter indicated that as part of the Government's "Program for Financial Revival" announced in October 2002, the Government (and in particular the FSA, under Mr. Takenaka) was undertaking a number of measures to strengthen the banking system, including confirming the reasonableness of accounting for DTAs and strengthening the external auditor's function. This letter was sent at the behest of the Government, and reiterates the factors that are relevant to making judgments about the realizability of banks' DTAs. The letter further encourages audit firms to make "strict" assessments of banks' DTAs. The letter apparently was a result of high level negotiations between the JICPA and the FSA, the outcome of which was to require the Japanese audit professions to get tougher on their bank clients on the deferred tax asset issue.[45]

[44] I am grateful to Tomo Suga and Yoshiko Imai-Suga for providing me with a translation of this letter.
[45] The JICPA was thus able to avoid the perceived ignominy of an FSA regulation specifically limiting the recognition of bank deferred tax assets.

Table 1: Major Components of Stockholders' Equity for the Major Japanese Banks, F1982-F2003, as well as Net Deferred Tax Assets, Unrealized Gains on Investment Securities, and Certain Data on the Effect of Realized Gains. Semi-annual Data, F1992 to F2003

	1992	1993	1994	1995	1996	1997, I	1997	1998, I	1998	1999, I	1999
Components of Stockholders' Equity:											
Earned Surplus	11953	12079	11638	7870	7451	5190	1933	-11	2590	3460	3789
Paid-in Capital	9440	9578	9805	9855	10671	10973	11626	11301	18848	18328	18702
	21293	21657	21443	17725	18122	16163	13559	11290	21438	21788	22491
Land Revaluation Reserve	-	-	-	-	-	-	-	-	1399	1371	1404
Unrealized Gain (Loss) on AFS Sec.	-	-	-	-	-	-	-	-	-	-	-
Total Stockholders' Equity	21293	21657	21443	17725	18122	16163	13559	11290	22837	23159	23895
Deferred Tax Assets	-	-	-	-	-	-	-	-	6648	6389	5731
% of Equity									29%	28%	24%

	2000, I	2000	2001, I	2001	2002, I	2002	2003, I	2003
Components of Stockholders' Equity:								
Earned Surplus	4590	4358	3598	858	3198	-898	1256	1492
Paid-in Capital	18023	18027	17700	16971	13602	13572	13004	13013
	22613	22385	21298	17829	16800	12674	14260	14505
Land Revaluation Reserve	1402	1327	1306	1072	948	853	807	619
Unrealized Gain (Loss) on AFS Sec.	-	446	-2068	-894	-1800	-520	615	1635
Total Stockholders' Equity	24015	24158	20536	18007	15948	13007	15682	16759
Deferred Tax Assets	5078	5279	7411	7997	8022	7848	6472	5493
	21%	22%	36%	44%	50%	60%	41%	33%

All amounts in billions of Japanese yen. All data from Bank of Japan, *Financial Statements of Japanese Banks*, http://www.boj.or.jp/en/stat/stat_f.htm. I define the set of major Japanese banks in the same way as the Bank of Japan. The set includes the seven city banks (Mizuho, Bank of Tokyo-Mitsubishi, UFJ, SMBC, Resona, Mizuho Corp., and Saitama Resona), the five large trust banks, as well as two long term credit banks, Shinsei Bank and Aozora Bank. This set is defined at the end of fiscal 2002. At the end of fiscal 1999, the set of major banks was defined as the nine city banks then in existence, the seven largest trust banks, and the three long-term credit banks.

Table 2
Descriptive Statistics on the Deferred Tax Positions of Japanese Banks Upon Adoption of Deferred Tax Accounting in Fiscal 1998 (amounts in ¥ millions). Obs. = 87 banks.

Panel A: Basic Balance Sheet Descriptive Statistics

	Stockholders' Equity	Total Assets	Net Deferred Taxes	Net DT/Total Assets	Net DT/Stockholders' Equity	Current year ROA	Average past ROA	Count of past losses
Mean	317,394	7,549,598	95,172	.010	.335	-0.14%	-0.39%	0.86
Median	113,866	2,735,688	24,705	.009	.213	-0.08%	-0.37%	1.00
Std. Devn.	536,731	13,214,175	189,263	.006	.344	0.32%	0.53%	0.91
Min.	-102,234	960,991	0	.000	.000	-0.97%	-1.96%	0
Max.	2,403,075	57,933,043	1,069,258	.037	1.781	0.30%	0.21%	3.00

Panel B: Descriptive Statistics on Deferred Taxes of Banks with Available Footnote Information

