# Capital Injection, Restructuring Targets and Personnel Management: The Case of Japanese Regional Banks*

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**Abstract**

A case study of the Japanese bank recapitalization by Hoshi and Kashyap (2005) identified a bank that overstated the progress of required personnel downsizing by shifting employees to subsidiaries. This paper asks if the recapitalization program had a systematic flaw in design. We focus on regional banks with a unique panel dataset of 82 banking groups that allows us to observe the employment levels of subsidiaries, in addition to those of parent banks, over fiscal 1994--2006. We estimate a labor-demand equation with sluggish adjustment to compare the employment patterns of public capital recipients and other banks. We found 4 banks increased subsidiary employment after receiving capital injection, but only temporarily. This temporary effect suggests that the personnel shifting was essentially layoffs. Our finding indicates that, despite the limited transparency of personnel sizes on the consolidated basis, rules on capital injection provided incentives for most recipients to pursue downsizing.

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# 1 Introduction

Responding to a severe accumulation of bad loans, Japanese authorities introduced programs for restructuring commercial banks in the late 1990s. Under the restructuring package, commercial banks received capital injections from the government on condition that they meet restructuring goals on the downsizing of personnel, in addition to capital-ratio and profit targets. Table 1 presents the planned reduction of employees, personnel expenses and nonpersonnel expenses for major banks in the country discussed by Nakaso (1999). Those banks on average were required to shed 13.9% of the workforce, or 19,831 workers, from 1999 through 2003. The size of planned reduction in personnel expenses exceeds the planned reduction in nonpersonnel expenses. Clearly, the downsizing of personnel was essential in adjusting the cost structure of these troubled banks.

The UFJ Bank is one of the prominent banks that received fund injections. In a previous study, Hoshi and Kashyap (2005) examined the restructuring of the UFJ Bank over FY2002--04 and found that while the bank boasted a radical personnel cut of 13%, there was virtually no change in the number of workers on consolidated bases (i.e., workers in the UFJ Bank plus those working for the UFJ subsidiaries). Since downsizing was a key component of the restructuring package, the authors suggest that the bank overstated the progress of restructuring by shuffling employees among nonbank subsidiaries, perhaps with the intent to please the regulator. The bank accumulated large losses and was eventually merged with the Tokyo Mitsubishi Bank in 2006. The case of the UFJ bank highlights the difficulty of monitoring firms under

government rescue operations: Differing interests of the regulator and banks, coupled with complex organizational structures, can generate specialized behavioral responses. The concern raised by Hoshi and Kashyap (2005) remains to date. According to the 2007 progress reports on reconstruction submitted by the troubled banks to the Japanese Financial Services Agency (FSA), 9 out of 11 banks were successful in meeting personnel restructuring targets.[1] It is however still difficult to assess the changes in the number of employees on a consolidated bases for several cases.

This paper asks whether the reconstruction program had a design flow that left leeway for banks to overstate their achievements. To our knowledge, no study has followed up on the case study in Hoshi and Kashyap (2005) to see if the case of the UFJ Bank is an isolated incident. While the case study is compelling, a systematic examination is needed to establish if there was an issue. Further, one might question if banks transferred employees to reduce costs. For instance, fieldwork conducted in 1999 reports that, in downsizing employees, large Japanese manufacturers transferred workers to subsidiaries on a fixed-term basis (a large fraction of which become permanent transfers), avoiding layoffs (Kato 2001). Thus, while the UFJ Bank was not able to recover by itself eventually, the personnel shuffling could well have been a genuine effort to restructure the company. To overcome the limitations with a case study of an individual bank, we turn to a larger sample, focusing on regional banks. Unlike city banks, some regional banks received public funds but oth-

[1]Financial Services Agency, Japan. "Financial Assistance and Capital Injection by Deposit Insurance Corporation of Japan" (`http://www.fsa.go.jp/en/regulated/index_menu02.html`, accessed September 11, 2008)

ers did not. This offers an interesting research setting to benchmark injected banks against uninjected banks. Our study is unique in utilizing company-level data on bank subsidiaries to examine bank restructuring. Montgomery and Shimizutani (2009) examined financial aspects of the capital injection but left the personnel targets unexamined; to our knowledge this paper is the first empirical examination of the human resource aspect of the Japanese capital injection of the late 1990s.

Our empirical examination suggests that the UFJ case is not an isolated incident, but calls into question the motives for shifting workers. We estimate labor demand equations using data from fiscal 1998--2006 on 82 regional banks to see if the employment demands by injected banks significantly deviated from those of uninjected banks in a way that signals target-induced shifting. We estimate the equation separately for parent banks, wholly owned subsidiaries and partially owned subsidiaries. On average, the patterns of subsidiary employment are similar between injected and uninjected banks, though some indications of shifting were present. On close examination of individual employment patterns, we have found four cases of possible shifting. Rather surprisingly, these cases are temporary. Three are temporary increases and one is indeterminate since this bank did not recover on its own and was subsequently nationalized. Our analysis cannot rule out an explanation that some of the personnel shifting took place for the purpose of window dressing. We argue however that the personnel shifting was layoffs in essence. That is, the shifting was a legally feasible option for downsizing in an environment with tight laws on dismissal. Overall, despite the limited transparency of personnel

sizes on a consolidated basis, rules on capital injection provided incentives for most public-fund recipients to implement restructuring plans in more than just form.

Our case study on the Japanese capital injection relates to a broader concern on banking rescue operations. A rescue operation often entails government becoming a partial owner through holding preferred stocks. As the ownership and control differs, the agency issue is a concern. Consider the recent financial crises. The U.S. regulators, who need to deal with banks affiliated to multibank holding companies (MBHC), face new challenges due to the complexity of the MBHC's organizational structure. A MBHC owns and controls subsidiary banks and has the ability to shift capital among affiliates as needed (Ashcraft 2006). Coates and Scharfstein (2009) argue that a MBHC received funding under the Troubled Asset Relief Program (TARP) to assist undercapitalized bank subsidiaries but did not allocate funding among group corporations in a way intended by the regulators---that is, to recapitalize troubled bank subsidiaries. Thus, the agency issue, compounded by the complexity of the organizational structure, can hinder the effective delivery of rescue operations.

