

Earnings Management Behaviors Under Different Economic Environments: Evidence from Japanese Banks*

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Abstract

This paper investigates Japanese banks' earnings management behavior under three distinct economic environments: (1) high-growth with asset price bubble economy (1985-1990); (2) stagnant growth with financial distress economy (1991-1996); and (3) severe recession with credit crunch economy (1997-1999). Using bank balance sheet information of 78 Japanese banks, we find that earnings management behavior by Japanese banks differ considerably across the three periods. Our results indicate that banks used security gains as a means to manage earnings throughout all three periods. We also find that banks used loan loss provisions to manage earnings; however, this behavior is only prevalent during the first two periods. Due to the fact that banks faced record-high non-performing loans during the latter severe recession period, banks on average may have been restrained from using loan loss provisions to smooth income and/or to replenish regulatory capital. Consistent with previous studies, we find that the Japanese banks significantly lowered their lending with increased provisions.

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1. Introduction

Earnings management occurs when managers use their discretionary power in the financial reporting process and in structuring transactions. By smoothing earnings over time, managers convey private information to stakeholders about the underlying economic performance of the company or attempt to influence contractual outcomes that depend on the reported accounting numbers.¹ Most empirical studies on bank earnings management practices focus on bank managers' discretionary actions to adjust the timing and size of transactions and accruals in their financial reports. There are three main incentives for bank managers to recognize and record certain financial transactions: (i) to achieve regulatory capital requirements; (ii) to defer tax payment on earned income; and (iii) to disseminate enhanced earnings information to investors.

In the case of Japanese banks, only two studies assess earnings management practices. In the first study, Genay (1998) examines the relationship between the performance of Japanese banks and their financial characteristics during the 1991-1997 period. The author reports that Japanese banks increased their loan loss provisions when their core earnings as well as the returns on the stock market are high, and attributes these behaviors to income smoothing.

Recently, Shrieves and Dahl (2003) – henceforth SD – investigate the discretionary accounting practices of Japanese banks operating under the financial constraints imposed by the Basle Accord guidelines. The authors find that, during the 1989-1996 period, surplus regulatory capital plays a

¹ Many motivations for earnings management have been examined in the literature including: (i) realization of earnings thresholds [Burgstahler and Dichev (1997) and DeGeorge, Patel, and Zeckhauser (1999)]; (ii) initial public offerings and seasoned equity offerings [Rangan (1998) and Teoh, et al. (1998a, 1998b)]; (iii) income smoothing [Greenwalt and Sinkey (1988) and Beaver and Engel (1996)]; (iv) regulatory capital planning [Scholes, Wilson, and Wolfson (1990), Kim and Kross (1998), and Shrieves and Dahl (2002)]; (v) book-tax reporting differences [Mills and Newberry (2001) and Phillips, Pincus, and Rego (2002)]; (vi) debt covenant restraints [DeFond and Jambalvo (1994)]; (vii) bonus plans and compensation [DeAngelo (1986) and Pourciau (1993), Gaver, et al. (1995), and Holthausen et al. (1995)]; (viii) alteration of risk perceptions and earnings information to investors [Bhattacharya,

significantly positive role in the lending decisions of Japanese banks. They also find that Japanese banks used realized securities gains and loan loss provisions to smooth income, and capital-constrained banks, in particular, used earnings management to replenish regulatory capital during this period of financial duress. The authors then argue that banks use discretionary accounting practices to increase their regulatory capital levels without reducing the risk of insolvency – a concept known as *regulatory-capital arbitrage*.

In this paper, we extend the SD study to investigate whether similar earnings management behaviors of Japanese banks can be observed across other time periods under extremely different economic environments. Our motivation to address this question stems from the fact since the mid 1980s, Japanese banks experienced upturns and downturns in the economy as well as some structural changes in the function of its financial intermediaries. With bank lending, provisioning, and profitability being typically pro-cyclical (see e.g., Berger and Udell, 2003; Borio, Furfine and Lowe, 2001), we ask whether earnings management behaviors similar to those documented in the SD study can also be observed in an earlier period of the late 1980s, when the Japanese economy enjoyed high economic growth with escalating asset price bubbles and absent the BIS regulatory capital requirement that allowed the Japanese banks to enjoy higher asset values and profits, or in a later period of the late 1990s, marked by severe economic recession, credit crunch and weakened banking system as the accumulation of non-performing loans further deteriorated the balance sheets of Japanese banks?

To this end, we follow the SD methodology and empirically assess the role of loan loss provisions and realized gains from securities portfolios on the earnings management practices of 78 Japanese banks over a 15-year period (1985-1999). Based on a number of economic and financial factors that changed the profitability of the Japanese bank over this sample period (which we discuss in the next section), we break our sample data into three sub-periods: (1) high-growth with asset price bubbles era (1985-1990); (2) stagnant growth with financial distress period (1991-1996); and (3) severe recession

et al. (2002), Barth, et al. (1999)]; (ix) government investigation [Bonner, et al. (1998)]; (x) management of bad debts [McNichols and Wilson (1988)].

with credit crunch period (1997-1999). For our broad sample of 78 Japanese banks, we estimate a simultaneous equation model of investment and financial decisions, which explicitly incorporates the endogeneity of accounting discretion with respect to security gains and loan loss provisions.

Our findings reveal that Japanese banks on average realized gains from securities in order to offset the negative impact of loan loss provisions and thereby engaged in income smoothing throughout all three periods. However, the propensity of using gains to smooth income was smaller for banks with negative nondiscretionary income during the latter periods of financial distress. On the other hand, we detect that Japanese banks used loan loss provisions as a means of managing earnings only during the high-growth and stagnant periods. During the third period of severe recession and more intensive capital constraints, however, banks on average did *not* use loan loss provisions to smooth income in the face of declining return on investment. This behavior is consistent with the notion that Japanese banks needed to increase their provisions-to-assets ratio to reflect the accumulating non-performing loans, and not necessarily to manage earnings. On the other hand, banks with negative nondiscretionary income continued to use provisions as a means to smooth income, despite the need for these banks to increase their loan loss provisions given the enormous share of non-performing loans during the period of severe economic recession and capital constraints.

Moreover, we find that the lending activities of Japanese banks differed significantly across the three periods. Relative to the second or third quarter, bank lending during the high growth period was hindered by the higher realized net dividend earnings and lower loan loss provisions on average. On the other hand, lending (particularly lending of the larger banks) deteriorated considerably following macroeconomic contraction during the stagnant growth period, and significantly increased provisions during the severe recession period. Overall, our findings are consistent with the observations that Japanese banks significantly lowered their lending during the latter two periods following the bursting of the asset price bubble (Hall, 1993 and Horiuchi and Shimizu, 1995).