	Deferred Tax Assets	Deferred Tax Liabilities	Valuation Allowance	Loan Loss Provision/DTA	Loss Carryforwards /DTAs
Mean	101,474	794	5,505	.646	.087
Median	25,098	0	0	.680	0
Std. Devn.	202,493	3,707	23,035	.145	.143
Min.	0	0	0	.259	0
Max.	1,211,483	30,607	130,442	.915	.597
# > 0	86/87	30/87	16/87	na	na

Notes. Total assets and stockholders' equity are from Compustat *Worldscope*. Net deferred taxes is net deferred taxes from the bank's balance sheet (i.e., deferred tax assets net of both the valuation allowance, if any, and deferred tax liabilities, if any). The ratios are net deferred tax assets (Net DT) deflated by total assets and stockholders' equity respectively. Current year ROA is net income divided by opening total assets (ROA). Average past ROA is the average of the three past years' ROA. Count of past losses is the number of losses in the past four fiscal years. Deferred tax assets (DTAs) is gross deferred tax assets before subtracting the valuation allowance, if any. Loan loss provision is the amount of the bank's deferred tax assets comprised of temporary differences due to book-tax differences in accounting for loan losses. Loss carryforwards is the amount of the bank's deferred tax assets attributable to tax loss carryforwards. The deferred tax variables are from bank financial statements while the financial variables (except total assets and stockholders' equity) are from the Nikkei NEEDS database. Note that the ROA and loss count variables are based on only 52 banks (data not yet updated to include the other banks).

Table 3
Comparison of the Deferred Tax Positions and Associated Variables for the Major Banks in Japan to those of the Regional Banks Upon Adoption of Deferred Tax Accounting in Fiscal 1998

	Major Banks (obs. = 15)	Regional Banks (obs. = 72)	Test for Difference
Net DT/TA	.016	.009	t = 4.50
	(.013)	(.007)	Z = 3.85
Gross DTA/SE	.486	.339	t = 1.31
	(.317)	(.162)	Z = 2.66
Net DT/SE	.339	.334	t = 0.09
	(.287)	(.162)	Z = 2.31
Δ Net DT/SE	-.102	.156	t = -6.20
	(-.114)	(.109)	Z = -4.36
Loan loss provisions/Gross DTAs	.557	.665	t = -2.70
	(.608)	(.687)	Z = -2.34
Tax loss carryforwards/Gross DTAs	.198	.063	t = 3.53
	(.152)	(0)	Z = 4.36
Valuation Allow./Gross DTAs	.098	.008	t = 1.52
	(.009)	(0)	Z = 3.85
Tier I Capital Ratio, 3/97	5.29%	6.72%	t = -3.76
	(4.81%)	(6.54%)	Z = -4.33
Tier I Capital Ratio, 3/98	5.39%	7.17%	t = -4.30
	(5.00%)	(6.80%)	Z = -3.91
Current year ROA	-.78%	-.27%	t = -4.33
	(-.73%)	(.05%)	Z = -3.22
Average past ROA	-.43%	-.06%	t = -5.35
	(-.37%)	(-.09%)	Z = -3.34
Count of past losses	1.00	.42	t = 3.81
	(1)	(0)	Z = 3.35

Notes. Net deferred taxes (Net DT) is net deferred taxes from the bank's balance sheet (i.e., deferred tax assets net of both the valuation allowance, if any, and deferred tax liabilities, if any). Gross deferred tax assets (Gross DTA) is gross deferred tax assets (i.e., before deducting the valuation allowance and deferred tax liabilities). Δ Net DT is the change in Net DT from year-end F1998 to F1998. Total assets and stockholders' equity are from Compustat *Worldscope*. Loan loss provisions/Gross DTAs is the proportion of gross deferred tax assets attributable to the book-tax difference between the way that banks account for loan loss provisions for accounting and tax purposes. Tax loss carryforwards/Gross DTAs is the proportion of gross deferred tax assets represented by tax loss carryforwards. Valuation allow./Gross DTAs is the valuation allowance for DTAs deflated by gross DTAs. Tier I capital ratio is the bank's Tier I capital ratio in a given year. Current year ROA is net income divided by opening total assets (ROA). Average past ROA is the average of the three past years' ROA. Count of past losses is the number of losses in the past four fiscal years. The deferred tax variables are from bank financial statements while the financial variables (except total assets and stockholders' equity) are from the Nikkei NEEDS database.

Table 4
Cross-sectional regressions of three deferred tax variables on variables that proxy for their determinants and bank managers' regulatory arbitrage incentives. Sample comprises 72 Japanese banks with available data in Fiscal 1998.

