Did the Japanese Stock Market appropriately Price the Takenaka financial reform ?*

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Abstract

Using event study methodology, we study how the stock market evaluates the Japanese financial reform, so-called, "Takenaka Plan", by examining how market participants perceive three important events that occurred in 2003, the release of a package of monetary policies initiated by Fukui new governor of BOJ, and failures of Risona Bank and Ashikaga Bank. The response of stock market returns of Japanese banks to failures of Risona and Ashikaga reveals that bank shareholders differentiate individual banks by their financial conditions that are targeted for disciplinary purpose by Takenaka Plan, whereas the response to the monetary package shows no evidence to differentiate banks by individual conditions.

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1. Introduction

The Japanese financial crisis almost ended in 2005, after one decade and around since its onset. Over this interval, the Japanese government and BOJ made a great deal of efforts to work out the financial crisis, but it was not until the introduction of the drastic financial reform, so-called, "Takenaka Plan", that the government policy was effective to combat the crisis and to accelerate the disposal of non-performing loans. Takenaka Plan that was first announced in October 2002 is remarkable in that it is the first reform that attempted to restore the confidence in the Japanese banking sector by requesting strongly banks to improve the transparency of financial information and by preventing banks from engaging in accounting discretion in meeting minimum capital requirements. In March 2003, the new governor of BOJ, Fukui, announced a package of monetary policies to accommodate Takenaka Plan, including the continuation of the ample provision of liquidity to banks and an increase in the maximum total amount of equity holdings it purchases from banks. Using event study methodology, we study the market evaluation to Takenaka Plan by examining how market participants perceive each of the three events, the monetary package initiated by Governor Fukui, and the failure of Risona Bank, one of the Japanese largest banks, and the failure of Ashikaga Bank, one of the largest regional banks.

Behind the introduction of Takenaka Plan is the fact that the financial authority had poor ability of supervising banks. The government has taken a policy of regulatory forbearance to avoid the financial crisis and the consequent economic stagnation. Under the easy supervisory policy, banks understated the amount of non-performing loans and engaged in accounting discretions in meeting minimum capital requirements. Therefore, the estimation for how the stock market prices the riskiness of individual banks using the events that occurred since the implementation of Takenaka Plan is anticipated to contribute to the study on the financial reform in Japan.

Brewer**III** et al. (2003), a paper that is closely related to ours, estimate how the stock market prices financial conditions of individual banks for the failures of four commercial banks and two securities firms that occurred for the period from 1995 to 1998. Their finding reports that to some extent the stock market incorporate information on financial conditions of individual

banks in prices although the ability of the Japanese stock market to price the riskiness of financial firms was recognized to have been low due to the poor transparency of bank information. The methodology and some of financial variables used in our paper are common and comparable to theirs, and the present analysis provides a base for assessing the Japanese financial supervisory policy before and after the introduction of Takenaka Plan.

A number of papers have studied the effectiveness of the Japanese financial supervisory policy using an approach of an event-study analysis. Peek and Rosengren (2001) study the government reaction to the Japan's premium problem that occurred from 1995 to 1998, and report that the announcement by the government was not effective to the reduction of the premium, but capital injections to banks were effective.[1] Spiegel and Yamori (2003) study the stock market response to two financial regulatory reforms passed in 1998, the Financial Reconstruction Act and the Rapid Recapitalization Act, and report that shareholders of regional banks responded favorably to the legislation of these acts, while those of large banks did adversely. Spiegel and Yamori (2004) argue that market participants perceive the financial supervisory policy as a "too-big-to-fail" policy, but that the tendency to favor large banks has been diminishing over time. What is most related to the present paper is Yamori and Kobayashi (2007). They study the effect of the nationalization of Risona Bank on the stock market, and report that as the government announces the protection of shareholders of Risona, market participants came to regard the injection of public funds for the nationalization as a too-big-to-fail policy.

The purpose of this paper is to study the market evaluation of Takenaka Plan by examine if the package of new monetary policies and the failures of Risona and Ashikaga differentiate the riskiness of individual banks by the financial conditions or other characteristics. For each of the three events, we examine three hypotheses. The first hypothesis is if the impact of each event on the stock market return is positive or negative, or zero toward the banking sector as a whole. The second hypothesis is if the impact on the stock market return, if it exists, is uniform across banks, regardless of differences of the financial condition of the individual banks. The third

[1] Ito and Harada(2004), since 2001, credit derivative swaps are a good indicator of Japanese bank risk.

hypothesis is that if the impact reflects more than pure contagion across banks, including financial conditions of individual banks. Specifically, we examine if the response of each event to the stock market reflects the improvement of financial supervisory policy.

This paper is organized as follows. Section 2 surveys the financial supervisory policy in Japan since 1998. Section 3 describes three events examined in the analysis. Section 4 explains the methodology. Section 5 explains data. Section 6 reports the empirical results. Section 7 reconsiders the too-big-to-fail hypothesis on the failure of Risona. Section 8 concludes.

2. Financial Supervisory Policy in Japan

In 1997, three large financial institutions, Sanyo securities, Hokkaido Takushoku Bank, and Yamaichi securities, failed, and in 1998 the financial supervisory policy came to the turning point.[2] In July, Financial Supervisory Agency was founded as an independent agency of the fiscal authority, (which was reorganized as Financial Services Agency in June 2000). In October, two financial regulatory reforms, the Financial Reconstruction Act and the Rapid Recapitalization Act, were passed. These two acts were aimed to rule the injection of public funds to weak banks, the nationalization of failing banks, and the protection of depositors. Soon after the legislation, two major banks, Long Term Credit Bank of Japan and Nippon Credit Bank, failed and were nationalized. The arrangement toward the effective financial supervisory policy was formally established. In March 1998 and March 1999, the government injected public funds into the banking sector in an attempt to avoid the financial crisis and the associated economic stagnation. As Figure 1 illustrates, just after the legislation of the Financial Reconstruction Act, the stock market rapidly recovers. The stock market seems to have priced the *de facto* establishment of financial supervisory policy favorably.