The target-induced personnel-shuffling is a plausible behavioral response to expect in Japan where the legal environment on layoffs is tight and firms are thought to weigh the interests of employees more heavily than their counterparts in the Anglo-Saxon countries. Japanese firms tend to invest in on-the-job training of employees, and workers with firm-specific capital are difficult to replace in the market. Since firms operating under a different labor-market

regime would not be compelled to shield employees in the downturns, a more relevant concern in the U.S. context would be executive compensation. For example, the American International Group---the large insurance company currently under the federal assistance---paid large executive bonuses to public outrage. The American Recovery and Reinvestment Act of 2009 incorporated limitations on executive compensation for banks participating in TARP by setting standards on many different aspects of executive pay (among others: bonus, retention award, incentive compensation). However, the standard on executive compensation may be compromised by taking advantage of closely-managed affiliates, particularly with regard to executive salaries or even the number of executives. Given that rescue plans are financed by taxpayers, it is important to ensure that funds are spent as intended. Hoshi and Kashyap (2008) demonstrate that the Japanese experience can provide insight on the restructuring of financial institutions through discussions on the asset- and equity-purchase programs. Our paper continues the discussion by documenting one aspect of bank responses that has been largely neglected in previous studies.

The rest of the paper is organized as follows. Section 2 reviews the literature. Section 3 considers the incentive faced by the recipient of capital injection. Section 4 describes the business groups headed by Japanese regional banks. Section 5 considers the empirical approach. Section 6 presents the results. Section 7 discusses the findings. Section 8 concludes.

# 2 Related Literature

The Japanese banking crisis of the late 1990s has been studied extensively. Montgomery and Shimizutani (2009) also consider the effectiveness of the capital injections but focus mainly on the financial aspects of the reconstruction program. The goals of capital injections relate to (1) bank capital ratios, (2) write-offs of nonperforming loans, (3) lending to small and medium enterprises (SMEs), and (4) encouraging bank restructuring. Montgomery and Shimizutani (2009) empirically examine the first three, but re-structuring, including the downsizing of employees, is out of scope in their analysis. Their results indicate that the overall effect of capital injections on bank capital ratios is positive for all banks, international and domestic, albeit the coefficients are only significant for the former group.[2] The authors also find that the second round of capital injections had a significant impact on write-offs of nonperforming loans for both international and domestic banks. The second round of capital injection was also found to increase lending to SMEs.

Hoshi and Kashyap (2005) provide an extensive overview of the possible solutions to the Japanese banking crisis. One of their main recommendations is an aggressive clean up of banks' balance sheets as well as restructuring of some of their loans. The authors indicate how the improved macroeconomic conditions, as of 2004, provided an appropriate background for bank-loan restructuring. Additionally, Hoshi and Kashyap (2005) suggest aggressive recapitalization for the healthiest banks.

[2]When looking at the individual effect of each capital injection on bank capital ratios, the authors find that the 1998 capital injection is also positive and significant for domestic banks.

Multinational corporations are known to shift income into group corporations located in favorably taxed jurisdictions to reduce tax payments (Gordon and Hines 2002). Likewise, a financial conglomerate transfers assets between separately regulated divisions to avoid high capital charges (e.g., Freixas, Lóránth, and Morrison 2007). The behaviors considered in our paper are similar to these known behaviors in that both take advantage of the presence of affiliated but legally independent corporations. One difference is that our focus is on "real" production inputs, rather than financial transactions.

Finally, our examination of bank employment is relevant in considering the changing role of the main bank system in Japan. The rise of direct finance in the country is argued to have contributed to the declining importance of the main banks in Japan. A recent study by Hoshi, Koibuchi, and Schaede (2009) documents the decline in the likelihood of bank-led restructuring during the extended recession of the 1990s. If rescue operations can be thought of as being human-capital intensive, the decline in employment documented in our paper offers a supply-side explanation for the reduced role of banks.

# 3 Capital Injection

The injection of public capital of the late 1990s was implemented against the backdrop of a broader financial sector reform that was intended to make administrative oversight more transparent and fair by moving towards one that is based on the principles of market mechanisms and self-reliance. Montgomery and Shimizutani (2009) provide a good summary. This section focuses on the

institutional details that give rise to the pressure for injected banks to achieve targets laid out in business improvement plans (FSA 2000).

The application for an injection of public capital works as follows. First, the supervision division under the FSA and the Bank of Japan (BOJ) brief the Financial Reconstruction Commission (FRC) on the state of a bank under consideration for capital injection. The FSA (2000) does not clearly document who initiates this formal review process, but presumably informal consultations between banks and the FSA take place before those banks formally request funds. It is well known that by 1999 Japanese banks were being monitored closely, and banks that did not meet capital requirements were being closed. Thus, the group of banks that received capital injection included those that were not insolvent in the regulators' judgment. Second, the FRC reviews a draft of a business-improvement plan submitted by the bank, and conducts a hearing with representatives of the bank. In evaluating plans submitted by regional banks, the FSA took into consideration the their importance in the local economies. After the preliminary examination, the bank then revises the plan and formally applies for funds. In the case of Kumamoto Family Bank, the approval took 35 days from an initial briefing on November 4, 1999. After being approved, a bank receives funding through preferred stocks or subordinate debts.

In the follow-up, the government acts as an active shareholder with a power to invoke punitive measures. FSA monitors approved banks in quarterly hearings designed to discover measures implemented to achieve the plan. The FSA also requires the disclosure of progress reports, which are published on the

its website. In case the realized outcome deviates substantially from a target and the market disapproves of a bank's performance, the government considers punitive measures. The benchmark for underperformance includes the actual return on equity being 30% below the target return on equity (ROE). The assessment of the market evaluation is based on objective measures such as stock price, interest rate on borrowing, and deposit movements. The targets include those on the personnel costs and administrative expenses. In the case of unsatisfactory performance, the government considers invoking a business-improvement order, under which a bank may be prohibited or restrained from paying dividends and executive bonuses or, in the worse case, closed down. In sum, this mechanism intends to foster self-correction of bank behavior using market forces and the government's power.

How would this oversight mechanism affect the downsizing of injected banks? The regulatory body and bank management develop a target on personnel cuts jointly since a business-improvement plan receives feedback as described. A downsizing plan, if sensibly devised, would require a bank to cut personnel faster than it would otherwise have done on its own. This is likely since the regulatory authority would require cost cuttings given the government's stake in the bank. Also, a worker's union, which is enterprise based, may be less inclined to resist a personnel cut when faced with the risk of being closed down. A downsizing plan is thus likely to be aggressive. Managers have strong incentives to achieve a planned personnel cut at a parent bank since a failure to achieve the goal may lead to a loss of their positions.

Why, then, would a bank's management not lay off workers, instead

shifting them to subsidiaries? First, the case law on dismissals limits the management's option for outright layoffs. Adjustment must first come from a hiring freeze and early retirements. Transferring workers to subsidiaries can be the only legally feasible option available. Second, a firm and workers may have an implicit agreement regarding the continuity of their relationship. Lifetime employment and seniority wages for male workers was a common practice in the Japanese banking industry. Under those practices, young workers are paid below their productivity in expectation of a higher wage later in their working lives at the company. The implicit agreement fostered between a bank and employees may in addition have affected the acceptable conduct of bank management. Additionally, workers with firm-specific capital would be hard to replace in the market, so shifting may be done for hoarding purposes. The personnel shifting thus appears to be a plausible behavioral response in the Japanese context.