The rest of the paper is organized as follows. The next section describes the evolution of the Japanese banks from 1985 to the present. Section 3 presents the data and the simultaneous-equation methodology that is used to model the determinants of lending, securities gains, loan loss provisions and dividends. Section 4 presents descriptive statistics and the empirical results. Section 5 provides some concluding remarks.

2. Three Economic Environments

The Japanese banking industry has traditionally been one of the most heavily regulated industries.² Before banking deregulation, the Ministry of Finance (the internal regulator) traditionally favored more confidentiality and only required limited disclosure of the true financial conditions and accounting practices of a bank's operations. This indirectly allowed banks to conceal financial difficulties. However, with increasing bank deregulation and with the industry having to transition to a new regulatory capital regime under the Basle Accord I in the early 1990s, regulators also required greater disclosures that have made it easier to determine the true value of a bank's loan portfolio. Banks with publicly traded equity shares were forced to comply with sometimes-conflicting regulations. These changes to the banking system have either required or encouraged banks to disclose their equity positions in their financial statements, enabling investors to make more informed decisions. Deregulation has also led to a loss of much of the banks' protection from competition, both domestic and international. Consequently, banks faced competition across their traditional business lines, leading banks to diversify their loan portfolios. All of these factors have contributed to the difficulties faced by banks. Below we describe economic and regulatory changes faced by the Japanese banks from 1985 to 1999 and conclude that an examination of the differing earnings management behaviors of Japanese banks under the three economic environments is warranted.

² The Japanese banking system has been going through a very gradual deregulation process that started in the early 1980's and has taken around 25 years for its completion [Hoshi and Kashyap (2001)].

2.1 High-Growth with Asset Price Bubble Economy (1985-1990):

Japanese banks expanded vigorously and enjoyed high profits during the 1980's. The main reasons for their success included strong macroeconomic performance of the Japanese economy, a rapidly rising stock market, low domestic interest rates, a relatively strong yen, and a vibrant real estate market. In July 1988, *The Banker* had the following quote, "In a year which was the worst-ever for many US and European banks, Japan's banks turned in higher profits, increased their capital and took in a larger share of world lending and capital-market business" (p. 109).

At the same time, the Japanese economy also experienced the strengthening of "asset price bubbles" (see e.g., Shiratsuka, 2003; Okina and Shiratsuka, 2002; Okina and Shiratsuka, 2004). During this period, the asset portfolios of Japanese banks were significantly inflated by the substantial rise in land prices as well as other assets as banks significantly shifted from manufacturing and wholesale sectors to finance/insurance, real estate, and other sectors throughout the second half of 1980s (see e.g., Tsuru, 2001b). Furthermore, with financial deregulation policies that resulted in structural changes in corporate finance during the late 1980s, large firms created many small- and medium-sized subsidiaries. The Japanese banks' lending to these subsidiary firms rose substantially (e.g., banks lending to property developers via non-bank finance companies known as *jusen*) from 45 percent in 1985 to almost 57 percent in 1990, with the proportion of loans to the real estate industry rising from 7 percent in 1985 to 12 percent in 1990 (Hoshi, 2001).

Moreover, Hoshi (2001) points out that because banks lacked intrinsic information about these new client firms, banks demanded collateral in order to provide loans. Real estate was a desirable choice for collateral primarily because the value of real estate had not declined throughout the entire postwar period. In fact, real estate asset prices were experiencing significant increase. Hence, both Ueda (2000) and Hoshi (2001) maintain that Japanese banks shifted towards portfolios that contained higher shares of loans collateralized by real estate. Unfortunately due to the surge in the value of the collateral, banks did not view it necessary to monitor the real estate related loans (Baba and Hisada, 2002). Given the rise in

collateral lending patterns, the banks' asset portfolios were extremely vulnerable to the risk of asset price decline as well as performance deterioration of the concentrated industries (see e.g., Shimizu and Shiratsuka, 2000). Ex post, Ueda (2000) empirically documents that the large increase in land price inflation during the late 1980s and the decline between 1991 and 1996 positively affected the bad loan ratio in 1996. Hoshi (2001) finds that the increase in real estate loans during the late 1980s positively and significantly contributed to the rise in the ratio of non-performance loans in 1998.

With stable economic growth, high demand for credit, and increasing asset prices to support collateral lending portfolio, the banking sector grew vibrantly with respect to assets, lending, and profits during the late 1980's. There are numerous reasons why, even during a period of rapid expansion, Japanese banks may have wanted to manage their earnings. Banks may desire to reduce their income tax burden by smoothing profits over time. In the absence of the Basle Accord, regulatory capital did not constrain overall bank capital; therefore, banks could finance their lending activities without being constrained by regulatory capital. Thus, banks could easily maintain growth in lending activities as well as stable dividend policy for investors. In addition, banks may also want to display a constant income stream in order to gain confidence from the public and/or investors. Thus, it can be conjectured that bank managers may have reduced the realization of gains from sales of securities by increasing their loan loss provisions as well as dividends in order to smooth their earnings during this period of prosperity, financial growth, and high profits.

Alternatively, given the effects of macroeconomic developments and stock market performance on risk provisions and earnings, banks may behave in two ways. On the one hand, banks may behave pro-cyclically, e.g., reducing provisions during economic upswings. It is plausible that banks, generally faced with very few non-performing loans during the good times, are willing to reduce the level of provisioning. Hence, there may exist an inverse relationship between economic growth and the loan loss provisions for Japanese banks during high growth periods. On the other hand, banks may behave counter-cyclically, e.g., may not reduce and/or may even increase risk provisioning during high-growth

periods. The reason is that banks may anticipate a cyclical economy, in which an expansionary period would be followed by an economic downturn, and should position them for the possibility that their debtors may have difficulties repaying their loans.

2.2 Stagnant Growth with Financial Distress Economy (1991-1996):

By 1991, the asset price bubbles began to burst, with mild annual deflation at 1%.³ Shortly thereafter, real estate prices declined significantly. The fall in real estate values eroded the capital base of the banks' balance sheet, and thus significantly contributed to the problems faced by Japanese banks. Between 1990 and 1994, the Nikkei 225 Index declined by 50 percent. Because Japanese banks held large positions in common stock, they suffered a significant decline in their capital⁴, compounding the banking industry's balance sheet problem.