In January 1999, Mr. Yanagisawa was appointed as financial supervisory minister to head financial supervisory policy. He addressed that Japanese banks were recovering, and took a stance against the drastic disposal of non-performing loans and the nationalization of failing banks. In order to accelerate the disposal of non-performing loans, under the head of Minister

[2] It is now commonly recognized that the government took a policy of regulatory forbearance to help weak banks and had no well functioning supervisory policy (e.g. Ito and Sasaki (2002), Shrieves and Dahl(2003), Hosono and Sakuragawa (2003), and others) .

Yanagisawa, the financial authority started to audit the amounts of non-performing loans. In the special audit conducted by the financial authority in the period from 2000 to 2001, the total amount of non-performing loans disclosed by individual banks was 34 trillions and over, while the total amount audited by the financial authority was 47 trillions and over. The discrepancy amounted to 35 percent. This observation suggests that even after the legislation of the two acts for financial reforms, financial authority had poor ability of assessing bank assets.

The government kept a policy of regulatory forbearance in managing minimum capital requirements. In 1998, deferred tax assets were allowed to be accounted for as bank capital. Skinner(2005) argues that since its introduction, banks have used deferred tax assets to compensate for declines in bank capital that arose from unrealized losses on the holdings of stocks. The government also implicitly allowed banks to use subordinated debt as a tool of regulatory arbitrage. Fukao and JCER (2003) calculate the true bank capital by excluding problematic regulatory capital, and reports that, as of March 2002, the true capital ratio in the BIS standard amounted only to 1.36 percent even by including public funds as bank capital. The stock market also seems to have been skeptical about the government ability of supervising banks. Spiegel and Yamori (2003) argue that market participants perceived the Financial Reconstruction Act as a tool of helping weak banks. These observations suggest that in the period of 1998-2002, the financial authority had poor ability of supervising banks. As Figure 1 illustrates, stock prices begin to decline again in October 1999.

BOJ continued a stance for monetary loosing to avoid further decline in stock prices and the consequent financial crisis. Despite the huge amount of liquidity supply, however, as Figure 1 illustrates, stock prices continued to decline.

In October 2002, Minister Yanagisawa was fired for the possible recurrence of the financial crisis, and Heizo Takenaka was appointed as financial services minister to head financial supervisory policy, and released the “Financial Revitalization Program”, so-called, “Takenaka Plan” to accelerate the disposal of non-performing loans. Takenaka Plan has mainly three contents. First, the government requested banks to disclose the amount of non-performing loans on a more rigorous standard. Second, the government took a policy against banks that engage in regulatory arbitrage to meet minimum capital requirements. Specifically, the government

requested banks not to overstate deferred tax assets. Third, the government arranged a scheme for injecting public funds into weak but solvent banks by adopting Deposit Insurance Law, Article 102 that is intended to help banks that are vulnerable to the financial crisis.

It is now widely recognized that since the introduction of Takenaka Plan, the accuracy of assessing bank assets and the transparency of financial conditions considerably improved. In the third-round special audit conducted by the financial authority in the period from 2003 to 2004, the total amount of non-performing loans disclosed by individual banks was 34 trillions and over, while the total amount audited by the financial authority was 36 trillions and over, and the discrepancy reduced to 5.5 percent. This observation seems to reveal that the financial authority ability of supervising banks improved.

How did the stock market price Takenaka Plan? As Figure 1 illustrates, the stock market worked out the bottom in March 2003 when Fukui new governor released a package of new monetary policies, not in October 2002 when Takenaka Plan was first announced. Stock prices apparently reversed the trend upwardly in May 2003 when Risona was nationalized. Stock prices kept the upward trend in November 2003 when Ashikaga was nationalized. Below we examine the market response to Takenaka Plan using an event-study approach.

3. The Events Examined

We examine three impotents events that occurred in 2003, the release of a package of monetary policies initiated by Fukui new governor of BOJ, and failures of Risona Bank and Ashikaga Bank.

Mr. Fukui, as a new governor of BOJ, announced a package of new monetary policies on 25 March, 2003. New monetary policies had mainly three pillars: first, BOJ decided to continue the ample provision of liquidity to banks, secondly decided to apply the Lombard-type lending facility to the official discount rate by suspending the restriction on the maximum number of days, and thirdly decided to increase the maximum total amount of equity holdings it purchases from banks to 3 trillion yen by 1 trillion yen. We use the event day as March 25, 2003.

On May, 2003, the collapse of Risona, one of the Japanese largest banks, was disclosed after its auditors did not agree to the recognition of excessively estimated deferred tax assets, and

requested the write-off of part of deferred tax assets. The capital ratio on the BIS standard was disclosed to be about 2 percent at the earnings report as of March, 2003, below the minimum required for ordinary operation, 4 percent. This collapse triggered 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 following the Deposit Insurance Law, Article 102-1-1.

The bankruptcy proceeding following Article 102-1-1 involves the injection of public funds and the restructuring on the government initiative, followed not by liquidation, unlike in the case of Long Term Credit Bank of Japan and Nippon Credit Bank. The article 102-1-1 is applied to a failing bank whose net asset is positive, but later the audit by the financial authority exposes the possible negative net asset for Risona. Financial Service Management Council was held in Saturday, and we use the event day as the next trading day, 19 May.

The financial authority audited Ashikaga Bank and disclosed the inappropriate loan classification, the shortage of loan loss reserves, and overstatement of differed tax assets. Taken this information into account, the net asset of Ashikaga was disclosed to be negative in the earning report as of September, 2003. This report, in 29 November, 2003, triggered an immediate emergency meeting of the Government's Financial Service Management Council and a subsequent injection of public funds following the Deposit Insurance Law, article 102-1-3.

The bankruptcy proceeding following 102-1-3 involves the acquisition of all stocks at zero by the government while protecting all deposits, the restructuring on the government initiative, and the sale of bank assets to other banks. Unlike the case of Risona, shareholders bear the substantial costs. Financial Service Management Council was held in Saturday, and we use the event day as the next trading day, 1 December, 2003.