Since the concept of employees can be complex, its measurement may not be as transparent to the regulator as other performance measures; the level of employees on a consolidated basis is not necessarily reported in the business-improvement reports. It thus seems highly plausible to expect bank managers to transfer employees in case the necessary reductions cannot be achieved through, for example, an early retirement package. Other targets, however, mitigate this incentive to some degree. For one, the stock market performance of a bank would likely be based on consolidated performance. While permanent transfers to subsidiaries reduce the personnel costs as the workers' salaries are reduced, investors may disapprove of a resulting cost

structure. Moreover, if an administrative-costs target is binding, it will not help the bank to relabel personnel expenses as outsourcing fees. Perhaps most important, a bank may be punished for not meeting a target on ROE. Thus, a bank has a strong incentive to meet personnel targets at the parent level, but the extent of shifting is likely to depend on corporate culture and whether a bank can meet other targets.

# 4 Corporate Groups Headed by Japanese Regional Banks

## 4.1 Data source

Toyo Keizai's Affiliated Company Data (ACD) is our data source on the subsidiary employment of Japanese banking groups. Parent banks covered are listed companies, and the data contain their domestic subsidiaries and affiliates.[3] While current financial statements contain reports on subsidiaries, information from the 1990s are often missing; ACD thus is a valuable information source on banking groups. ACD, however, starts presenting consolidated employment, rather than stand-alone figures, during the sample period. We obtained stand-alone employment figures for parent banks from Nikkei's NEEDS and detailed accounting information and performance benchmarks from Flitch IBCA's BankScope.

[3]Toyo Keizai complies ACD based on surveys and financial statements. ACD contains company-level information on basic financial information (sales, profit, paid-in capital), company characteristics (e.g., number of workers, 2-digit industry, short description of business operation, location, name of company representative), and information on group affiliation.

## 4.2 The group structure

Subsidiaries of regional banks mainly conduct two lines of business operations: finance and logistics. Financial subsidiaries offer credit cards, leasing, venture capital, factoring, credit guarantees on consumer loans, and investment consulting. Though banks had been allowed to operate securities subsidiaries since 1993 and city banks started owning security subsidiaries thereafter, regional banks except the "top three" (Chiba, Shizuoka, and Yokohama) had not entered into the security business at least before FY2000.[4] Banks were restricted from holding more than a 5% stake in financial subsidiaries until the mid-1990s, but the semiformal tie between a parent and its subsidiaries is apparent from the sharing of corporate identity and from often locating at an identical address. Larger regional banks tend to own more diverse sets of subsidiaries than their smaller counterparts. The most common operations are credit card processors and, in the later period, leasing companies, both of which are nonbank credit operations.

Nonfinancial subsidiaries undertake logistical operations outsourced by parent banks. Typical outsourced activities include day-to-day operations such as IT maintenance, cash handling, payment collection, building maintenance, and miscellaneous logistics. Most banks have a wholly owned temporary staffing company, supplying logistical support staff to parent branches. Some banks currently hire even tellers through staffing companies. A court case on a labor dispute involving the Iyo bank and its staffing company suggests that while

[4]The Bank of Ryukyu did report owning a security company as a group company before JFY1994.

hired by a legally separated company, those temporary/contract workers are fully controlled by the parent banks---which is not surprising since those companies are often physically located within parent banks. Some subsidiaries are specialized in asset evaluation, sales of foreclosed assets, or development of IT systems. These subsidiaries are typically wholly owned. Once again, large banks tend to outsource more than smaller banks.[5]

## 4.3 Descriptive statistics

"Employee" has multiple meanings in practice and warrants an explanation. In our analysis, the number of employees corresponds to figures reported in financial statements, and excludes the members of the board and part-time employees for both parent and subsidiary data. The information on part timers is not available in our data. The subsidiary figure reported in ACD excludes those workers on temporarily transfer (*shukkou*) from parent banks (i.e., zero employment is reported for a subsidiary in which its entire workforce consists of *shukkou* workers). Permanent transfers (*tenseki*)---transfers that terminate the workers' employment contracts with a parent and initiate a formal relationship with a subsidiary---are counted as subsidiary employment. The parent figure obtained from NEEDS is from the financial statement. Some inconsistency may exist, but this figure typically excludes *shukkou* workers from the definition of employees. If banks increased the number of *shukkou* workers dur-

[5] A window-dressing operation known as *tobashi* involves paper companies that are controlled by a parent bank. A *tobashi* operation aims to reduce bad loans on balance sheets: The paper company overpays for a debtor's collateral asset so that the debtor can pay back its loan. We have checked for the presence of paper companies in the criminal investigation of now-dissolved Hokkaido Takushoku Bank, but naturally, those shell companies were not included in ACD.

ing their restructuring process, the financial statement figures overstate the extent of employment cuts at the parent level. However, as capital-injected banks report to FSA the employment figures that include *shukkou* workers in their reconstruction report, the capital injection limits perverse incentives to inflate the extent of employment cuts in this way.

Our sample base is the first- and second-tier regional banks listed in stock exchanges. To maintain comparability of groups across time while ensuring sufficient sample size, we adopted the following protocol in dealing with banks that changed structures through mergers and acquisitions. We compiled the information on mergers and acquisitions through BankScope's bank-history section (Table 2). The list indicates the stability of the regional banking during the 1990s and an active reorganization in the 2000s. We dropped six banks that restructured by the end of JFY2000 in the analysis. For those banks reorganized after FY2000, we dropped observations on those banks from the year following the restructuring.

The number of workers reported in the ACD is nearly complete in the banking sector; the raw ACD data contain nonmissing information on workers for about 97% of bank subsidiaries. Nonetheless, because nonreporting of the number of workers in one year renders a cross-time comparison within a firm difficult, we treat as missing those subsidiary-year observation in which more than 10% of the group subsidiaries contains missing information on the number of workers. These selection criteria left 82 regional banks as a base sample.

Table 3 lists the regional banks included in the sample, the average number of employees in the parent and subsidiaries, the average number of

subsidiaries and the average assets for each bank over JFY1988--2000. The average sizes of parents and aggregated subsidiaries are, respectively, 2,149 and 268 workers. Roughly half the subsidiary employment is at 100% owned companies, but the variation is large: the range for time averages is 12 to 97%. The average number of subsidiaries is 8.2, of which 34% is wholly owned.