Economic growth also slowed down dramatically (industrial production growth rate over this 6 year period averaged -0.34 percent) and the instability of the financial system intensified when, in addition to the fact that the collateral used to support the loans declined in value, the banks experienced a significant increase in the number of non-performing loans and suffered large losses in the value of their own securities holdings.⁵ During the Japanese economic downturn, many of the small- to medium-sized firms were unable to make their loan payments. Japan's Ministry of Finance (MOF) inspected the *jusen* companies and found that 40% of their loans were non-performing (Milhaupt, 1999). In fact, all *jusen* companies were insolvent, with 75% assets non-performing, by mid-1996 (Milhaupt, 1999; Mori, Shiratsuka, and Taguchi, 2001). Thus, the collapse of the asset price bubble stimulated the non-performing loan problems and substantially weakened financial intermediation.

³ It has been argued that monetary policy failures were the main cause of large asset price fluctuations (see e.g., Hoshi, 2001).

⁴ According to Fukao (2001), a 10 percent drop in stock price index reduces 20 percent of the net capital since the market value of stocks held by banks is about twice as much as their net capital.

⁵ Moreover, this was in tandem with the overall decline in the Japanese economy. Between 1990 and 1994 the average growth rate was 1.5 percent compared to 5.5 percent for the previous four years. Moreover, monetary policy tools were also ineffective even though the Bank of Japan reduced the discount rate seven times in a period of three years from 6% to 1.75%. All these macroeconomic events further led to the bank loan problems.

According to the Bank of Japan (BOJ), loan loss provisions and loan write-offs were at record high at ¥13 trillion in FY1995 and ¥7.6 trillion in FY1996. Despite the significant increase in loan loss provisions, operating profits remained high in 1995 because banks realized net gains on bond-selling operations. In 1996, however, the banks operating profits declined 5 percent. Despite the increase in non-performing loans and the increase in loan loss provisions, it has been argued and empirically found that rather than writing off bad loans, the banks refinanced the bad loans – this is known as forbearance lending (Kobayashi, Saita and Sekin, 2002).

During this post bubble period, the BIS regulatory capital requirements emerged in 1993, further reducing the banks' ability to lend. If capital constrains bank lending, then it is expected that lending will vary positively with capital ratios, creating a new incentive for Japanese banks to manage their earnings. Through the use of discretionary accounting practices, banks could maintain or increase their lending, and still meet capital reserve requirements. Specifically, banks that were near the BIS capital-constraint limit had an incentive to alter the appearance of their capital position by increasing equity and net income. As pointed out in Hoshi and Kashyap (2001), despite the long tradition of holding company shares, the banks started to sell some of their stock positions to realize gains and support their weakened balance sheets.⁶ According to the capital-arbitrage view (see e.g., Shrieves and Dahl, 2002), banks could increase their equity position and thereby increase or at least maintain their lending activities by reducing dividends and increasing the discretionary components of income (e.g., increase realized security gains and reduce loan loss provisions).

2.3 Severe Recession with Credit Crunch Economy (1997-1999)

The failures of many large financial institutions [including the 10th largest bank (Hokkaido-Takushoku Bank), the 4th largest securities firm (Yamaichi Securities)] as well as the East Asian Crisis hampered the stability of the financial system, and exerted negative economic growth for five consecutive quarters since the 4th quarter of 1997 (Hayakawa and Maeda, 2000; Mori, Shiratsuka and Taguchi, 2001).

In this post-bubble economy, the recession in the words of Hayakawa and Maeda (2000), “...turned out to be the worst ever experienced by Japan in the post war era.” (p. 1). In turn, there was a substantial tightening in bank lending of private banks, which resulted in a significant reduction in business fixed investment, particularly in fixed investment of small and financially constrained firms. Hence, this third period was marked by a credit crunch (Woo, 1999; Motonishi and Yoshikawa, 1999; Hayakawa and Maeda, 2000; Schaede, 2004).

Japanese banks endured a continuing deterioration of their balance sheets and an intensifying banking distress. In particular, banks faced extended economic recession, mounting bad loans, and relatively weak capital reserve positions that continued to adversely impact their lending positions. Equally important, because a significant portion of their loans used real estate as collateral, Japanese banks should have engaged in prudent risk management practices by increasing their loan loss provisions to reflect mounting bad loans as well as a decline in the collateral value of their loans. For example, the ratio of bad loans to total loans increased to 6 or 6.5 percent in the later period from 3 percent or less during the earlier period of financial distress. In 1998 and 1997, net operating losses (defined as the difference between gross profits and loan losses) peaked at –¥8.3 trillion and –¥7.9 trillion, respectively. This contrasts sharply from positive profits of ¥2.5 trillion in both 1991 and 1992.⁷

Between December 1997 and March 1998, supervisory and regulatory reforms were initiated for the banking industry to govern bank risk regulation, failed bank resolutions, and bank recapitalizations (Tsuru, 2001a; Milhaupt, 1999; Daigo, Yonetani and Marumo, 1998). About ¥7 trillion of public funds were injected to stabilize the financial system, with ¥1.8 trillion to recapitalize 21 banks (Mori, Shratsuka, and Taguchi, 2001). In addition to the public funds, the Japanese government also revised accounting rules by allowing banks to reevaluate their property assets at the market price and to use the cost method in valuing their equity portfolio (Daigo, Yonetani and Marumo, 1998). As a result, “the use of cost method accounting for stocks eased the pain of banks suffering from sharp drop of stock prices, and the

⁶ Since most of these share holding were decades old and thus had a very low base price compared even to their post-peak current market price.

reevaluation of property assets allowed banks to count unrealized gains of property assets as Tier II capital” (Daigo, Yonetani and Marumo, 1998, p. 1). Accordingly, the use cost method accounting allowed banks to increase Tier 1 capital, while the ability to reevaluate property assets at the market price allowed banks to increase Tier 2 capital. Hence, we expect a more intensive pattern of regulatory capital arbitrage than that observed in the SD’s study, particularly for the financially constrained banks.

2.4 Summary Statistics Across Three Sub-periods:

Table 1 gives summary statistics of macroeconomic and financial characteristics endured by Japanese banks across three unique time periods. In addition, this table provides t-statistics testing the difference in the mean value of the macroeconomic and financial characteristics between the three periods. As can be seen in Table 1, domestic production, as measured by industrial production (INDPROD), increased on average at an annual rate of 4.4 percent during the 1985-1990 period, as compared to growth rates of -0.34 percent in the 1991-1996 period and -0.83 percent in the 1997-1999 periods. The stock market index (STOCKS) increased on average 20.9 percent during the 1985-1990 period, while the index returned -4.8 percent on average during the 1991-1996 period and -13.6 percent during 1997-1999 period. The land price index (LAND) declined from a 4.8 percent annual growth rate in the high-growth period to a -3.3 percent and -4.1 percent annual growth rate during the last two periods, respectively. Meanwhile, average growth in stock prices of Japanese banks (STOCKS_BANK) rose at the rate of 14.7 percent during the economic and stock market upswings, but then declined on average 8.0 percent and 8.7 percent during the two latter periods, respectively. Overall, the t-statistics reveal that the Japanese banks operated under three distinct macroeconomic environments.