Dependent variable	Intercept	LL/Gross DTA	CF/Gross DTA	Regional Dummy	Size	BIS_{397}	Adj. R^2
Gross DTA/SE	1.77 (1.92)	.54 (1.91)	1.81 (5.97*)	-.26 (-1.96*)	-.12 (-2.34*)	.01 (.41)	.400
Val. Allow./Gross DTA	.73 (2.41*)	-.04 (-.41)	.27 (2.70*)	-.17 (-3.99*)	-.04 (-2.89*)	.03 (2.94*)	.372
Net DT/SE	.31 (.40)	.52 (2.18*)	1.19 (4.66*)	.09 (.81)	-.01 (-.30)	-.05 (-2.17*)	.281

Table 5
Levels and Changes in Japanese Banks' Deferred Tax Positions from F1998 through F2003. Means (Medians) for All Banks, Major Banks, and Regional Banks

	All Banks	Major Banks	Regional Banks	Test for Difference
Panel A: Levels of Net Deferred Taxes				
Fiscal 1998	.010	.014	.009	t = 2.32
N = 54	(.008)	(.013)	(.007)	Z = 2.89
Fiscal 1999	.010	.012	.009	t = 1.38
N = 64	(.009)	(.012)	(.008)	Z = 2.42
Fiscal 2000	.008	.016	.006	t = 3.66
N = 66	(.008)	(.012)	(.005)	Z = 2.72
Fiscal 2001	.009	.008	.009	t = -.23
N = 61	(.009)	(.009)	(.009)	Z = -.21
Fiscal 2002	.011	.013	.011	t = .91
N = 66	(.011)	(.015)	(.010)	Z = 1.14
Fiscal 2003	.007	.009	.007	t = 1.02
N = 61	(.007)	(.009)	(.007)	Z = 1.10
Panel B: Changes in Net Deferred Taxes				
Fiscal 1999	.0003	-.0021*	.0010*	t = -3.78
N = 52	(.0005)	(-.0017*)	(.0009*)	Z = -3.65
Fiscal 2000	-.0021*	.0040	-.0034*	t = 1.96
N = 58	(-.0023*)	(-.0002)	(-.0026*)	Z = 2.21
Fiscal 2001	.0029*	.0026	.0029*	nm
N = 53	(.0032*)	(.0026)	(.0032*)	nm
Fiscal 2002	.0007	-.0014	.0009*	t = -1.29
N = 58	(.0004)	(.0008)	(.0004)	Z = 0.46
Fiscal 2003	-.0034*	-.0058*	-.0032*	t = -1.89
N = 59	(-.0036*)	(-.0059)	(-.0034*)	Z = -1.40

Notes. Net deferred taxes (Net DT) is net deferred taxes from the bank's balance sheet (i.e., deferred tax assets net of both the valuation allowance, if any, and deferred tax liabilities, if any). Both levels and changes in this variable are deflated by lagged total assets from Compustat *Worldscope*. The deferred tax variables are from bank financial statements.
* denotes that mean (median) is reliably different from zero under two-tailed test at the 5% level.
nm = comparison not meaningful.

Table 6
Determinants of Japanese Banks' Deferred Tax Positions from F1998 through F2003. Means (medians) for All Banks, Major Banks, and Regional Banks

	All Banks	Major Banks	Regional Banks
Deferred Tax Component Variables:			
Loan Losses			
Fiscal 1998	.626	.569	.649
	(.653)	(.608)	(.685*)
Fiscal 1999	.678	.629	.692
	(.698)	(.699)	(.697)
Fiscal 2000	.618	.589	.626
	(.651)	(.621)	(.657)
Fiscal 2001	.603	.477	.619*
	(.629)	(.468)	(.641*)
Fiscal 2002	.563	.314	.593*
	(.597)	(.330)	(.616*)
Fiscal 2003	.557	.239	.599*
	(.578)	(.190)	(.602*)
Tax Loss Carryforwards			
Fiscal 1998	.111	.189	.081
	(0)	(.172)	(0*)
Fiscal 1999	.053	.116	.034
	(0)	(.038)	(0*)
Fiscal 2000	.069	.190	.036*
	(0)	(.145)	(0*)
Fiscal 2001	.048	.177	.031*
	(0)	(.186)	(0*)
Fiscal 2002	.099	.388	.064*
	(.005)	(.417)	(0*)
Fiscal 2003	.118	.467	.072*
	(0)	(.458)	(0*)
Unrealized Losses (Gains) on AFS Securities			
Fiscal 1998	na	na	na
Fiscal 1999	na	na	na
Fiscal 2000	-.314	.003	-.413*
	(-.209)	(0)	(-.385*)
Fiscal 2001	-.271	.077	-.325*
	(-.159)	(.105)	(-.239*)
Fiscal 2002	-.201	.076	-.237*
	(-.093)	(.074)	(-.137*)
Fiscal 2003	-.392	.008	-.448*
	(-.353)	(-.020)	(-.387*)

Table 6 (Cont.)
Determinants of Japanese Banks' Deferred Tax Positions from F1998 through F2003. Means (medians) for All Banks, Major Banks, and Regional Banks