# 5 Empirical Analysis

## 5.1 Basic Strategy

We focus on regional banks to examine the impact of the capital injection of the late 1990s in Japan. Regional banks are important players in the local economy, accounting for 34.3% of total private lending in 2008. The total deposits at regional bank in 2009 was 2.7 times as much as the total deposits for all banks in Australia. The key advantage in focusing on the regional banks, rather than the national banks, is the richness of the comparison group. Most of the major national banks were recipients of public funds in the late 1990s---it is thought that the fear of being singled out as a "troubled bank" led national banks to coordinate the take-up decision. On the other hand, 9.3% of banks that belong to the Regional Bank Association of Japan (RBAJ), which consists of 64 large regional banks around Japan, received the financial assistance in the late 1990s. Similarly, 11.1% of banks that belong to the Second Association of Regional Banks (SARB), which consists of 45 small regional banks, had received assistance. The variation in funds injection provides an interesting research setting. Of course, the assignment of injection is not random, but

the mix of the sample is instrumental in examining whether the employment patterns differ between injected and uninjected banks.

## 5.2 Empirical model

Our objective is to determine whether injected banks, other than the UFJ, shifted personnel due to capital injection. We compare the time series of employment for capital-injected banks with that of other banks to see if they are different around the time of capital injections. A positive effect of the injection on the employment at subsidiaries of injected banks in conjunction with a negative effect on parent bank employment is to be taken as evidence consistent with the personnel shifting being widespread. We modify a labor-demand equation with sluggish adjustment considered by Arellano and Bond (1991) as follows.

$$y_{itk} = \sum_{j=0}^{2} \beta_{kj} inject_{it-j} + \lambda_k y_{it-1k} + X_{it}^{'} \gamma_k + \eta_{ik} + \omega_{tk} + u_{itk}, \qquad (1)$$

where $y_{itk}$ is log employment for the $k^{\text{th}}$ organization type (parent, wholly owned subsidiary, partially owned subsidiary) in banking group $i$ at time $t$. The lagged dependent variable on the right-hand side is designed to capture the dynamic dependence. $inject_{it-j}$ is a dummy for banks that received capital injection in $t-j$. For banks that received multiple injections, we used the first injection to define this variable. In practice most injection occurs close to the end of the financial year and the following financial year is taken as the first postintervention year (Table 4). The injected group consists of 12 banks,

but we use 11 in practice since much of Fukuoka City Bank's information is missing. $\omega_{t\,k}$ is designed to capture type--year-specific time effects.

The effects of capital injection on employment can last over time since banks are on the recapitalization program for years. To flexibly capture the effects of injection, we include the indicator for contemporaneous capital injection and its lags. A practical consideration in estimation restricted the choice of lag length. The timing of injection varies from FY1998 to FY2001. With semibiannual data with the last observation in 2006, the last bank to receive injection has 3 postintervention periods. We set the lag length to 2 periods. Longer lags did not affect the main conclusion.

The Hoshi--Kashyap hypothesis suggests two implications: (1) To the extent that the injected parent sheds employment quickly, the level of employment at the injected parents (groups that received capital injection) will fall with respect to the control parents. (2) The employment level at the injected subsidiaries will increase with respect to the control subsidiaries. Thus, if the estimated coefficients of $\beta_{parent\,t-j}$ and $\beta_{subsidiary\,t-j}$ for $j = 0, 1, 2$ were negative and positive, respectively, we take the pattern as being consistent with the hypothesis.[6]

The model is separately estimated for employment level at parent, wholly owned subsidiary, and partially owned subsidiary, where $y_{i\,t\,1}$, $y_{i\,t\,2}$, and $y_{i\,t\,3}$ denote the number of employees at the parent banks, all subsidiaries, and

[6]We would expect wholly owned subsidiaries and partially owned subsidiaries to respond differently, but whether more shifting will take place in either type remains an empirical question. A bank has incentives to shift personnel to subsidiaries whose account is unconsolidated since such operations may improve performance reported in consolidated statements. It may however be costless to shift employees to fully controlled entities. If anything, the results suggest that the latter force is dominant.

wholly owned subsidiaries, respectively. $X_{it}$ is a vector of determinants of labor demand. In a preliminary analysis with a shorter time span (FY1994--2000), we considered real wage and real output growth for the region where a bank has its headquarters. The regional GDP and GDP deflator in the initial analysis is only available over 1990--2003. To examine a longer postintervention sample, we decided to drop those controls and instead report a specification with nominal wage. This allows us to examine the employment pattern for a longer time frame. The estimates on key coefficients were not sensitive to inclusion of real wage and real GDP growth in the earlier analysis.[7] $\eta_{ik}$ is a fixed effect and $u_{itk}$ is a heteroskedastic error with no serial correlation and no correlation across groups.

## 5.3 Estimation methods

We consider three estimation methods to better assess sensitivity. As a preliminary regression, we present a fixed effect regression. As is well known, the lagged dependent variable in the left-hand side raises a concern about the dynamic panel bias given the small time-series dimension and the moderately sized cross section. We present Arellano and Bond's (1991) estimator, a commonly applied solution to this issue. We also estimate an augmented version of Arellano and Bond's (1991) estimator developed in Blundell and Bond

[7]The data source for the nominal wage is an average salary of financial-sector male employees for a given region in the Basic Survey on Wage Structure (Chingin Kōzō Kihon Tōkei Chosa) published by the Ministry of Health, Labour and Welfare. The data source for the regional GDP growth rates is the regional account (Kenmin Keizai Keisan) published by the Economic and Social Research Institute, Cabinet Office. The series used for the robustness check discussed later is 93SNA (2000 base) which connects over 1996--2007. Unlike the national GDP, regional GDP series do not connect to the earlier data.

(1998). The generalized method of moments estimator developed by Arellano and Bond (1991) treat the model as a system of equations, one for each time period. The equations differ only in their instrument/moment condition sets. In Arellano and Bond's (1991) model, the predetermined and endogenous variables in first differences are instrumented with suitable lags of their own levels. Strictly exogenous regressors, as well as any other instruments, can enter the instrument matrix in the conventional instrumental-variable fashion, in first differences, with one column per instrument. A problem with the original Arellano--Bond estimator is that lagged levels are often poor instruments for first differences, especially for variables that are close to a random walk. Arellano and Bover (1995) described how, if the original equations in levels were added to the system, additional moment conditions could be brought to bear to increase efficiency. In these equations, predetermined and endogenous variables in levels are instrumented with suitable lags of their own first differences. Blundell and Bond (1998) provided the necessary assumptions for this augmented estimator more precisely and tested it with Monte Carlo simulations. The original estimator is sometimes called a *difference GMM*, and the augmented one, *system GMM*. The Arellano--Bond *system GMM* estimators have one- and two-step variants. Though asymptotically more efficient, the two-step estimates of the standard errors tend to be severely downward biased (Arellano and Bond 1991; Blundell and Bond 1998). To compensate, this augmented version of the Arellano--Bond estimator includes a finite-sample correction to the two-step covariance matrix derived by Windmeijer (2005). This can make the two-step robust more efficient than one-step robust, es-

pecially for the system GMM. Our augmented version of the Arellano--Bond estimates are based on the two-step GMM estimator with finite-sample correction. The exogenous variables in our estimation of the augmented Arellano--Bond model are the year dummy, the injection dummies ($inject_{it-j}$) and the log of nominal wage. For robustness, we also considered a specification that weakens a restriction by treating the injection dummies and nominal wage as predetermined rather than exogenous. This alternative specification does not qualitatively change the result and is not reported.