4. Methodology

For each of the three events, we examine three hypotheses. The first hypothesis is if the impact of each event on the stock price is positive or negative, or zero toward the banking sector as a whole. The second hypothesis is if the impact on the stock market return if it exists, is uniform across banks, regardless of differences of the financial condition or other characteristics

of the individual banks. The third hypothesis is that if the impact reflects more than pure contagion across banks, and market participants differentiate the riskiness of individual banks by their financial condition. The estimation typically used in the literature of the event-study analysis takes the form;

$$R_{it} = \alpha_i + \beta_i R_{mt} + \sum_{k=0}^{1} \gamma_{ik} D_k + \varepsilon_{it} \qquad (1)$$

where R_{it} is the stock return of bank i on day t; α_i is the intercept coefficient for bank i; R_{mt} is the market index for day t; β_i is the market risk coefficient for bank i; D_k is a binary variable that equals 1 if day t is equal to the event day or window $k(k \in [0,+1])$, zero otherwise; γ_{ik} is the event coefficient for bank i; and ε_{it} is a random error. Thus, the estimated parameters γ_{ik} capture any daily intercept shifts on event day (window) k and provide an estimate of abnormal (excess or unexpected) returns associated with the event announcement on day (window) k.

We do not estimate each of individual equations independently, but estimate equation (1) as a system of separate equations in the sample using generalized least squares (GLS). To permit the variance of the residuals to vary across banks, we apply SUR (seemingly unrelated regression).[3]

The values of the parameters in Equation (1) are estimated using daily data before and after each event date over an observation period sufficiently long to obtain meaningful results. However, because the three events that occurred in 2003 are reasonably close to one another, we have to be careful to the possible effects of specific events on subsequent events. To avoid this

[3] Because the events occurred on the same day for all the banks, it is likely that the residuals in the individual bank equations are correlated contemporaneously. Thus, we adjust for contemporaneous correlation. The methodology used in this article makes the standard assumptions that the residuals are independent and identically distributed within each equation and independent of the market return and the binary event variables; the noncontemporaneous correlation of residuals across banks is zero; and there is no event-induced heteroskedasticity. Thus the covariance matrix of the residuals in equation(8) has following structure:

$$E(\varepsilon\varepsilon') = \begin{bmatrix} \sigma_1^2 I & \sigma_{12} I & \cdots & \sigma_{1n} I \\ \sigma_{21} I & \sigma_2^2 I & \cdots & \sigma_{2n} I \\ \vdots & \vdots & \ddots & \vdots \\ \sigma_{n1} I & \sigma_{n2} I & \cdots & \sigma_n^2 I \end{bmatrix}$$

where I is the identity matrix and N is the number of banks in the sample.

problem, following Brewer III et al.(2003), Equation (1) is modified so as to permit a shift in both the intercept (α) and the market index coefficient (β) after the first event:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \alpha_i P + \beta_i P R_{mt} + \sum_e \sum_{k=0}^{1} \gamma_{ik,e} D_{ke} + \varepsilon_{it} \qquad (2)$$

where e is the number representing each of events, the announcement of new monetary policy (e =1), the failure of Risona(e =2), and the failure of Ashikaga (e =3), and $\gamma_{ik,e}$ is the coefficient for bank i for the event $e(=1,2,3)$, and P is a binary variable that is equal to 1 for the period after the first event window, the announcement of new monetary policy, and zero otherwise. We do so because the event days are close to each other.

First, in order to access the impact of each event on the stock market return as a whole in the banking industry, we test the following hypothesis using the estimated coefficients in (2);

$$H_0^{mean} : \frac{1}{N}\left(\gamma_{1k,e} + \gamma_{2k,e} + \cdots + \gamma_{Nk,e}\right) = 0 \qquad (3)$$

Equation (3) represents the hypothesis that the simple average of the coefficients of the daily abnormal stock market return in the sample is zero. If market participants perceive the impacts of each event favorably on the banking industry as a whole, the average will be positive, while otherwise, it will be negative. Note that large banks may have a great impact on the market price for the banking industry as a whole. To take into account the possible impacts of large banks, we test also the hypothesis with asset-weighted coefficient.

$$H_0^{Wmean} : v_1\gamma_{1k,e} + v_2\gamma_{2k,e} + \cdots + v_N\gamma_{Nk,e} = 0 \qquad (4)$$

where v_i is the weight on bank i that is calculated by dividing the total market value of bank i by the sum of total market values of all banks. Additionally, we compute the cross-sectional median of abnormal returns and test the hypothesis that the number of banks with positive abnormal returns is greater than 50 percent in the sample.

$$H_0^{median} : median = 0 \qquad (5)$$

If market participants perceive the impacts of each event favorably, the median is expected to positive, while otherwise, it is expected to be negative. For this hypothesis test, we compute the t test statistic and check the sign test .

Secondly, we test the pure contagion hypothesis by accessing if the impact of each of the

events is equal across all banks. We examine the following hypothesis

$$H_0^{AR} : \gamma_{1k,e} = \cdots = \gamma_{Nk,e} \qquad (6)$$

$$H_0^{WAR} : v_1\gamma_{1k,e} = \cdots = v_N\gamma_{Nk,e} \qquad (7)$$

Equation (6) represents the hypothesis that the coefficients of the daily abnormal stock market return in the sample are equal across all banks. If shareholders differentiate the riskiness of individual banks, the hypothesis is rejected, whereas if otherwise, the pure contagion hypothesis will not be rejected. Furthermore, we have to be careful to the possibility that even if the influence is contagious, the coefficients may be different in magnitude by bank size. To take into account the effect of the bank size, we test also the hypothesis with asset-weighted coefficient, represented by Equation (7). For each hypothesis test, we compute the standard asymptotic χ^2 test statistic and the *F*-statistic.