Table 2 presents the financial characteristics of large city banks and smaller regional banks. These two panels reveal the financial struggles by Japanese banks in the last two periods as a result of the collapse of the asset price bubble and non-performing loan problems. City banks’ loan loss write off jumped drastically from an average of ¥525 million during the high growth period to an average of ¥9.6

⁷ Refer to Fukao (2001).

billion during the economic stagnancy and to an average of ¥25.7 billion during the recession period. Consistently, City banks' income on average fell sharply, exhibiting negative net income during the most recent period. Similar trends are observed for the regional banks. Furthermore, the t-statistics reveal that the Japanese banks' profitability in the latter two periods significantly differed from the first period.

Summary statistics are also provided for the main variables in our model. For example, the growth in lending activities as a percent of total assets (dLOANS) for the city banks on average decelerated from a 6.3 percent growth rate during the 1985-1990 period to only 1.2 percent during the 1991-1996 period and -1.1 percent during the 1997-1999 period. Furthermore, loan loss provisions as a percent of total assets increased from an average of 0.04 percent in the first period to about 0.28 percent in the second period and 0.86 percent in the third period. Equally important, average gains from sales of securities as a share of total assets decreased from 0.29 percent of total assets during the high-growth period to 0.37 percent during the stagnant period and to 0.31 percent during the period of more severe recession period.⁸ Finally, net dividends declined slightly from 0.054 percent in the first period to 0.048 percent and 0.040 percent during the two periods of financial distress. Similar trends are again observed for the regional banks.

[Insert Table 1 and Table 2]

3. Data and Methodology

3.1. Data

Our bank-level data are obtained from the Pacific-Basin Capital Market Research Center (PACAP) Database-Japan, which is jointly created and maintained by the University of Hawaii and University of Rhode Island in collaboration with the Daiwa Institute of Research and the Tokyo Keizai

⁸ Gains from sales of securities on average were higher in the latter two periods despite the decline in the market value of overall equities of the banks, as measured by decline in the stock market index. This inconsistent observation is due to the fact that equity investments were held at cost, which was still below market value. And when they were sold and repurchased back at market value, Japanese banks realized their latent gains, increased the book value of their equity investments, and thereby increased their Tier 1 Capital.

Inc. We compile a large data set, with annual income statements and balance sheet data for 78 Japanese banks over a 15-year study period, 1985-1999. Moreover, our sample also includes city and regional banks that are listed on the Tokyo Stock Exchange (TSE).⁹ Our initial sample includes 13 city banks and 87 regional banks. We exclude banks that cease to be listed on the TSE for reasons of failure or nationalization. Mergers are accounted for by treating the merged bank as one for the entire sample period. We also exclude banks with no information on their financial statements. Our final sample has 78 banks that are comparable to SD's sample. They report that the number of banks in their final sample is between 67 and 79 varying by year.

3.2. Methodology

We follow the SD methodology and estimate a simultaneous equation model to analyze the discretionary accounting practices of Japanese banks on four decision variables: lending, securities gains, loan loss provision, and dividends. This model assumes that Japanese banks periodically and simultaneously adjust their decisions to achieve their objective of income smoothing and/or capital arbitrage. Specifically, the equations for securities gains and loan loss provision offer empirical evidence on how Japanese banks use discretionary accounting to smooth reported earnings, while the equations for lending and dividends reflect how banks make decisions regarding investment and financial activities, respectively.¹⁰ These four financing decisions are functions of financial bank attributes as well as other exogenous variable.

$$\begin{aligned}
 dLOANS_{it} = & \alpha_0 + \alpha_1 REG_{it} + \alpha_2 ASSETS_{it-1} + \alpha_3 LNASS_{it-1} + \alpha_4 INDPROD_{it} \\
 & + \alpha_5 CAPLO_{it-1} + \alpha_6 CAPMID_{it-1} + \alpha_7 CAPHI_{it-1} + \alpha_8 ROI_{it} + \alpha_9 (ROI * NEG)_{it} \\
 & + \alpha_{10} GAINS_{it} + \alpha_{11} PROV_{it} + \alpha_{12} NETDIV_{it} + \varepsilon_{it}
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 GAINS_{it} = & \beta_0 + \beta_1 REG_{it} + \beta_2 ASSETS_{it-1} + \beta_3 LNASS_{it-1} + \beta_4 STOCK_{it} + \beta_5 PRIME_{it} \\
 & + \beta_6 CAPLO_{it-1} + \beta_7 CAPMID_{it-1} + \beta_8 CAPHI_{it-1} + \beta_9 ROI_{it} + \beta_{10} (ROI * NEG)_{it} \\
 & + \beta_{11} dLOANS_{it} + \beta_{12} PROV_{it} + \beta_{13} NETDIV_{it} + \xi_{it}
 \end{aligned} \tag{2}$$

⁹ Long term credit banks and trust banks are excluded from our sample.

$$\begin{aligned}
PROV_{it} = & \delta_0 + \delta_1 REG_{it} + \delta_2 ASSETS_{it-1} + \delta_3 RSRVRAT_{it-1} + \delta_4 LAND_{it} \\
& + \delta_5 CAPLO_{it-1} + \delta_6 CAPMID_{it-1} + \delta_7 CAPHI_{it-1} + \delta_8 ROI_{it} + \delta_9 (ROI * NEG)_{it} \\
& + \delta_{10} dLOANS_{it} + \delta_{11} GAINS_{it} + \delta_{12} NETDIV_{it} + \psi_{it}
\end{aligned} \tag{3}$$

$$\begin{aligned}
NETDIV_{it} = & \gamma_0 + \gamma_1 REG_{it} + \gamma_2 ASSETS_{it-1} + \gamma_3 NETDIV_{it-1} + \gamma_4 CAPLO_{it-1} + \gamma_5 CAPMID_{it-1} \\
& + \gamma_6 CAPHI_{it-1} + \gamma_7 ROI_{it} + \gamma_8 (ROI * NEG)_{it} + \gamma_9 dLOANS_{it} + \gamma_{10} GAINS_{it} \\
& + \gamma_{10} NETDIV_{it} + \omega_{it}
\end{aligned} \tag{4}$$

We follow Shrieves and Dahl (2003) for the definitions of all variables in the simultaneous equation system.¹¹ The only deviation from their definition is in our measure of capital ratios. Instead of using surplus regulatory capital ratios (BIS) as in Shrieves and Dahl's study, we use the overall equity capital ratios (CAP)¹² because of the difficulty in measuring risk-weighted capital during the transition period, during which the banking regulator did not fully enforce the reported BIS ratios in Japan. We are comforted by Shrieves and Dahl's acknowledgement that the use of CAP measures leads to similar conclusions. The endogenous and exogenous variables as well as bank characteristics are defined as follows.¹³

The four endogenous variables are defined as follows. dLoans is a one-year change in a bank's total loans divided by the beginning of the year total assets, GAINS is the gains or losses on a sale of

¹⁰ Several other studies have used a similar model specification, like Greenawalt and Sinkey (1988) and Moyer (1990). However, our specification is based on the work by Shrieves and Dahl (2002), where they also model a simultaneous model with four equations.