# 6 Results

## 6.1 Baseline model

Table 5 presents the results. The model is estimated with the semibiannual data that span 1994--2006. The dependent variable for Columns 1--4 is the log of employment size at parent banks. The model fits the parent sample well according to the $R$-squared reported for the fixed-effects specification.[8] The time effects are negative and significant for all the specifications, reflecting the contraction in employment that occurred throughout the banking industry even after the economic recovery since 2001. The main coefficients of interest---those on $inject_{it-j}$---are negative throughout the different specifications. The contemporaneous effect of the capital injection is negative and significant at the 1% level for the system GMM specification (Column 4). The point estimate

[8]We did not find the serial correlation of the idiosyncratic error term with m2 statistics of Arellano and Bond (1991). We also failed to reject the null of whether the instruments are uncorrelated with the error process for the difference and system GMM estimators.

implies that the injected banks on average reduced employment 9.3 percentage points faster than other banks. The lagged effect of capital injection is also negative and significant for the FEs and for the difference GMM specification. Although the timing of the decline is sensitive to the estimators, the result shows that injected banks reduced employment quicker than uninjected banks--a necessary condition to detect shifting in this approach. The coefficients on the lagged dependent variable are positive and significant. A priori, we would expect the employment level to be dependent across time. The system GMM estimator produces an estimate (0.965) in line with this prior compared to other estimators, suggesting that the dynamic panel bias is better controlled in the last specification.

The dependent variable for Columns 5--8 is the log of employment size at partially owned subsidiaries. In a subsidiary sample, the model does not fit as well as in the parent sample, suggesting the importance of factors outside the model, possibly influences of internal labor market considerations. As indicated by the coefficients on the year effects, the partially owned subsidiary employment declines during the sample period, particularly after 1996. The coefficients on $inject_{it-j}$ are positive for the contemporaneous effect but negative for the lags. The coefficients on the lags are significant at the 10% level but sensitive to estimation methods. The positive coefficient for the initial year is suggestive of shifting, but it did not last long. Statistically, however, the partially owned subsidiaries of injected banks behaved similarly to uninjected banks. The difference GMM estimator does not seem to correct for the dynamic panel bias since it produces an implausible estimate on the lagged

dependent variable.

The dependent variable for Columns 9--12 is the log of employment size at wholly owned subsidiaries. As above, the year effects are negative and significant for all specifications for nearly all years. Unlike the previous company types, the coefficients on $inject_{it-j}$ are consistently positive except for one year in Column 11. The magnitude of the coefficients is interesting. The range for the contemporaneous effect is 5--14%. The range for the first lag is 22--32%. The range for the second lag is $-6$--11%. The larger magnitude for the first lag suggests a temporary deviation from the uninjected sample. As the shifting seems to be a temporary phenomenon, the pattern does not seem to fit so well with the interpretation that banks shifted employees purely to meet regulatory targets. The results show that the two groups are similar on average, but it would be hasty to conclude that there was no shifting: The sample size of injected bank may be too small to pick up the effect. We will return to this point below.[9]

## 6.2 Alternative specification

We estimated an alternative labor-demand equation where we impose less structure on the data:

$$y_{itk} = \sum_{t=1996}^{2004} (\alpha_{tk} d_t + \beta_{tk} treat_i \times d_t) + \lambda_k y_{it-1k} + X_{it}^{'} \gamma_k + \eta_{ik} + e_{itk}. \quad (2)$$

[9]The main specification does not include regional GDP growth because of the discontinuity of data at 1996. We obtained similar results when estimating the model for the period 1998--2006 and including regional GDP growth.

The model is similar to (1) except for the summation term. $treat_i$ is a dummy for the banks that received capital injection. The treatment dummy is interacted with the time dummies to flexibly capture deviations from the employment pattern of the benchmark banks. $d_t$ is a year dummy, $\alpha_{t\,k}$ captures year--type-specific time effects for the group of uninjected banks. We consider JFY1996--2004, taking JFY1994 as the base year. Hence $\alpha_{t\,k}$ represents the average deviation of the employment level in the uninjected $k^{\text{th}}$ type from their respective 1994 level. The coefficients on the interaction terms, $\beta_{t\,k}$, capture the deviation of the injected banks from the uninjected group for year $t$. The coefficients on the interaction terms for 1996 through 2004 reflect the average difference between injected banks and other banks. Note that this approach is agnostic about the timing of intervention. The Hoshi--Kashyap hypothesis implies that the coefficients of $\beta_{j\,parent}$ and $\beta_{j\,subsidiary}$ for the post-1998 period should be negative and positive, respectively.

Table 6 presents the results. The dependent variable for Columns 1--4 is the log of employment size at parent banks. The main coefficients of interest---those on JFY2000 as well as the interaction term between $treat_i$ and JFY2000---are consistently negative and significant at the 5% level across specifications. Once again, the estimates show that the injected banks downsized more rapidly than the benchmark banks.[10]

The dependent variables for Columns 5--8 are the log of employment size at partially owned subsidiaries. The coefficients on the interaction term

[10]Uninjected banks on average shed 12.1--15.8% of workers over JFY1994--2000, as indicated by the coefficient on JFY2000. The group of injected banks, on average, shed 7.2--14.2% of workers over the reduction of the uninjected banks.

between $treat_i$ and JFY2000 are consistently positive, albeit not significant, indicating that the employment pattern of partially owned subsidiaries for the injected groups are statistically equivalent to that for the uninjected group for the fiscal year 2000.

The dependent variables for Columns 9--12 are the log of employment size at wholly owned subsidiaries. Notably, the coefficient on the interaction $treat_i$ and JFY2001 is consistently positive and significant for all but the difference GMM specification. The deviation from the benchmark sample is not significant for other years. This is in a sharp contrast with the benchmark sample where coefficients are mostly negative and often significant. As before, these estimates are indicative of a temporary deviation of the injected banks from the uninjected banks. Furthermore, the deviation seems to occur in 2001.