Third, given that the pure contagion hypothesis is rejected, we test if the evidence of cross-sectional variation in the responses of the surviving banks reflects their own financial condition. To do this, we expand Equation (1') to include a number of conditioning variables that reflect the financial characteristics of each bank and two control variables;

$$\begin{aligned} R_{it} &= \alpha_i + \beta_i R_{mt} + \alpha_i P + \beta_i PR_{mt} \\ &+ \sum_e \bar{\gamma}_{ke} D_{ke} + \sum_e \phi_e D_{ke} COND_i + \sum_e \theta_e D_{ke} SH_i + \sum_e \lambda_e D_{ke} TA_i + \mu_{it} \end{aligned} \qquad (8)$$

where $\bar{\gamma}_{ke}$ is the coefficient for all banks for the event $e(=1,2,3)$, $COND_i$ is a variable that describes the financial condition of bank i at the time of the event, TA_i is the log of total assets for bank i at the time of the event, and controls for bank size, and SH_i controls for the exposure of bank i to the failed bank through equity investments.[4] If the response of the stock market to the event reflects individual bank conditions, coefficients of either $COND_i$ or SH_i

[4] SH_i is defined as $SH_i = \dfrac{\rho_i TA_j}{TA_i}$, where ρ_i is the percent of outstanding shares of the failed institution j that was owned by bank i, TA_j is the total assets of the failed institution j, and TA_i is the total assets of the surviving bank i.

are statistically different from zero. We test the following hypotheses;

$$H_0^{cond} : \phi_e = 0 \qquad (9)$$

$$H_0^{SH} : \theta_e = 0 \qquad (10)$$

for each of the three events and a number of measures of $COND_i$ and SH_i.

We list up nine descriptive variables as representing the financial condition of banks; 1) the ratio of nonperforming loans to total loans outstanding (NPL); 2) the ratio of reported loan loss reserves to risk-weighted regulatory capital (LLR); 3) the ratio of domestic loans to firms in the construction industry, real estate, and finance and insurance, (which are typically assumed to be riskier than other loans) to total domestic loans (RISKY); 4) the ratio of bank capital to total bank assets calculated based on either international or domestic standard (CAPITAL); 5)the ratio of subordinated debt to risk-weighted regulatory capital (SUB); 6) the ratio of deferred tax assets debt to risk-weighted regulatory capital(DEF); 7) the ratio of liquid assets to total bank assets(LIQ); 8) the ratio of the market value of stocks to total bank assets(STOCK), and 9); the ratio of the latent gains (losses) of stocks to total bank assets(GAIN).

If banks disclose non-performing loans accurately, NPL and LLR are supposed to reflect the true magnitude of non-performing loans, and banks with higher values of NPL and LLR are supposed to be in weaker financial condition. The marginal impact of each event is expected to be greater in weaker banks with a higher value of NPL, and the sign is expected to be positive （$\phi_1 > 0$）for the announcement of new monetary policy, and negative （$\phi_2 < 0, \phi_3 < 0$）for two failures of banks. Loan loss reserves are, in principle, against non-performing loans, and weaker banks with higher ratio of non-performing loans should account for a higher value of LLR. The expected signs are $\phi_1 > 0, \phi_2 < 0, \phi_3 < 0$.

As we have discussed in Section 2, it has been commonly recognized that, before the introduction of Takenaka Plan, reported non-performing loans were undervalued. If the stock market has already incorporated this information into pricing, two variables explained above, NPL and LLR, may not appropriately reflect the soundness of banks. As a complementary variable, we use the ratio of domestic loans to firms in the construction industry, real estate, and finance and insurance (which are typically assumed to be riskier than other loans) to total domestic loans (RISKY).

A number of recent works, including Hoshi (2000), Sakuragawa (2002), and Hosono and Sakuragawa (2002), report that banks helped many of nearly bankrupt firms in these three industries by rolling over loans to these firms. Banks, in principal, should account for loan loss reserves against loans extended to almost bankrupt firms, but unless the financial authority severely inspects non-performing loans, banks will dress up their reported balance sheets by classifying these problem loans as good loans. For this reasoning, we use RISKY as a proxy to potential non-performing loans. Banks with a higher value of RISY tend to extend more bad loans, and the expected sighs are $\phi_1 > 0, \phi_2 < 0, \phi_3 < 0$.

We use CAPITAL as a measure of basic variable that captures the effect of minimum capital requirements. Banks with a smaller value of CAPITAL are more likely to be constrained by minimum capital requirements and affected more strongly by each of the events. The expected sighs are $\phi_1 > 0$, $\phi_2 < 0, \phi_3 < 0$.

Subordinated debt is allowed to account for as Tier 2 complementary capital in the local rule of capital requirements. However, in Japan subordinated debt is held by mainly insurance companies that are under double gearing with issuer banks（e.g. Fukao and TCER (2003)）. Ito and Sasaki (2002) and Hosono and Sakuragawa (2002) report that banks with poor capital tended to issue more subordinated debt to dress up reported balance sheets.

In 1998, the government allowed to account for deferred tax assets as bank capital up to expected earnings in future five years. Skinner (2005) argues that since the introduction of deferred tax assets, banks have used deferred tax assets to compensate for declines in bank capital that arose from unrealized losses on the holdings of stocks. He finds that, over the period of 1998- 2003, average ROA is negatively correlated with deferred tax assets among large banks, and that weaker banks with poor prospect of future earnings tended to account for greater deferred tax assets.

The government implicitly allowed banks to use subordinated debt and deferred tax assets as tools of regulatory arbitrage. Taking into account the accounting manipulation on regulatory capital, we use SUB and DEF as measures of regulatory arbitrage in capital requirements. Banks with a higher value of SUB will be identified as banks that have scarce true capital and have to rely more on subordinated debt to meet minimum capital requirements, and hence are

affected more strongly by each of the events. The expected sighs are $\phi_1 > 0$, $\phi_2 < 0, \phi_3 < 0$. Similarly, banks with a high value of DTA will also be identified as weak banks. The expected signs are $\phi_1 > 0, \phi_2 < 0, \phi_3 < 0$.