	All Banks	Major Banks	Regional Banks
Profitability Variables:			
ROA			
Fiscal 1998	-.005	-.008	-.004
	(0)	(-.007)	(0*)
Fiscal 1999	-.003	.002	-.004
	(.001)	(.002)	(.001)
Fiscal 2000	-.003	.001	-.004
	(.001)	(.002)	(.001)
Fiscal 2001	-.004	-.010	-.003*
	(.000)	(-.008)	(.000*)
Fiscal 2002	-.002	-.013	-.001*
	(.001)	(-.009)	(.001)
Fiscal 2003	.001	-.003	.002
	(.002)	(.003)	(.002)
Average Past ROA (three years)			
Fiscal 1998	-.001	-.004	-.001*
	(0)	(-.004)	(.001)
Fiscal 1999	-.002	-.004	-.002
	(.001)	(-.004)	(0*)
Fiscal 2000	-.003	-.003	-.003
	(-.001)	(-.003)	(0*)
Fiscal 2001	-.004	-.002	-.004
	(0)	(-.001)	(0)
Fiscal 2002	-.001	-.002	-.001
	(0)	(-.002)	(0)
Fiscal 2003	-.002	-.007	-.001*
	(-.001)	(-.006)	(-.001*)
Past Losses (four years)			
Fiscal 1998	.759	1.64	.62*
	(0)	(2)	(0*)
Fiscal 1999	.975	1.82	.84*
	(1)	(2)	(1*)
Fiscal 2000	.949	1.73	.82*
	(1)	(2)	(1*)
Fiscal 2001	.792	1.30	.72*
	(1)	(1)	(1*)
Fiscal 2002	.770	1.25	.71*
	(1)	(1)	(1*)
Fiscal 2003	.986	2.20	.89*
	(1)	(2)	(1*)

Notes. Loan losses is the fraction of the bank's gross deferred tax assets comprised of temporary differences due to book-tax differences in accounting for loan losses. Loss carryforwards is the fraction of the bank's gross deferred tax assets attributable to tax loss carryforwards. Unrealized losses (gains) on AFS securities is the tax effect of unrealized gains (losses) recognized under GAAP as a component of equity but not realized for tax purposes divided by gross deferred tax assets. Current year ROA is net income divided by opening total assets (ROA). Average past ROA is the average of the three past years' ROA. Count of past losses is the number of losses in the past four fiscal years. The deferred tax variables are from bank financial statements while the financial variables (except total assets and stockholders' equity) are from the Nikkei NEEDS database.

*Denotes a statistically significant difference between the major and regional banks at the five percent level under two-tailed tests.

Table 7

The Relation Between Levels and Changes in Japanese Banks' Deferred Tax Positions from F1998 through F2003 and the Determinants of the Banks' Deferred Taxes. Panels A and B present Spearman Rank Correlations for Levels and Changes while Panels C and D present OLS Regressions for Levels and Changes.

Panel A: Rank Correlations Between Levels of Net Deferred Taxes and Determinants Thereof

	Loan Losses	Tax Loss Carryforwards	Unrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Past Losses
Fiscal 1998	-.07	.52*	na	-.74*	-.77*	.61*
Fiscal 1999	.19	.41*	na	.06	-.70*	.67*
Fiscal 2000	.30*	.55*	.74*	-.16	-.61*	.57*
Fiscal 2001	.19	.49*	.86*	-.35*	-.63*	.60*
Fiscal 2002	.07	.60*	.80*	-.14	-.66*	.62*
Fiscal 2003	.19	.41*	.73*	-.11	-.57*	.60*

Panel B: Rank Correlations Between Changes in Net Deferred Taxes and Determinants Thereof

	ΔLoan Losses	ΔTax Loss Carryforwards	ΔUnrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Past Losses
Fiscal 1999	.78*	.53*	na	-.41*	.47*	-.51*
Fiscal 2000	-.05	.09	na	-.36*	-.48*	.41*
Fiscal 2001	.65*	.28	.85*	-.39*	.32*	-.28*
Fiscal 2002	.46*	.14	.14	-.18	.45*	-.48*
Fiscal 2003	.32*	-.01	.60*	-.36*	-.10	.01

Panel C: Regressions of Net Deferred Taxes on Determinants Thereof

	Intercept	Loan Losses	Tax Loss Carryforwards	Unrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Adj. R-squared
Fiscal 1998:							
	-.05	.02	.03				.213
	(-.63)	(1.92)	(3.38)				
	.01				-.27	-1.10	.453
	(8.17)				(-1.15)	(-2.77)	
	.00	.01	-.00		-.39	-1.13	.448
	(.63)	(.68)	(-.28)		(-1.32)	(-2.79)	
Fiscal 1999							
	-.00	.02	.03				.135
	(-.77)	(2.40)	(3.09)				
	.01				.01	-.88	.232
	(9.62)				(.04)	(-4.17)	
	.00	.01	.01		-.01	-.77	.229
	(.17)	(1.33)	(.68)		(-.03)	(-2.70)	
Fiscal 2000	.00	.01	.03	.02			.611
	(.41)	(1.82)	(2.52)	(5.46)			
	.00				-.00	-1.94	.340
	(3.12)				(-.00)	(-4.89)	
	.00	.01	.02	.02	.02	-.18	.594
	(.41)	(1.67)	(1.75)	(4.62)	(.12)	(-.37)	