# 7 Discussion

The regression analysis suggested an increase in 2001 of the employment at wholly owned subsidiaries owned by injected banks. As the employment at parent banks was declining faster for injected banks, the pattern appears to be consistent with the personnel-shifting hypothesis. Anecdotally, Ashikaga Bank implemented an aggressive restructuring plan, reducing employment by 26.3% over JFY2000--2003. Over JFY1998--2000, Ashikaga Bank reduced employment by 6.7% but increased subsidiary employment by 9.3%. In net, employment at the group level fell by 4.9%. Thus, the shifting appears to have taken place not just in the UFJ but also in other regional banks.

Unexpectedly, however, the shifting seems temporary. To obtain a better sense behind the average, Figure 1 plots employment levels for four injected banks. First, the Bank of Yokohama received public capital in March 1998 and repaid in FY2004. The parent employment declined from 6,152 workers in 1996 to 2,832 workers in 2004---a decline of more than 50%. Over the same period, the bank's subsidiary employment declines more modestly (15% fall), and goes through two cycles of increasing subsidiary employment starting in the initial year of injection. Second, Ashikaga Bank also received a capital injection in March 1998. As noted already, the subsidiary employment increased after the injection. Our available data for this bank ends in 2001 so we are not able to tell if this was temporary. Third, Gifu Bank received an injection in April 2001. The subsidiary employment on the year shows a curious spike: The parent employment falls by 75 workers whereas the subsidiary employment increased by 44 workers. Lastly, Chiba Kogyo Bank received an injection in September 2000. Another curious spike is observed in 2001: Subsidiary employment increased by 129 workers and parent employment fell by 50 workers. The coefficient estimate on the interaction terms for JFY2001 picked up the behavior of these two banks. An inspection of those four banks corroborates the interpretation of the regression results that the shifting was a permanent one.

We followed up on Hoshi and Kashyap (2005) to see if the UFJ bank behaved similarly. Table 7 reproduces Hoshi and Kashyap (2005) and adds the employment level at March 2005---the latest available year due to the merger with the Tokyo Mitsubishi Bank in January 2006. The number of full-time employees at the subsidiaries increases by 49% from 2002 to 2004,

offsetting the 13% employment decline in the banking operations. However, the subsidiary employment falls in 2005, and is just 10% above the 2002 level. Once again, the shifting is temporary. The number of part-timers and contract workers in UFJ banking entities remains high, so the increase in nonregular workers seems to have lasted longer.

Why was the shift not permanent? Is this consistent with a view that banks shifted personnel to improve performance measures at parent banks? Those increases in the number of regular employees at subsidiaries are likely to be due to permanent transfers from parent banks rather than new hires. The subsequent reduction can reflect the "choice" of workers to cease employment or their "consent" to be hired on a part-time or contract basis; dismissals are unlikely to account for the decline due to the tight labor law. In this case, at least three interpretations about banks' intentions are possible. The first is an attempt to provide employment security to workers. The management might have intended to balance the need to meet regulatory targets while preserving employment. A permanent transfer would have enabled the bank to reduce costs and employees to maintain positions with the bank. The subsequent decline can reflect the choices by workers who found the new position unexpectedly undesirable. It may also be the case that the bank needed to ask them to turn into contract workers to cope with further restructuring needs. Alternatively, the original intent could have been just to bypass the tight dismissal law. The banks transferred employees to some undesirable position so that workers are induced to move on. Loans officers for instance may find it demoralizing to monitor and maintain automatic teller machines. If the transfers

were just disguised dismissals, the shifting would not have been purely window dressing. Lastly, banks might have transferred workers who were about to retire in a year or two. Without additional demographic information on workers being shifted, a firm conclusion about the intent of banks cannot be drawn. While we acknowledge that at least some part of the shifting might have been driven by the need for compliance, in the absence of evidence of longer-term transfer, it seems sensible to hypothesize that the shifting were largely disguised layoffs.

# 8 Conclusion

This paper investigated the employment pattern of Japanese regional banks that received capital injections in the late 1990s to see if employees were shifted into subsidiaries in order to appear to be meeting restructuring targets. Our approach was to estimate a labor-demand equation to see if the employment demands by injected banks significantly deviated from uninjected banks in a way that signaled possible shifting. We found evidence consistent with shifting, corroborating the previous case study of the UFJ Bank (Hoshi and Kashyap 2005). However, that shifting was temporary and raised question about whether the shifting was done as window dressing. We interpreted the temporary shifting as disguised layoffs: Labor law limited banks' option of firing workers; therefore, downsizing beyond that attained through early retirement and a hiring freeze was achieved by sending redundant workers to marginal positions so that they were induced to resign.

We noted that the recapitalization program lacks a systematic requirement on disclosure of group employment. As a result, in business reconstruction reports, some banks disclose the number of employees at subsidiaries while others report stand-alone figures only. This uneven requirement can be a source of possible manipulation. Nonetheless, our finding is consistent with a view that the overall monitoring mechanism ensured compliance with downsizing targets. We think that the performance requirement on, for example, the return on equity and the threat of penalty placed sufficient incentives for bank managers to implement aggressive layoffs, rather than to attempt to securing workers' employment.

We omitted international banks from our analysis due to a substantial complexity with larger banks' group structure. The behavior of city banks and trust banks is an interesting topic for a further study. Information on age and gender of subsidiary workers would shed light on the intent of shifting as the gender-based division of labor in banking operations appears to persist to date.