LIQ is a variable that may be expected to have a great impact at the event of the package of new monetary policy released by Governor Fukui. If bank shareholders think the shortage of liquidity as a serious problem in the banking sector, an announcement for the additional supply of liquidity should affect stock prices favorably. Banks with a lower value of LIQ are more likely to suffer the liquidity shortage, and affected more strongly by the monetary loosing. The expected sign is $\phi_1 < 0$.

STO and GAIN are variables that are expected to capture the influence of the change in stock prices on banks. The policy for purchasing stocks by BOJ is supposed to weaken the adverse effect of the stock market decline on banks. Banks with a higher value of STO tend to be more vulnerable to the stock market risk, and hence affected more favorably by this policy. The expected sign is $(\phi_1 > 0)$. Banks with greater losses on the stock holding tend to be more vulnerable to the stock market risk, and hence affected more favorably by this policy. The expected sign is $(\phi_1 < 0)$. The stock price of banks that hold a greater proportion of the stock of the failed bank is expected to decline more sharply. The coefficient of SH_i is expected to be $(\theta_2 < 0, \theta_3 < 0)$.

5. Data

Daily stock prices and returns for our sample of 80 publicly traded and surviving banks are obtained from the Toyo Keizai Kabuka CD-ROM for 307 business days from October 1, 2002 to December 30, 2003. All dates were Japanese dates. Market returns are measured by the TOPIX Index, which includes seasoned shares of over 1000 major companies including both banks and nonbanks (First Section) traded on the Tokyo Stock Exchange, from the CD-ROM of the TOYO KEIZAI Inc.'s tock price database. The data on the financial condition of individual banks are obtained from the Nikkei NEEDS financial statement database.

On financial data of individual banks, we use the earning reports released as of March, 2003. The announcement dates of new monetary policy and the two failures are obtained through a

search of the statement released by BOJ and a search of the Nihon Keizai Shinbun. Actually, BOJ announced a package of new monetary policies on March 25, 2003. At this stage, earning reports as of March 2003 were not yet released, but banks usually released the prediction of their earning in the interim period. It will be conceivable to think that market participants form the almost rational expectation on this information about the financial condition of individual banks.

If each announcement was made during a trading day in Japan, that date is used as the event day [0].If an announcement was made after the market was closed or over the weekend, we use the next trading date as event date.

The number of banks used in the analysis is 80 in which stock market data is available except for Rison and Ashikaga. Note the in this sample period a number of mega banks are established by merger. We exclude Mitsui-Sumitomo Bank that is established by the merger of Sumitomo Bank and Sakura Bank for the reason that the stock market data is available only after 29 November, 2002.

6. Empirical Results

Table 1 reports estimation results on (3), (4), and (5).The first column in the table reports the result for the estimated abnormal returns of individual banks for Day0 of each event window, the second column the results for Day+1, and the third column the results for the [0,+1] window.

For the new monetary policy announced by Governor Fukui, the first row, denoted, "Simple Mean", reports the average of the coefficients on the abnormal stock market return, and beneath the first reports *t* values. The average of abnormal stock market returns are positive and significant for Day0, negative and insignificant for Day+1, and positive and significant for the [0,+1] window. The third row, denoted, "Weighted Mean", reports the asset-weighted average of the coefficients on the abnormal returns, and beneath the third reports t values. The abnormal returns are positive and significant for Day0, negative and significant at 10% level for Day+1, and positive and significant for the [0,+1] window. The two alternative estimations both seem to show that market participants perceive the BOJ new policy as favorable. The differential result of Day+1 may reveal that the new policy may have disappointed shareholders of large banks.

The row denoted, “Median”, reports the median of the abnormal returns of individual banks. The row denoted, “Positive”, reports the number of banks whose abnormal return is positive, and the row denoted, “Negative”, the number of banks whose abnormal is negative. The row denoted, “sign-test”, reports *z* values on the statistical significance for the median. On the event Day0, among 80 surviving banks, abnormal returns are positive for 62 banks, and the median is positive and significant. On the event Day+1, the number of banks whose abnormal return is negative is more than a half, (46 banks), and the median is negative but insignificant. On the two-day window, the median is positive and significant. The results for the three event days suggest that stockholders of banks evaluate new monetary policy favorably to the banking industry.

For the estimation of the failure of Risona Bank, the row, denoted, “Simple Mean”, reports that the average of the coefficients on the abnormal return is negative and significant in any of the three windows. The results on “Weighted Mean” also report that the average is negative and significant in any of the three. In more than a half of banks, abnormal return is negative, and the median is negative and significant in any of the three windows. Market participants seem to incorporate new information on Risona Bank as negative into stock prices.

On the other hand, for the failure of Ashikaga Bank, the row, denoted, “Simple Mean”, reports that the average of the coefficients on the abnormal return is negative and significant for Day0, but positive and significant for Day+1. For the [0,+1] window, the estimated value is negative but slightly significant. The results on “Weighted Mean” report that the average is negative and significant for Day0, and negative but insignificant for Day+1. The results on the median report that the number of banks whose abnormal return is negative is more than a half on the window [0], but less than a half on the window [+1].

Comparing between estimations of Risona and Ashikaga, we find that the average abnormal stock returns are negative for Day0 and Day+1 in Risona, but in Ashikaga it become positive in the second day. Market participants seem to perceive that the failure of Ashikaga is local and does not transmit to other surviving banks. In other words, market participants may have anticipated the rapid government response following Takenaka Plan. Actually, in the event of Ashikaga, in the second day, the stock price of more than a half number of banks rises. This fact

also may support this interpretation.

Table 1 reports estimation results on (6) and (7). Rows beneath "H_0 : $\gamma_1=\ldots=\gamma_{80}=0$" or "$H_0$: $v_1\gamma_1=\ldots=v_{80}\gamma_{80}$" report χ^2 -statistic and F-statistic. In any of the events, the pure contagion hypothesis is rejected. For each of the events, market participants seem to differentiate the riskiness of individual banks by financial condition and other characteristics.