Panel C (Cont.): Regressions of Net Deferred Taxes on Determinants Thereof

	Intercept	Loan Losses	Tax Loss Carryforwards	Unrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Adj. R-squared
Fiscal 2001							
	.01	.01	.02	.02			.840
	(2.49)	(1.87)	(2.77)	(10.51)			
	.01				-.72	-.88	.417
	(7.39)				(-4.12)	(-3.91)	
	.01	.01	.02	.01	-.27	-.18	.864
	(2.98)	(1.24)	(1.96)	(9.60)	(-2.82)	(-1.22)	
Fiscal 2002							
	.01	.00	.01	.01			.715
	(2.98)	(1.29)	(2.84)	(6.94)			
	.01				-.58	-1.17	.482
	(13.04)				(-3.83)	(-5.93)	
	.01	.01	.01	.01	-.25	-.58	.775
	(3.05)	(1.47)	(1.52)	(6.03)	(-2.22)	(-3.55)	
Fiscal 2003	.01	.00	.01	.01			.789
	(3.59)	(.39)	(1.37)	(8.86)			
	.00				-.15	-1.32	.336
	(2.59)				(-.23)	(-4.76)	
	.01	.00	.00	.01	.15	-.35	.794
	(3.58)	(.11)	(.33)	(8.04)	(.38)	(-1.66)	

Panel D: Regressions of Changes in Net Deferred Taxes on Determinants Thereof (all coefficients multiplied by 100)

	Intercept	Regional Bank Intercept Dummy	ΔLoan Losses	ΔTax Loss Carryforwards	ΔUnrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Adj. R-squared
Fiscal 1999:								
	-.11	.07	.77	1.05				.573
	(-2.01)	(1.19)	(4.22)	(3.83)				
	-.16	.19				21.7	23.6	.375
	(-2.06)	(2.52)				(1.59)	(2.47)	
	-.17	.10	.77	.52		17.7	8.13	.568
	(-2.15)	(1.46)	(4.06)	(.98)		(1.17)	(.72)	
Fiscal 2000								
	-.05	.04	1.26	1.41	1.00			.679
	(-.27)	(.18)	(6.12)	(1.87)	(5.64)			
	.18	-.67				-39.6	-60.2	.171
	(.60)	(-2.16)				(-.91)	(-1.43)	
	-.04	.04	1.36	1.12	1.06	31.4	9.51	.670
	(-.19)	(.19)	(5.69)	(1.36)	(4.29)	(.98)	(.25)	
Fiscal 2001	.39	-.26	1.04	1.16	.47			.752
	(3.64)	(-2.35)	(8.81)	(4.23)	(4.35)			
	.22	.12				-19.8	8.25	.249
	(1.24)	(.67)				(-3.54)	(1.15)	
	.37	-.23	.80	1.28	.52	-7.72	2.21	.748
	(3.22)	(-2.05)	(3.36)	(3.86)	(3.99)	(-1.18)	(.39)	

Panel D (Cont.): Regressions of Changes in Net Deferred Taxes on Determinants Thereof (all coefficients multiplied by 100)

	Intercept	Regional Bank Intercept Dummy	ΔLoan Losses	ΔTax Loss Carryforwards	ΔUnrealized Gains (Losses) on AFS Securities	ROA	Average Past ROA	Adj. R-squared
Fiscal 2002								
	.38	-.41	.81	.37	1.12			.871
	(2.93)	(-3.21)	(7.72)	(2.23)	(14.10)			
	.11	.00				-9.47	27.8	.045
	(.36)	(.02)				(-.78)	(1.79)	
	.42	-.45	1.04	.59	1.12	14.1	-.01	.880
	(3.24)	(-3.49)	(6.92)	(2.95)	(14.10)	(2.10)	(-.18)	
Fiscal 2003								
	-.40	.33	1.73	1.34	.87			.635
	(-2.46)	(2.16)	(4.31)	(2.27)	(7.45)			
	-.46	.26				-74.7	-11.0	.132
	(-1.62)	(1.06)				(-2.16)	(-.83)	
	-.36	.31	1.63	1.13	.88	9.58	7.76	.623
	(-1.92)	(1.93)	(3.31)	(1.63)	(6.89)	(-.34)	(.83)	

Notes. Loan losses is the fraction of the bank's gross deferred tax assets comprised of temporary differences due to book-tax differences in accounting for loan losses. Loss carryforwards is the fraction of the bank's gross deferred tax assets attributable to tax loss carryforwards. Unrealized losses (gains) on AFS securities is the tax effect of unrealized gains (losses) recognized under GAAP as a component of equity but not realized for tax purposes divided by gross deferred tax assets. Current year ROA is net income divided by opening total assets (ROA). Average past ROA is the average of the three past years' ROA. Count of past losses is the number of losses in the past four fiscal years. The deferred tax variables are from bank financial statements while the financial variables (except total assets and stockholders' equity) are from the Nikkei NEEDS database.