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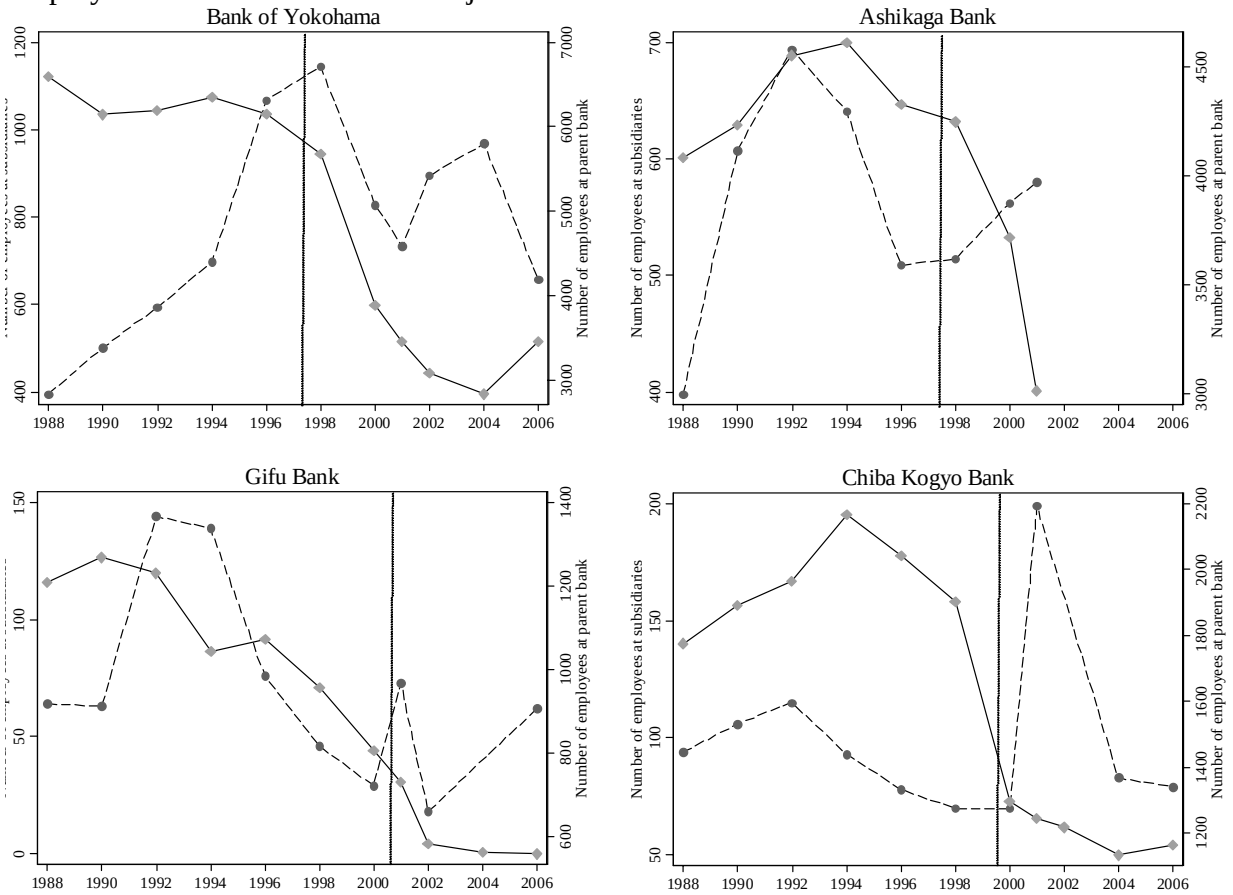
Figure 1
Employment Patterns of Selected Injected Banks




Notes: Figures are as at the end of respective fiscal years. Solid lines show the number of employees at parent banks (right scale). Dotted lines show the number of employees at their subsidiaries (left scale). Vertical lines show the timing of capital injections.

Table 1
Planned Bank Restructuring: Major Banks

| | Workforce | | | Personnel expenses | | | Nonpersonnel expenses excluding investment in mechanization | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of personnel at end of Mar-99 | Number of personnel at end of Mar-03 | Percentage change | Expenses at end of Mar-99 (billions of Yen) | Expenses at end of Mar-03 (billions of Yen) | Percentage change | Expenses at end of Mar-99 (billions of Yen) | Expenses at end of Mar-03 (billions of Yen) | Percentage change |
| Sakura | 16,700 | 13,200 | -21.0 | 180 | 152 | -15.5 | 195 | 186 | -4.9 |
| Dai-Ichi Kangyo | 16,130 | 13,200 | -18.2 | 166 | 138 | -16.5 | 166 | 149 | -10.2 |
| Fuji /a | 14,250 | 13,000 | -8.8 | 153 | 138 | -10.1 | 137 | 133 | -3.3 |
| Sumitomo | 15,000 | 13,000 | -13.3 | 156 | 147 | -5.6 | 138 | 129 | -6.5 |
| Sanwa | 13,600 | 11,400 | -16.2 | 148 | 126 | -15.4 | 144 | 141 | -2.4 |
| Tokai | 11,125 | 9,731 | -12.5 | 112 | 93 | -16.9 | 90 | 83 | -7.5 |
| Asahi | 12,800 | 11,800 | -7.8 | 114 | 107 | -5.9 | 94 | 93 | -1.1 |
| Daiwa | 7,640 | 6,300 | -17.5 | 63 | 52 | -17.0 | 92 | 90 | -2.4 |
| IBJ | 4,776 | 4,482 | -6.2 | 69 | 68 | -0.9 | 61 | 50 | -18.0 |
| Mitsubishi Trust | 4,932 | 4,695 | -4.8 | 68 | 63 | -8.3 | 60 | 60 | -0.4 |
| Sumitomo Trust | 5,900 | 5,200 | -11.9 | 61 | 52 | -14.8 | 57 | 54 | -5.1 |
| Mitsui Trust/ Chuo Trust /b | 9,980 | 8,900 | -10.8 | 91 | 82 | -10.4 | 78 | 72 | -8.6 |
| Toyo Trust | 4,100 | 3,400 | -17.1 | 42 | 38 | -9.9 | 31 | 30 | -2.3 |
| Yokohama | 5,718 | 4,512 | -21.1 | 51 | 43 | -14.9 | 42 | 40 | -4.1 |
| **Total** | **142,651** | **122,820** | **-13.9** | **1,474** | **1,299** | **-11.9** | **1,384** | **1,308** | **-5.5** |

Source: Reproduced from Nakaso (1999). /a Unconsolidated basis. /b After-merger figures are used for end of March 2003.

Table 2
Reorganization of Regional Banks: 1998–2008

| GID | Name | Date | Action | Target/host name | Name change |
|---|---|---|---|---|---|
| 8526 | Fukutoku | 1998 10 | merged with | Bank of Naniwa | Bank of Namihaya |
| 8520 | Shokusan | 1998 11 | acquired operations from | Hokkaido Takushoku Bank | |
| 8534 | Tokyo Sowa | 1999 00 | went insolvent | | |
| 8547 | Tokuyo City | 1999 04 | merged with | Midori Bank | Minato Bank |
| 8523 | Kinki | 2000 04 | merged with | Bank of Osaka | Kinki Osaka Bank |
| 8371 | Kinki Osaka | 2001 02 | acquired | Namihaya Bank | |
| 8359 | Hachijyuni | 2002 00 | acquired operations from | Ueda Shoko Credit Cooperative | |
| 8534 | Tokyo Sowa | 2002 00 | absorbed by | Tokyo Chuo Credit Corp, Tokyo Credit Corp | |
| 8548 | Kyushu | 2003 04 | absorbed by | Shinwa | |
| 8391 | Shinwa | 2003 04 | acquired | Kyushu Bank | |
| 8338 | Kanto | 2003 04 | acquired | Tsukuba Bank | |
| 8545 | Kansai | 2004 02 | acquired | Kansai Sawayaka Bank | Kansai Urban Banking Corp. |
| 8549 | Setouchi | 2004 05 | absorbed by | Momiji | |
| 8533 | Hiroshima Sogo | 2004 05 | acquired | Setouchi Bank | Momiji Bank |
| 8539 | Fukuoka City | 2004 10 | absorbed by | Nishi-Nippon City Bank | Nishi-Nippon City Bank |
| 8327 | Nishi Nihon | 2004 10 | acquired | Fukuoka City Bank | Nishi-Nippon City Bank |
| 8370 | Kiyo | 2006 10 | acquired | Wakayama Bank | |
| 8520 | Shokusan | 2007 05 | acquired | Yamagata Shiawase | Kirayaka Bank |
| 8520 | Shokusan | 2008 09 | acquired | Kirayaka Holding | |
| 8531 | Sapporo | 2008 10 | absorbed by | North Pacific Bank | North Pacific Bank |
| 8524 | Hokuyo | 2008 10 | acquired | Sapporo Bank | North Pacific Bank |

Source: Authors' tabulation from BankScope's bank-history section.