¹¹ We conducted two formal tests for the Two-Stage Least Square (2SLS) model. The first test examines whether the parameters from OLS and 2SLS methods are equal, as they would be in the absence of simultaneity or model misspecification. Hausman's (1978) specification test rejects the hypothesis of equivalence of the parameters in each of the four equations, supporting the assumption of endogeneity in lending, security gains, loan loss provision, and net dividends. The second test for model misspecification consists of a regression of the residuals from each equation in the 2SLS model on all the instruments and computing tests of the hypothesis that the coefficients in each equation are jointly zero; the results show that none of the tests were significant at even the 10% level.

¹² Total equity capital divided by total assets.

¹³ Some of our variable definition spans into different eras; however, we believe this is not a problem. The reason is that the extent to which banks manage their earnings in the current year is depended on their balance sheet last year. There is no reason to believe the causality will totally break down as the economic environment changes. In other word, the lag variables serve as controls for firm specific characteristics. Even if external conditions may change, those constraints may still affect a bank's behavior. It is important to remember that earnings management behaviors are influenced by both external and internal factors. Hence, the external factor is economic environments and lag variables are proxy for internal factors. We only examine how a bank responds to the changes of the external factor.

securities¹⁴ divided by the beginning of the year total assets, PROV is the bank's provision for loan losses divided by the beginning of the year total assets, and NETDIV is the bank's cash dividends (net of stock issuance) divided by the beginning of the year total assets.

The four endogenous variables are regressed simultaneously on a set of bank financial characteristics. The variable REG is a dummy variable that equals one if a bank is a regional bank and zero if it is a city bank. ASSETS_{t-1} is log of total assets lagged by one year, while the LNASS_{t-1} is the one year lagged of total loans divided by total assets and the RSRVRAT_{t-1} is the one year lagged of loan loss reserves divided by total assets. CAPI_{t-1} is the one year lag of equity capital divided by total assets in the *i* = lowest, middle, and highest quartiles. ROI is the non-discretionary earnings¹⁵ divided by total assets, while NEG is a dummy that equals one if a bank has negative non-discretionary income, and zero otherwise.

We also control for a set of exogenous variables. The variable STOCKS is a two-year average percentage change in the Tokyo Stock Exchange price index. PRIME is a two-year average change in the long-term prime lending rate, LAND is a two year average percentage change in the land price index. And INDPROD is a two-year average change in the industrial production index.

Since our focus is on income smoothing and capital arbitrage behavior, we summarize in Table 3, the expected signs of key coefficients in each equation. In the lending equation (dLOANS), if regulatory capital constrains bank lending, then we expect (i) the three capital-to-assets ratios (CAPLO, CAPMID, CAPHI), return on investment (ROI), and gains/losses on sale of securities (GAINS) to be positively related to dLOANS; and (ii) loan loss provisions (PROV) and net dividend payouts (NETDIV) to be negatively related to dLOANS. In the equation for gains/losses on sale of securities (GAINS) equation, if income smoothing and capital arbitrage behavior exists, we expect: (i) lending (dLOANS), loan loss

¹⁴ Includes gains on foreign exchange sold, trading account securities transactions, maturity of securities, national and other bonds redeemed less loss on securities sold.

¹⁵ Non-discretionary earnings is composed of income less expenses, provisions for loan losses, other revenue/expenses (calculated by PCAP to include reversal of special/specific reserves, provision of special/specific reserves, special profit, non-operating income, special loss, and non-operating expenses) and gains/losses on sales of securities.

provisions (PROV), as well as net dividend payouts (NETDIV) to be directly related to GAINS; and (ii) the three capital-to-assets (CAPLO, CAPMID, CAPHI) and the return on investment (ROI) to be negatively related to GAINS. Likewise, if income smoothing and capital arbitrage behaviors exist, then: (i) the three capital-to-assets ratios (CAPLO, CAPMID, CAPHI), the return on investment (ROI) and gains/losses from sale of securities (GAINS) should positively impact loan loss provisions (PROV); (ii) lending (dLOANS) as well as net dividend payouts (NETDIV) should be inversely related to PROV. And finally, CAPLO, CAPMID, CAPHI, ROI, and GAINS (dLOANS and PROV) should positively (negatively) affect net dividend payouts (NETDIV).

[Insert Table 3]

4. Empirical Results

We first estimate the four equations using the same period as in the SD study (1989-1996). While we do not however formally include the table of results in the paper,¹⁶ our results overall are fairly consistent with the SD's evidence of earnings management by Japanese banks. On the other hand, when we estimate the SD model for three different periods: high-growth period (1985-1990); economic stagnant period (1991-1996); and severe recession period (1997-1999), there are interesting similarities and differences between our results and those of SD. Furthermore, the breakdown of time periods should enable us to compare and contrast Japanese banks' decisions in lending, gains from sales of securities, loan loss provisions, and net dividend across the three distinct economic environments. Table 4 presents the empirical results of each financial decision variable for each of the three periods. Below we discuss the results.

[Insert Table 4]

4.1. Bank Lending

The first equation in Table 4 shows the empirical results for various factors that determine bank-lending decisions (dLOANS). Overall, lending behaviors differ significantly across the three periods.

¹⁶ The table of results for the SD time period is available upon request.

During the high growth period, bank lending was constrained by discretionary accounting factors. On the other hand, lending was constrained by macroeconomic contraction as well as deteriorating assets during the stagnant growth period, and by the need to increase provisions during the severe recession period.

Specifically, our results show that non-discretionary income as a percent of assets (ROI) is significantly and positively related to lending only during high growth period. Also, an increase in net dividend payout (NETDIV) significantly reduces bank lending only during high growth period. Furthermore, loan loss provisions as a percent of assets (PROV) has an inverse relationship with banks' loan growth only during the high-growth and the severe recession periods, but not during the period of economic stagnant. On the other hand, the realization of security gains significantly increases bank lending during the high-growth period, while significantly reduces bank lending during the stagnated economy. These results imply that bank lending was constrained by discretionary accounting factors during the high growth period.