We turn to the investigation for individual financial conditions. For the event of new monetary policy, the upper part in Table 2 reports estimation results. None of financial variables is significant. The coefficient of LIQ is especially expected to be significant, but it is insignificant. Neither STO nor GAIN is significant. Although market participants perceive the monetary package as favorable to the banking industry as a whole, they do not seem to differentiate individual banks by their conditions.

For the event of the failure of Risona, the central part in Table 2 reports estimation results. Among variables of financial conditions, RISKY, CAPITAL, DEF, and GAIN are statistically significant. The statistical significance of CAPITAL and DEF will reveal that market participants turned to perceive Takenaka Plan as an effective tool to strengthen supervisory policies. Particularly, the negative and significant coefficient of DEF reflects the market's expectation that the financial authority forces banks not to overstate differed tax assets as bank capital and banks with greater deferred tax assets will be constrained more severely by capital requirements.

Neither NPL nor LLR is significant, while RISKY is significant. Market participants do not yet seem to perceive the improvement of the supervisory assessment to non-performing loans. Indeed, the government decided to nationalize Risona by following Deposit Insurance Law, Article 102-1-1 that is meant to be applied to the bank whose net asset is positive, but later the audit by the financial authority detects the possibility of negative net asset. Market participants perceive that non-performing loans are still understated.

The measure of bank size, LA, is insignificant. At least this finding does not reveal the market evaluation for a too-big-to-fail policy. Yamori and Kobayashi (2007) examine the estimations for both the event day of 19 May when the government announces the nationalization with the injection of public funds and the event of 21 May when the government states the protection for

the shareholders. They report that in the estimation for the day of 19 May, the impact of bank size is not found, whereas in the estimation for the day of 21 May, it is statistically found, and conclude that the government's statement for the protection of Risona shareholders seem to have induced market participants to perceive the nationalization as a too-big-to-fail policy. SH is insignificant in any of the estimations. This result may be influenced by the fact that the government adopts the restructuring followed by the protection of shareholders of Risona Bank.

For the event of the failure of Ashikaga, the lower part in Table 2 reports estimation results. Among variables of financial conditions, five variables, NPL, LLR, CAPITAL, DEF, and SUB are statistically significant while four variables are significant in Risona. In terms of variables on non-performing loans, NPL and LLR are significant in contrast to the case of Risona. On the other had, RISKY is insignificant, while it is significant in the case of Risona. Market participants come to perceive the supervisory assessment of non-performing loans more credible than before. In terms of variables on bank capital, DEF and SUB are significant. Market participants seem to perceive the financial authority to force banks not to engage in accounting discretion. SH is, unlike the case of Risona, negative and significant in any of the estimations. This result seems to reflect the fact that the government adopts the bankruptcy proceeding against the shareholders. TA is insignificant in any of the estimations.

Brewer**III** et al. (2003) study the similar analysis using the failures of six financial institutions, that occurred from 1995 to 1998, including Hyogo Bank, Sanyo securities, Hokkaido Takushoku Bank, Yamaichi securities, Long Term Credit Bank of Japan, and Nippon Credit Bank. In their cases of four bank failures, among four comparable variables of NPL, LLR, RISKY, and CAPITAL, five among sixteen are significant. This figure amounts to about 31 percent in the total. Furthermore, in the case of failures of Long Term Credit Bank of Japan and Nippon Credit Bank that occurred after the legislation of the Rapid Recapitalization Act, the proportion of significant coefficients is only 12 percent. On the other hand, the percentage rises to 63 percent in the present analysis that focuses on bank failures that occurred after the introduction of Takenaka Plan. Market participants seem to perceive the government to have changed the forbearance policy following Takenaka Plan.

7. Reconsideration: Too-Big-Too-Fail Policy

Yamori and Kobayashi (2007) examine the estimations for both the event day of 19 May when the government announces the nationalization for Risona and the event of 21 May when the government states the protection for the shareholders. They report that in the estimation for the day of 21 May, the bank size has a significant effect on the stock market return, and conclude that the government's statement for the protection of Risona shareholders seem to have induced market participants to perceive the nationalization as a too-big-to-fail policy.

We explore the too-big-to-fail hypothesis by estimating equation (8) using 21 May as an event day. If market participants regard the nationalization of Risona as a too-big-to-fail policy, the log of total asset, denoted TA, should have a positive and significant coefficient.

Our estimation differs from Yamori and Kobayashi (2007) in three respects. First, as a measure of bank size, they use a dummy variable that takes unity if the total asset of a bank is larger than that of Risona and zero otherwise, while we use the log of total asset. Second, they control for three variables as representing the financial condition of banks, CAPITAL, NPL, and DEF in our definition, while we use more variables including SUB and RISKY. Third, we use the variable SH to control for the exposure of a bank to the failed bank through equity holding.

Table 3 reports the estimation results. TA is insignificant in any of the estimations. We do not find any result to support that market participants perceive the statement for the protection as a too-big-to-fail policy.

SUB is positive and significant, while it is insignificant in the estimation of May 19-20 (see Table 2). Banks with poor capital tend to issue subordinated as a tool of meeting minimum capital requirements. Market participants seem to perceive the statement for protection as a revival of a forbearance policy.

SH is positive and the t values of the coefficient improve relative to the estimation of May 19-20. This result is contrasted with the case of Ashikaga in which SH is negative and significant. The contrasting result will reflect the different attitude of the government toward the protection of shareholders between the two failures.

In sum, in contrast to Yamori and Kobayashi (2007), we find no story of a too-big-to-fail

policy, but a revival of a forbearance policy. The different result on bank size will come from a possibility that the dummy variable used by them may reflect some fundamentals that are specific to large banks, for example, the issuance of subordinated debt to a large scale.