Table 8
Descriptive Statistics on the Valuation Allowance for Deferred Tax Assets for Japanese Banks, F1998 to F2003. Table Reports Mean Valuation Allowance (Deflated by Gross Deferred Tax Assets) as well as the Fraction of Banks with Valuation Allowances

	All Banks	Major Banks	Regional Banks	Test for Difference
Fiscal 1998	.024	.098	.008	t = 1.52
N = 86	16/86	8/15	8/71	χ^2 = 14.47*
Fiscal 1999	.047	.105	.035	t = 1.13
N = 87	33/87	12/14	21/72	χ^2 = 16.18*
Fiscal 2000	.044	.074	.037	t = 1.29
N = 73	36/73	13/14	23/59	χ^2 = 13.14*
Fiscal 2001	.078	.094	.076	t = 0.36
N = 77	45/77	8/9	37/68	χ^2 = 3.89*
Fiscal 2002	.124	.397	.092	t = 5.33*
N = 80	55/80	8/8	46/71	χ^2 = 4.12*
Fiscal 2003	.143	.424	.110	t = 4.56*
N = 80	63/80	8/8	54/71	χ^2 = 2.44*

Notes. Deferred tax numbers are from bank financial statements. * denotes statistical significance under two-tailed test at 5% level or better.

Fig. 1: Plot of earnings/(losses) before realized gains/(losses) [solid line], realized gains/(losses) [longer dashes], and pre-tax earnings [short dashes] for major Japanese banks, 1982-2002. Amounts in billions of Japanese yen.