In addition, we find that lending is significantly curtailed (1) by the lower demand for loans (measured by the growth of industrial production) in the second period of economic stagnation; (2) for larger banks (as measured by assets) in the second period; and (3) by the significant increase in loan loss provisions in the third period. On average, lending activities for the smaller regional banks were relatively higher than those of the larger city banks during the latter two troubled periods.

All three ranges of capital ratios for (CAPLO, CAPMID, CAPHI) are surprisingly negative and insignificant in determining bank-lending activities across all three sub-periods, suggesting that lending by banks were not constrained by the lack of capital. The implication of this finding is that increase in banks' capital-to-assets ratios could have been aimed to improve their capital position rather than to expand their loan portfolio. Similarly, Horiuchi and Shimizu (1995) find that Japanese banks that increased their equity capital had a reduction in lending. Likewise, Hall (1993) argues that in order to maintain adequate levels of capital during 1990-1993, Japanese banks reduced their loan portfolios as a way to reduce the percent of risky assets in their portfolios.

4.2. Security Gains

The second equation in Table 4 illustrates the important determinants of bank decisions to realize gains from sales of securities across the high-growth, financial distress, and banking crisis periods. Overall, our empirical evidence suggests that banks consistently used gains as a means to manage their earnings throughout all three periods. While the degree of using realized gains to smooth income for banks with negative nondiscretionary earnings is stronger during the high-growth period, it is relatively weaker during the latter two sub-periods. Moreover, the coefficient for loan loss provisions is significantly positive throughout all three periods, suggesting that increase in provisions, which results in reducing income, prompted banks to increase gains from sales of securities.

Furthermore, equity-to-assets ratios (CAPLO, CAPMID, and CAPHI) are insignificant across the three periods (except the significantly negative coefficient for CAPMID during the high-growth period), suggesting that overall banks' decision to realize security gains were not significantly constrained by capital. On the other hand, net dividend payout has a significantly positive impact on realized gains across all three periods, implying that increase in dividend payouts substantially raises the propensity of banks to realize gains on the sale of securities. More importantly, the empirical evidence of banks using realized gains as a means to smooth income prevails throughout all three periods.

Other interesting findings include: (i) the average gains from sales of securities are relatively larger for regional banks as compared to city banks during the second period in which banks face more deteriorating balance sheet problems following the asset price bubble burst; (ii) the realization of gains by banks on average was significantly lowered during the last period of severe recession when the stock market performed poorly, with the realized losses being eased by the ability of banks to use of cost method accounting for stocks (Daigo, Yonetani and Marumo, 1998); and (iii) banks significantly lowered their realization of gains on securities when interest rate fell during the post-asset bubble period.

4.3. Loan Loss Provision

The third equation in Table 4 shows the factors influencing bank decisions to provision for loan losses (PROV) across the three periods. Overall, our empirical evidence suggests that Japanese banks used loan loss provisions as a means to manage their earnings during both the high-growth and stagnant periods. During the third period of severe recession and more intensive capital constraints, however, banks on average did *not* use loan loss provisions to smooth income in the face of declining return on investment; however, banks with negative nondiscretionary income continued to use provisions as a means to smooth income.

We find that security gains are positively related to provisions only during the first two periods, suggesting banks on average used gains from the sale of securities to offset the negative impact of provisions on income during the high-growth and the stagnant period. Furthermore, income-smoothing behavior with respect to loan loss provisions is significant during both the high-growth and the stagnated period. During the severe recession period, however, banks increased loan loss provisions (instead of decreasing them as implied by the income smoothing and capital-arbitrage hypothesis) in the face of declining nondiscretionary income, while banks with negative nondiscretionary income display some degree of income-smoothing behavior by decreasing the provisions-to-assets ratio in response to a reduction in ROI. This finding suggests that during the severe recession period, only the capital-constrained banks engaged in income-smoothing and capital-arbitrage behavior given the mounting non-performing loans, the rigorous regulatory capital requirements as well as the change in accounting rules to recapitalize banks during the third period (Daigo, Yonetani and Marumo, 1998).

In addition, banks with lower loan loss reserves at the beginning of the period tend to set lower levels of loss provisions during the periods of high-growth and severe recession. This finding is not consistent with prudent risk management since we expect banks to increase their provisions for losses in the face of a decline in loan loss reserves, particularly in the latter troubled period of rising non-performing loans.¹⁷ Moreover, with the real estate price index being a measure of the risk characteristics

¹⁷ For example, Hanazaki and Horiuchi (2003) document that the portion of non-performing loans not covered by loan loss reserves increased from ¥13.8 trillion in March 1998 to ¥18.4 trillion in March 1999.

of the banks' loan portfolio, a significantly negative relationship between real estate price index (LAND) and provision-to-assets (PROV) exists during both the high-growth as well as the stagnated period. During the more severe recession period, however, banks may have also understated these provisions relative to loan portfolio risks as measured by the declining real estate price index.

Furthermore, the finding that higher dividend payouts on average reduces banks' propensity to provision for loan losses suggests that because banks continued to put emphasis on conveying positive earnings information to investors, prudent risk management may have been compromised. Increases in net dividend payouts significantly resulted in banks reducing their loan loss provisions throughout all three periods. Finally, loan loss provisions do not differ significantly across bank type.

4.4. Net Dividends

The final equation in Table 4 examines the factors that explain banks' decisions on dividend payouts (NETDIV) across the three sub-periods. Overall, the main driver of the banks' dividend policy across all three periods is last period's dividend payouts (NETDIV_{t-1}), implying that banks primarily focused on achieving a stable growth of dividend earnings for their investors throughout all three periods. In addition, increases in gains from sale of securities or reductions in loan loss provisions during both the high-growth and the stagnated periods significantly contributed banks' dividend payouts. On the other hand, the reverse holds for the severe recession period - reductions in gains or increases in provisions during this period induced banks to on average increase dividend payouts. In addition, net dividends are significantly and positively determined by non-discretionary income during the high-growth and the stagnated periods. These results suggest the high growth and stagnant growth periods, Japanese banks on average were less likely to pay dividends in the face of declining nondiscretionary earnings and increasing loan loss provisions, unless of course they can realize gains from sale of securities.