8. **Conclusion**

Using event study methodology, we study how the stock market evaluates the Japanese financial reform, so-called, "Takenaka Plan", by examining how market participants perceive three important events that occurred in 2003, the release of a package of monetary policies initiated by Fukui new governor of BOJ, and failures of Risona Bank and Ashikaga Bank. The response of stock market returns of Japanese banks to failures of Risona and Ashikaga reveals that bank shareholders differentiate individual banks by their financial conditions that are targeted for disciplinary purpose by Takenaka Plan, whereas the response to the monetary package shows no evidence to differentiate banks by individual conditions.

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FIGURE1.CHANGES IN STOCK PRICE INDEX AND JAPAN PREMIUM

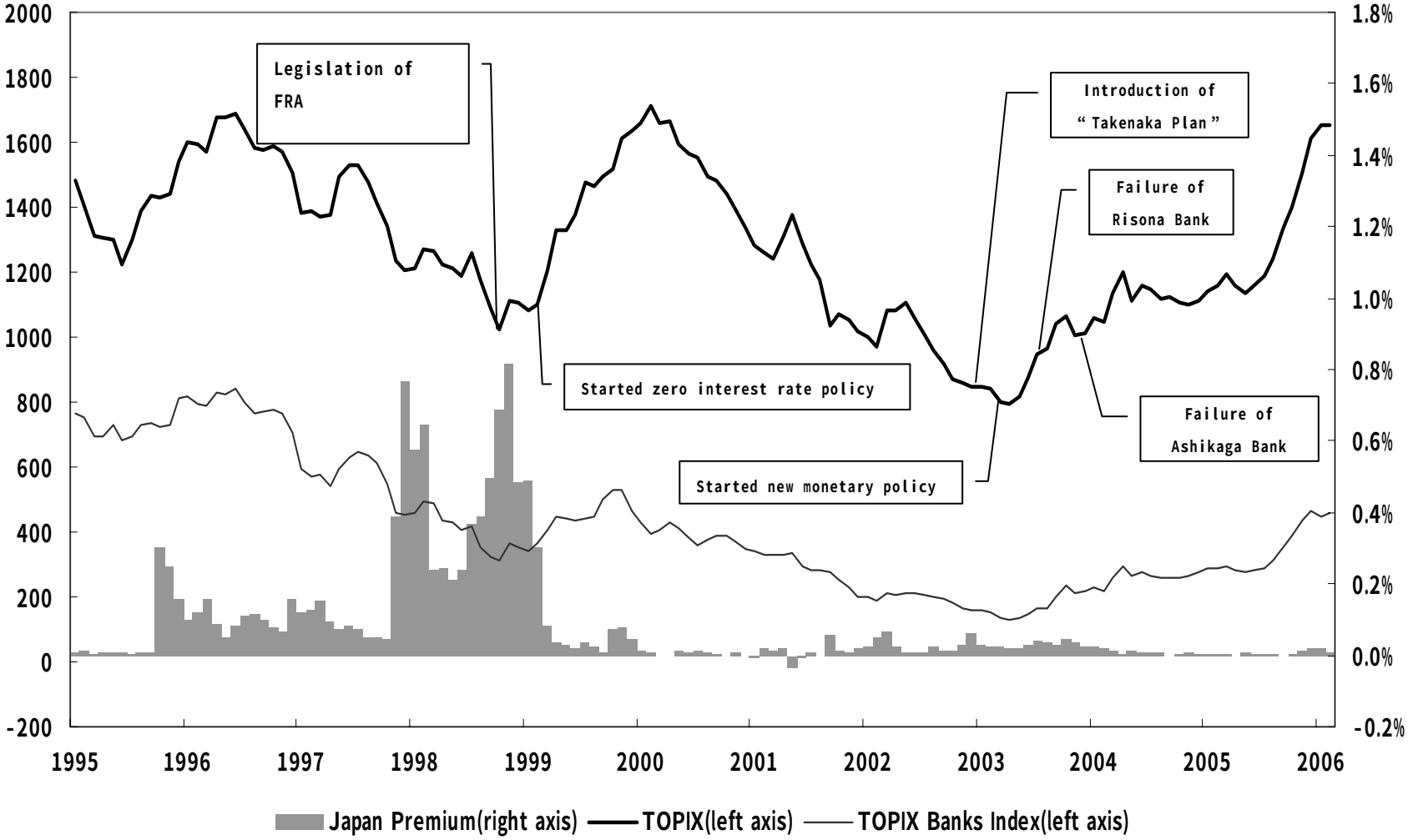


TABLE 1. ABNORMAL RETURNS OF SURVIVING BANKS

	Day 0	Day +1	[0,+1]
New monetary policy（March 25, 2003）			
Simple Mean	0.011	-0.001	0.01
t-statistic	5.55***	-0.51	4.09***
Weighted Mean	0.017	-0.004	0.006
t-statistic	2.62**	-1.41*	2.37**
Median	0.011	-0.002	0.011
Positive	62	34	60
Negative	18	46	20
Sign-test; z-statistic	5.45***	-0.79	4.56***
H_0：$\gamma_1=\ldots=\gamma_{80}$			
F-statistic	2.61***	2.60***	5.21***
χ^2-statistic	208.92***	208.07***	416.51***
H_0：$v_1\gamma_1=\ldots=v_{80}\gamma_{80}$			
F-statistic	2.67***	2.54***	5.22***
χ^2-statistic	213.45***	202.86***	417.59***
Failure of Risona Bank（May 19, 2003）			
Simple Mean	-0.011	-0.004	-0.015
t-statistic	-5.95***	-2.00**	-5.10***
Weighted Mean	-0.015	-0.006	-0.011
t-statistic	3.19***	-1.46*	-2.55**
Median	-0.008	-0.002	-0.008
Positive	16	32	20
Negative	64	48	60
Sign-test; z-statistic	-5.82***	-1.91*	-5.27***
H_0：$\gamma_1=\ldots=\gamma_{80}$			
F-statistic	1.35**	1.76***	3.16***
χ^2-statistic	108.23**	141.50***	252.79***
H_0：$v_1\gamma_1=\ldots=v_{80}\gamma_{80}$			
F-statistic	1.37**	1.78***	3.16***
χ^2-statistic	109.87**	142.06***	252.85***
Failure of Ashikaga Bank（December 1, 2003）			
Simple Mean	-0.013	0.008	-0.004
t-statistic	-4.64***	3.91***	-1.30*
Weighted Mean	-0.019	-0.002	-0.011
t-statistic	-2.16**	-0.33	-1.56*
Median	-0.007	0.006	0.002
Positive	25	55	45
Negative	55	25	35
Sign-test; z-statistic	-4.94***	3.78***	0.15
H_0：$\gamma_1=\ldots=\gamma_{80}$			
F-statistic	2.87***	1.89***	4.81***
χ^2-statistic	229.79***	151.75***	384.80***
H_0：$v_1\gamma_1=\ldots=v_{80}\gamma_{80}$			
F-statistic	2.86***	1.99***	4.91***
χ^2-statistic	228.70***	159.61***	392.99***