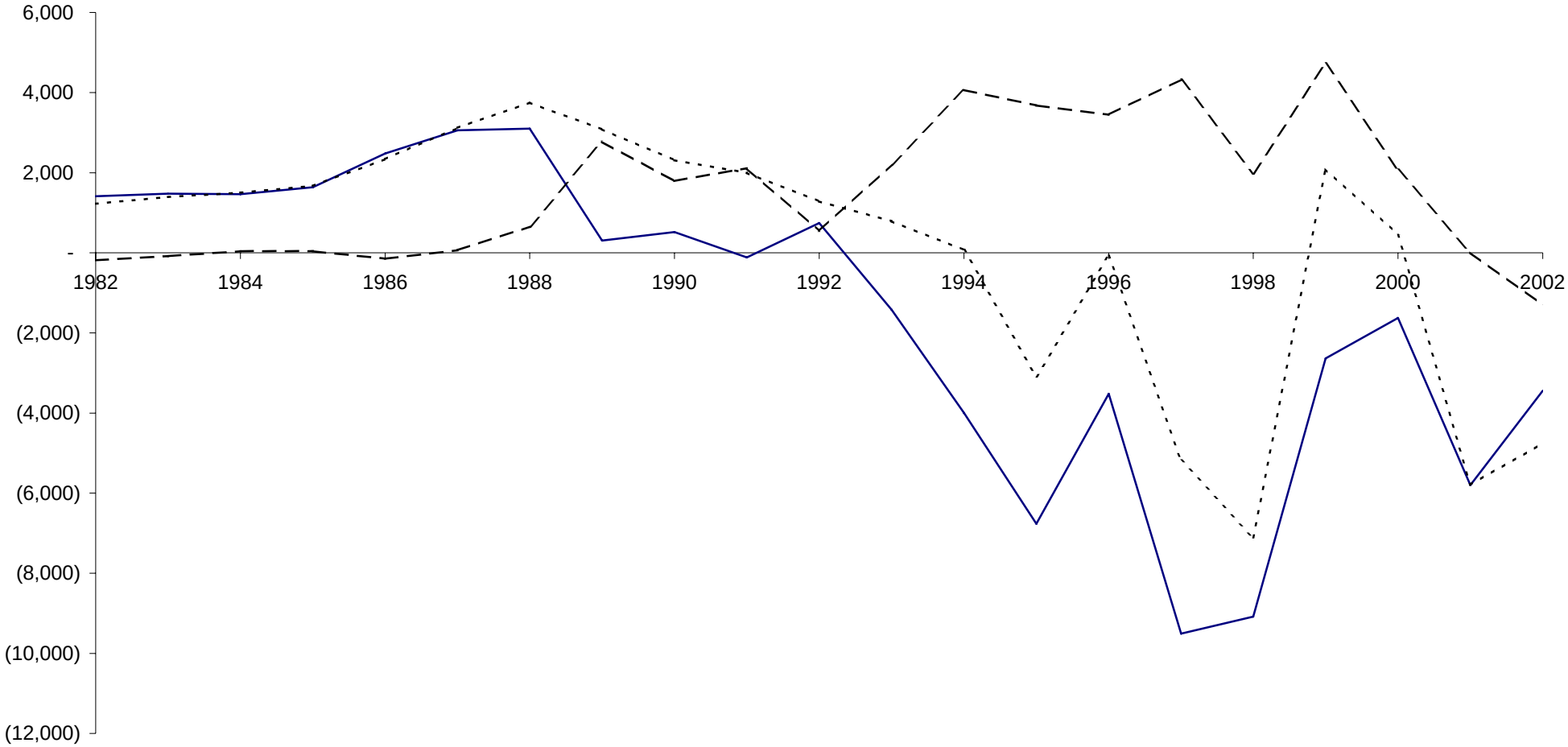


Fig. 2: Plot of total SE (solid line), total unrealized gains on securities (short dashes), and cumulative after-tax realized gains on securities and real estate (longer dashes) for major Japanese banks, 1982-2002. Amounts in billions of Japanese yen.

Figure 3: Components of Major Japanese Banks' Stockholders' Equity, F1993 to F2003