5. Conclusion

This paper analyzes the use of loan loss provisions and realized gains from securities portfolios as means to manage earnings by 78 Japanese banks over a 15 year-period (1985-1999). Specifically, we break down our analysis into three distinct periods that characterize three distinct economic environments: (1) high-growth with asset price bubble economy (1985-1990); (2) stagnant growth with financial distress economy (1991-1996); and (3) severe recession with credit crunch economy (1997-1999). Overall, we find that estimating the model across the three economic time periods would not yield stable results. Hence, earnings management patterns observed cannot be generalized across the sub-economic time periods, particularly the latest period of severe recession and credit crunch economy.

We find that Japanese banks used gains from sale of securities used as a means to manage their earnings throughout all three periods. This finding suggests that Japanese banks realized gains from sale of securities in order to offset the adverse impact of loan loss provisions on income in order to manage earnings. However, the propensity to use realized gains to manage earnings is significantly weaker for banks with negative nondiscretionary income during the two latter periods of economic downturns.

Furthermore, we also find that Japanese banks significantly used loan loss provisions to manage earnings during both the economic high-growth and stagnant growth periods. During the third period of severe recession and more intensive capital constraints, however, banks on average did *not* use loan loss provisions to smooth income in the face of declining return on investment. The reason may be due to the fact that during this period of acute non-performing loan problems, banks needed to increase their share of provisions-to-asset. In turn, this limited their ability to use provisions as a means of manage earnings. However, banks with negative nondiscretionary income continued to use provisions as a means to smooth income.

Moreover, we find that the lending activities of Japanese banks differed significantly across the three periods. During the high growth period, bank lending was constrained by discretionary accounting factors; the three factors contributing significantly to the growth of Japanese banks' loan portfolio during this period were the banks' objective to maintain a steady loan-to-assets ratio, the banks' inflated assets,

lower provisions relative to assets, and higher gains on sale of securities. On the other hand, lending was constrained by macroeconomic contraction and higher gains on sale of securities during the stagnant growth period, and by the need to increase provisions during the severe recession period. Overall, it seems that Japanese banks decreased their lending position significantly given the rise in gains on sale of securities and loan loss provisions during the latter two periods following the bursting of the asset price bubble. Our findings are consistent with Horiuchi and Shimizu (1995), who also observe that Japanese banks with increased equity capital reduced their loan portfolios. Furthermore, Hall (1993) contends that in order to maintain adequate levels of capital, Japanese banks reduced their loan portfolios during the 1990-1993 period as a way to reduce the amount of risky assets in their portfolios.

Finally, we also find that current dividend policy is significantly driven by the previous period's dividend payouts in all three sub-periods, indicating that Japanese banks continued to give great importance to stable growth dividend earnings for investors. Furthermore, to achieve higher dividend payouts, banks reduced realized gains from the sale of securities during the severe recession period in which the stock market deteriorated significantly. However, dividend payouts were significantly deterred by increases in banks' lending activities during the period of high-growth, but significantly reduced by lending contraction during the severe recession period. Finally, banks could significantly maintain stable dividend payout growth by understating their loan loss provisions relative to assets during the periods of high growth and stagnant growth. During the severe recession period, however, banks having to increase their loan loss provisions relative to assets could still maintain stable growth dividend earnings for their investors.

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Table 1: Macro Summary Statistics

| | Period 1: 1985-1990 | | Period 2: 1991-1996 | | Period 3: 1997-1999 | | T-test for mean difference between periods | | |
|------------------------|---------------------|---------|---------------------|---------|---------------------|---------|--|---------------|---------------|
| | Mean | Std Dev | Mean | Std Dev | Mean | Std Dev | Periods 1 & 2 | Periods 1 & 3 | Periods 2 & 3 |
| STOCKS (% change) | 0.2095 | 0.1395 | -0.0482 | 0.1003 | -0.1360 | 0.0018 | -29.74 | -33.48 | -11.83 |
| STOCKS_BANK (% change) | 0.1437 | 0.3630 | -0.0800 | 0.1889 | -0.0866 | 0.2274 | -10.84 | -7.90 | -0.36 |
| LAND (% change) | 0.0475 | 0.0332 | -0.0332 | 0.0188 | -0.0413 | 0.0054 | -41.90 | -35.89 | -5.66 |
| Prime | 3.7049 | 1.1297 | 2.5002 | 1.7321 | 0.5000 | 0.0000 | -11.57 | -38.36 | -15.61 |
| INDPROD (% change) | 0.0443 | 0.0299 | -0.0034 | 0.0340 | -0.0083 | 0.0129 | -20.95 | -22.85 | -1.88 |

Table 2: Bank Summary Statistics

| | Period 1: 1985-1990 | | Period 2: 1991-1996 | | Period 3: 1997-1999 | | T-test for mean difference between periods | | |
|---|---------------------|---------|---------------------|---------|---------------------|---------|--|---------------|---------------|
| | Mean | Std Dev | Mean | Std Dev | Mean | Std Dev | Periods 1 & 2 | Periods 1 & 3 | Periods 2 & 3 |
| N | 396 | | 392 | | 183 | | | | |

Table 3: Expected Signs of Key Variables Under Income Smoothing and Capital Arbitrage

| | dLOANS | GAINS | PROV | NETDIV | ROI | CAPLO | CAPMID | CAPHI |
|--------|--------|-------|------|--------|-----|-------|--------|-------|
| dLOANS | NA | + | - | - | + | + | + | + |
| GAINS | + | NA | + | + | - | - | - | - |
| PROV | - | + | NA | - | + | + | + | + |
| NETDIV | - | + | - | NA | + | + | + | + |