Notes: ***,**,and *, indicate significance at the 1%, 5%, and 10% levels, respectively.

TABLE2. EFFECTS OF A BANK FINANCIAL CONDITION: FOR EVENT DAY OR EVENT WINDOW k ($k \in [0,1]$)

	NPL	LLR	RISKY	CAPITAL	SUB	DEF	LIQ	STO	GAIN
New monetary policy（March 25, 2003）									
Cond	-0.045	0.002	-0.002	0.011	0.02	-0.005	-0.028	-0.121	-0.058
	(1.09)	(0.19)	(0.20)	(0.16)	(1.03)	(0.82)	(1.25)	(1.12)	(0.26)
TA	-0.002	-0.001	-0.001	-0.001	-0.002	-0.001	-0.001	-0.001	-0.001
	(0.87)	(0.71)	(0.67)	(0.70)	(0.87)	(0.58)	(0.72)	(0.72)	(0.70)
Failure of Risona Bank（May 19, 2003）									
Cond	-0.048	0.001	-0.035	0.146	-0.009	-0.02	0.01	-0.108	0.508
	(1.15)	(0.14)	(2.96)***	(2.09)**	(0.46)	(3.11)***	(0.44)	(0.99)	(2.25)**
TA	-0.002	-0.002	-0.002	-0.003	-0.002	-0.001	-0.002	-0.001	-0.002
	(1.27)	(1.02)	(0.95)	(1.43)	(0.91)	(0.62)	(1.07)	(0.77)	(0.92)
SH	-0.017	0.042	0.065	0.051	0.04	0.084	0.035	0.036	0.056
	(0.11)	(0.27)	(0.41)	(0.32)	(0.25)	(0.53)	(0.22)	(0.23)	(0.35)
Failure of Ashikaga Bank（December 1, 2003）									
Cond	-0.139	-0.038	-0.006	0.346	-0.053	-0.031	0.012	-0.075	-0.058
	(3.35)***	(4.01)***	(0.38)	(4.95)***	(2.79)***	(4.87)***	(0.50)	(0.69)	(0.26)
TA	-0.002	-0.002	-0.001	-0.003	0.000	0.001	-0.001	0.000	-0.001
	(0.94)	(0.83)	(0.42)	(1.37)	(0.14)	(0.28)	(0.43)	(0.23)	(0.51)
SH	-1.928	-2.219	-1.995	-1.904	-1.948	-1.645	-2.073	-1.983	-1.965
	(3.68)***	(4.22)***	(3.82)***	(3.65)***	(3.70)***	(3.13)***	(3.80)***	(3.79)***	(3.76)***
Number of observations	24560	24560	24560	24560	24560	24560	24560	24560	24560
Number of banks	80	80	80	80	80	80	80	80	80

Notes: *** and ** indicate significance at the 1% and 5% levels, respectively.

TABLE3. EFFECTS OF THE GOVERNMENT ANNOUNCEMENT TO PROTECT SHAREHOLDERS OF RISONA

FOR EVENT DAY OR EVENT WINDOW k ($k \in [0,1]$)

	NPL	**LLR**	**RISKY**	**CAPITAL**	**SUB**	**DEF**	**LIQ**	**STO**	**GAIN**
The Government announcement to protect shareholders of Risona （May 21, 2003）									
Cond	-0.061	-0.016	-0.026	0.084	0.040	-0.004	-0.003	0.163	-0.295
	(1.62)	(1.70)	(1.33)	(1.23)	(2.10)**	(0.62)	(0.12)	(1.52)	(1.31)
TA	0.000	0.000	0.000	-0.001	0.000	0.000	0.000	0.000	0.000
	(0.17)	(0.96)	(0.57)	(1.63)	(1.58)	(0.86)	(0.77)	(1.96)**	(1.22)
SH	0.305	0.278	0.328	0.291	0.277	0.302	0.292	0.294	0.285
	(1.96)	(1.78)	(2.08)**	(1.87)	(1.78)	(1.93)	(1.87)	(1.88)	(1.82)
Failure of Ashikaga Bank（December 1, 2003）									
Cond	-0.138	-0.038	-0.003	0.338	-0.050	-0.030	0.012	-0.069	-0.100
	(3.32)***	(4.02)***	(0.13)	(4.90)***	(2.55)**	(4.73)***	(0.52)	(0.62)	(0.44)
TA	-0.002	-0.001	-0.001	-0.002	0.000	0.001	-0.001	0.000	-0.001
	(0.89)	(0.74)	(0.46)	(1.29)	(0.21)	(0.31)	(0.35)	(0.13)	(0.42)
SH	-1.932	-2.223	-1.965	-1.902	-1.952	-1.647	-2.077	-1.984	-1.970
	(3.69)***	(4.23)***	(3.75)***	(3.64)***	(3.70)***	(3.13)***	(3.80)***	(3.78)***	(3.77)***
Number of observations	24560	24560	24560	24560	24560	24560	24560	24560	24560
Number of banks	80	80	80	80	80	80	80	80	80

Notes: *** and ** indicate significance at the 1% and 5% levels, respectively.