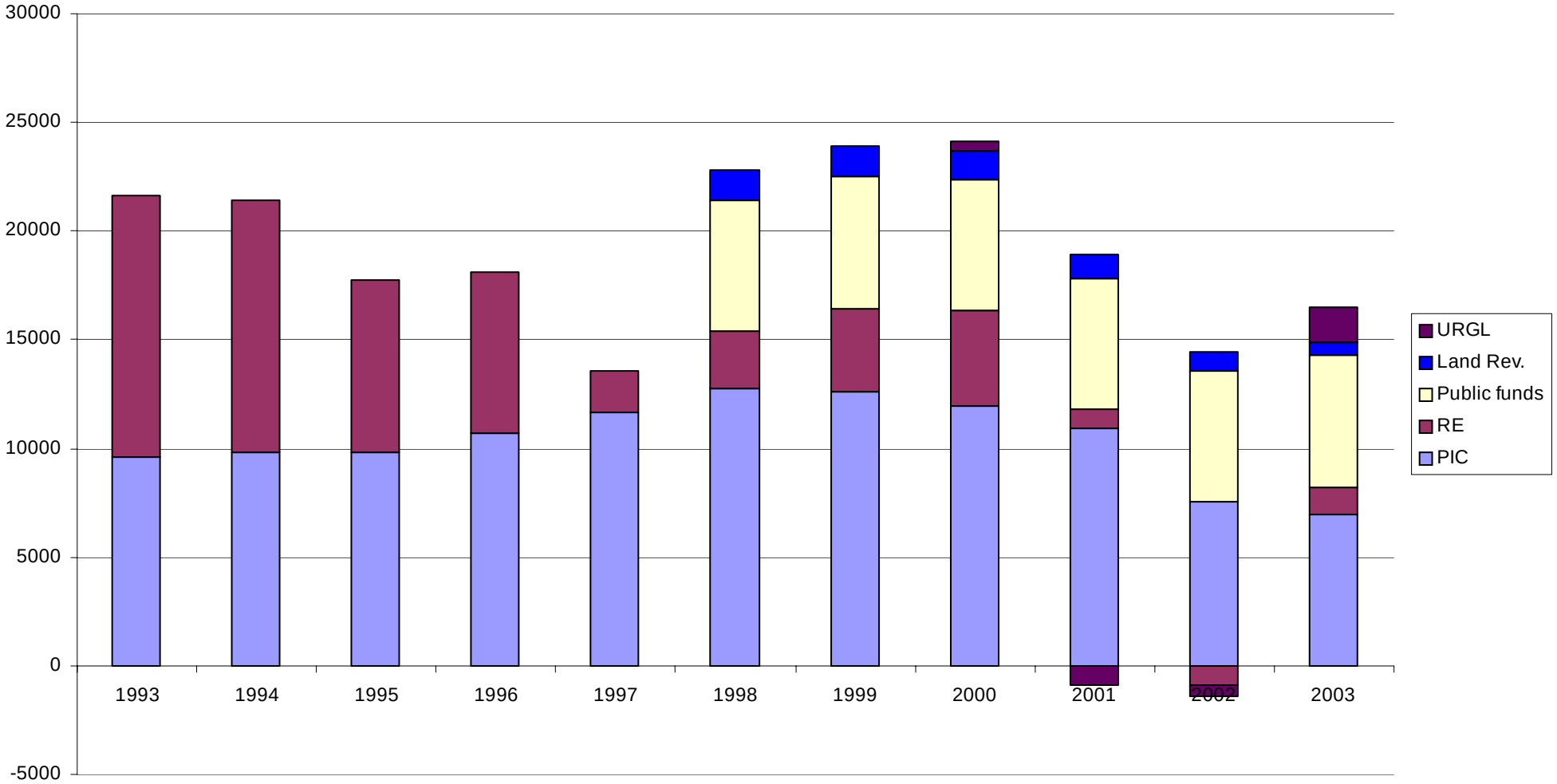
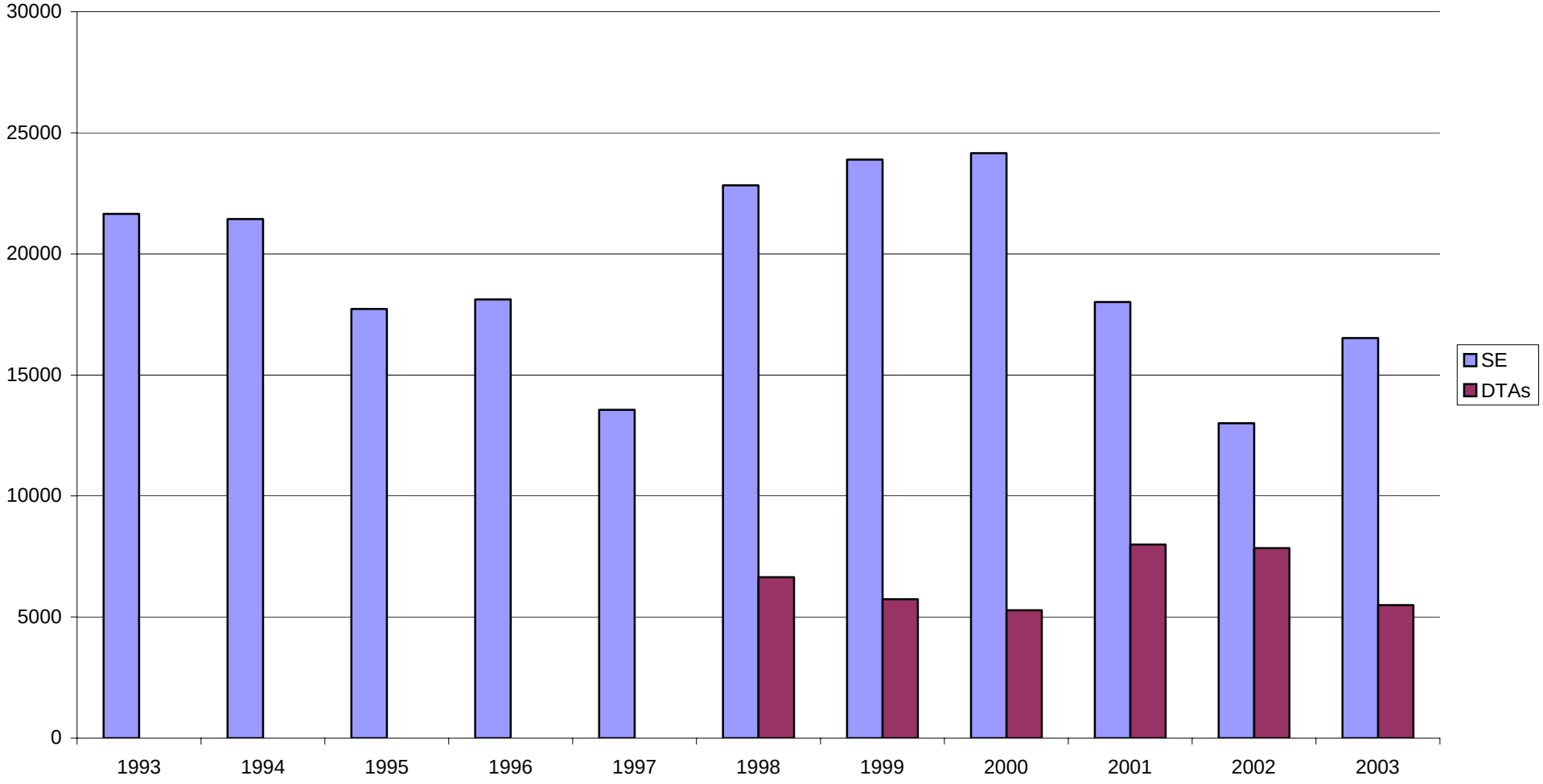


Figure 4: Major Japanese Banks' Stockholders' Equity and Net Deferred Tax Assets, F1993 to F2003



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