Table 4: 2SLS Model Estimation

| Equations | Period 1: 1985 - 1990 | | | Period 2: 1991 - 1996 | | | Period 3: 1997 -1999 | | | |
|-----------------|-----------------------|----------|-----------|-----------------------|---------|-----------|----------------------|----------|----------|-------|
| | Coeff. Est. | t-stat | Adj. R2 | Coeff. Est. | t-stat | Adj. R2 | Coeff. Est. | t-stat | Adj. R2 | |
| dLOANS = | Intercept | -0.2367 | -2.92 ** | 0.073 | 0.0120 | 0.23 | 0.0467 | -0.2252 | -0.83 | 0.056 |
| | REGIONAL | 0.0040 | 0.51 | | 0.0145 | 2.61 ** | | 0.0373 | 1.64 * | |
| | ASSETS_t-1 | 0.0066 | 1.81 * | | 0.0058 | 1.73 * | | -0.0072 | -0.57 | |
| | LNASS_t-1 | 0.2450 | 5.03 ** | | -0.1126 | -3.45 ** | | 0.2878 | 1.86 * | |
| | INDPROD | 0.0713 | 0.8 | | 0.2807 | 4.15 ** | | -11.8387 | -1.52 | |
| | CAPLO_t-1 | -0.2075 | -0.48 | | 0.1651 | 0.51 | | -1.9631 | -1.39 | |
| | CAPMID_t-1 | -0.0539 | -0.23 | | -0.0060 | -0.03 | | -0.9881 | -1.39 | |
| | CAPHI_t-1 | -0.0396 | -0.49 | | 0.0179 | 0.27 | | -0.0480 | -0.18 | |
| | ROI | 11.9500 | 4.75 ** | | -0.5371 | -0.41 | | 6.0300 | 1.34 | |
| | ROI*NEG | 3.1878 | 0.78 | | -1.4692 | -1.47 | | -6.4188 | -1.23 | |
| | GAINS | 19.2824 | 4.82 ** | | -9.1536 | -2.63 ** | | 10.6047 | 1.59 | |
| | PROV | -20.4600 | -3.89 ** | | 1.9659 | 1.08 | | -5.7455 | -2.18 ** | |
| | NETDIV | -64.1284 | -2.02 ** | | 23.4578 | 1.21 | | -94.1465 | -1.36 | |
| GAINS = | Intercept | 0.0112 | 5.01 ** | 0.637 | 0.0048 | 1.35 | 0.5077 | 0.1363 | 4.68 ** | 0.293 |
| | REGIONAL | -0.0002 | -1.07 | | 0.0008 | 1.87 * | | -0.0011 | -1.34 | |
| | ASSETS_t-1 | -0.0002 | -2.19 ** | | 0.0002 | 1.07 | | 0.0003 | 0.67 | |
| | LNASS_t-1 | -0.0095 | -8.21 ** | | -0.0077 | -3.65 ** | | -0.0166 | -3.55 ** | |
| | STOCKS | -0.0019 | -0.98 | | 0.0002 | 0.12 | | 0.9495 | 4.33 ** | |
| | PRIME | -0.0002 | -1.28 | | 0.0006 | 2.72 ** | | 0.0000 | 0 | |
| | CAPLO_t-1 | 0.0139 | 1.14 | | 0.0127 | 0.57 | | -0.0257 | -0.51 | |
| | CAPMID_t-1 | -0.0174 | -2.58 ** | | -0.0063 | -0.51 | | -0.0252 | -1 | |
| | CAPHI_t-1 | -0.0016 | -0.7 | | -0.0018 | -0.4 | | -0.0037 | -0.38 | |
| | ROI | -0.4917 | -11.94 ** | | -0.6028 | -10.25 ** | | -0.5435 | -3.63 ** | |
| | ROI*NEG | -0.6243 | -5.47 ** | | 0.4853 | 7.1 ** | | 0.6285 | 3.65 ** | |
| | dLOANS | 0.0211 | 3.28 ** | | -0.0351 | -2.24 ** | | 0.0170 | 1.83 * | |
| | PROV | 0.9312 | 8.24 ** | | 0.5288 | 9.19 ** | | 0.2837 | 3.61 ** | |
| | NETDIV | 2.7553 | 2.98 ** | | 3.5124 | 2.82 ** | | 6.1568 | 2.9 ** | |
| PROV = | Intercept | 0.0015 | 1.81 * | 0.408 | 0.0147 | 2.89 ** | 0.2207 | 0.0434 | 1.49 | 0.266 |
| | REGIONAL | 0.0000 | 0.2 | | -0.0011 | -1.55 | | 0.0016 | 0.76 | |
| | TASSETS_t-1 | -0.0001 | -2.76 ** | | -0.0011 | -3.15 ** | | -0.0012 | -1.08 | |
| | RSVRAT_t-1 | 0.1549 | 8.56 ** | | 0.0178 | 0.26 | | 0.3707 | 2.28 ** | |
| | LAND | -0.0031 | -1.65 * | | -0.0361 | -2.12 ** | | 0.4130 | 0.86 | |
| | CAPLO_t-1 | 0.0065 | 0.96 | | 0.0013 | 0.03 | | -0.0590 | -0.47 | |
| | CAPMID_t-1 | -0.0019 | -0.5 | | -0.0070 | -0.34 | | -0.0264 | -0.42 | |
| | CAPHI_t-1 | 0.0001 | 0.07 | | -0.0002 | -0.02 | | -0.0170 | -0.7 | |
| | ROI | 0.1967 | 6.59 ** | | 0.2185 | 1.71 * | | -0.7650 | -2 ** | |
| | ROI*NEG | 0.1388 | 2.11 ** | | 0.2139 | 1.78 * | | 0.8042 | 1.9 * | |
| | dLOANS | 0.0009 | 0.35 | | 0.0555 | 1.81 * | | 0.0015 | 0.06 | |
| | GAINS | 0.3184 | 7.71 ** | | 1.5575 | 7.07 ** | | 0.1116 | 0.2 | |
| | NETDIV | -1.7821 | -3.71 ** | | -5.6303 | -2.24 ** | | -4.4224 | -0.66 | |
| NETDIV = | Intercept | 0.0002 | 2.09 ** | 0.470 | -0.0001 | -0.61 | 0.7221 | -0.0009 | -1.79 * | 0.432 |
| | REGIONAL | 0.0000 | -1.16 | | 0.0000 | -0.02 | | -0.0001 | -1.36 | |
| | ASSETS_t-1 | 0.0000 | -0.5 | | 0.0000 | 0.98 | | 0.0000 | 1.55 | |
| | NETDIV_t-1 | 0.5664 | 14.54 ** | | 0.8608 | 29.31 ** | | 1.5983 | 8.81 ** | |
| | CAPLO_t-1 | 0.0008 | 1.01 | | 0.0000 | -0.06 | | -0.0035 | -1.05 | |
| | CAPMID_t-1 | 0.0004 | 0.8 | | 0.0002 | 0.67 | | -0.0008 | -0.44 | |
| | CAPHI_t-1 | 0.0002 | 1.22 | | 0.0000 | 0.42 | | -0.0002 | -0.32 | |
| | ROI | 0.0152 | 4.03 ** | | 0.0045 | 2.35 ** | | 0.0060 | 0.6 | |
| | ROI*NEG | 0.0050 | 0.62 | | 0.0047 | 2.74 ** | | -0.0069 | -0.61 | |
| | dLOANS | -0.0005 | -2.32 ** | | 0.0002 | 0.54 | | 0.0011 | 1.81 * | |
| | GAINS | 0.0169 | 2.96 ** | | 0.0130 | 2.86 ** | | -0.0415 | -3.96 ** | |
| | PROV | -0.0183 | -1.89 * | | -0.0094 | -3.53 ** | | 0.0123 | 2.47 ** | |

** / * Significant at the 95% / 90% Confidence Level