Table 3
Average Sizes and Performance of Individual Banks: JFY1988-2000

| | | Number of workers | | | | | Number of subsidiaries | | ROAA |
|---|---|---|---|---|---|---|---|---|---|
| | | | Subsidiaries | | | | | | |
| GID | Name | Parent | All | | 100% | | All | 100% | (Parent) |
| 8332 | Bank of Yokohama | 5,856.3 | 746.9 | (0.13) | 387.6 | (0.07) | 13.1 | 5.7 | -0.102 |
| 8333 | Joyo Bank | 4,707.1 | 557.4 | (0.12) | 224.9 | (0.05) | 13.0 | 4.1 | 0.118 |
| 8355 | Shizuoka Bank | 4,690.7 | 488.4 | (0.10) | 206.1 | (0.04) | 12.7 | 5.4 | 0.258 |
| 8331 | Chiba Bank | 4,438.0 | 638.4 | (0.14) | 208.7 | (0.05) | 13.4 | 4.3 | -0.044 |
| 8326 | Bank of Fukuoka | 4,408.0 | 782.3 | (0.18) | 339.9 | (0.08) | 12.9 | 5.1 | -0.166 |
| 8357 | Hokuriku Bank | 4,388.0 | 500.1 | (0.11) | 123.9 | (0.03) | 12.0 | 4.4 | -0.156 |
| 8335 | Ashikaga Bank | 4,251.7 | 560.7 | (0.13) | 193.0 | (0.05) | 14.9 | 4.1 | -0.330 |
| 8379 | Hiroshima Bank | 4,002.3 | 681.4 | (0.17) | 362.9 | (0.09) | 14.3 | 6.6 | 0.098 |
| 8334 | Gunma Bank | 3,784.3 | 518.6 | (0.14) | 213.9 | (0.06) | 14.7 | 4.7 | 0.090 |
| 8359 | Hachijuni Bank | 3,711.4 | 678.6 | (0.18) | 539.4 | (0.15) | 11.6 | 6.0 | 0.190 |
| 8327 | Nishi-Nippon Bank | 3,478.3 | 424.6 | (0.12) | 194.7 | (0.06) | 9.1 | 2.7 | -0.192 |
| 8382 | Chugoku Bank | 3,308.4 | 196.1 | (0.06) | 98.4 | (0.03) | 10.7 | 4.3 | 0.236 |
| 8380 | Yamaguchi Bank | 3,303.1 | 128.3 | (0.04) | 63.3 | (0.02) | 8.7 | 2.3 | 0.190 |
| 8341 | 77 Bank | 3,244.0 | 377.4 | (0.12) | 129.7 | (0.04) | 8.3 | 2.9 | 0.262 |
| 8356 | Juroku Bank | 2,994.7 | 112.6 | (0.04) | 13.3 | (0.00) | 7.6 | 1.0 | 0.112 |
| 8385 | Iyo Bank | 2,984.4 | 888.4 | (0.30) | 625.0 | (0.21) | 12.9 | 3.7 | 0.166 |
| 8367 | Nanto Bank | 2,948.1 | 185.9 | (0.06) | 63.3 | (0.02) | 9.4 | 3.1 | -0.008 |
| 8324 | Daishi Bank | 2,839.7 | 303.0 | (0.11) | 101.2 | (0.04) | 12.0 | 3.0 | 0.100 |
| 8368 | Hyakugo Bank | 2,823.9 | 288.0 | (0.10) | 221.0 | (0.08) | 8.3 | 4.0 | 0.174 |
| 8353 | Hokkaido Bank | 2,813.3 | 550.3 | (0.20) | 99.4 | (0.04) | 10.4 | 3.0 | -0.298 |
| 8381 | San-In Godo Bank | 2,711.1 | 367.1 | (0.14) | 227.4 | (0.08) | 12.4 | 3.1 | 0.168 |
| 8361 | Ogaki Kyoritsu Bank | 2,640.9 | 379.7 | (0.14) | 88.1 | (0.03) | 11.1 | 3.6 | 0.012 |
| 8366 | Shiga Bank | 2,615.6 | 253.4 | (0.10) | 110.4 | (0.04) | 10.6 | 4.0 | 0.092 |
| 8394 | Higo Bank | 2,604.1 | 888.3 | (0.34) | 858.4 | (0.33) | 3.7 | 2.3 | 0.220 |
| 8522 | Bank of Nagoya | 2,558.0 | 317.4 | (0.12) | 119.3 | (0.05) | 8.7 | 3.9 | 0.096 |
| 8363 | Hokkoku Bank | 2,504.7 | 205.4 | (0.08) | 96.3 | (0.04) | 11.4 | 4.6 | 0.164 |
| 8370 | Kiyo Bank | 2,462.4 | 253.9 | (0.10) | 50.1 | (0.02) | 10.7 | 2.6 | -0.130 |
| 8390 | Kagoshima Bank | 2,451.0 | 286.4 | (0.12) | 135.7 | (0.06) | 9.4 | 2.7 | 0.220 |
| 8386 | Hyakujushi Bank | 2,450.4 | 440.7 | (0.18) | 166.7 | (0.07) | 19.1 | 7.9 | 0.126 |
| 8539 | Fukuoka City Bank | 2,302.7 | 268.0 | (0.12) | 161.2 | (0.07) | 7.9 | 2.1 | -0.272 |
| 8527 | Aichi Bank | 2,281.1 | 175.7 | (0.08) | 78.9 | (0.03) | 7.7 | 1.4 | 0.076 |
| 8387 | Shikoku Bank | 2,200.1 | 161.1 | (0.07) | 50.0 | (0.02) | 6.3 | 1.3 | 0.116 |
| 8533 | Hiroshima Sogo Bank | 2,071.7 | 259.5 | (0.13) | 161.5 | (0.08) | 9.5 | 3.5 | -0.078 |
| 8336 | Musashino Bank | 2,056.9 | 202.9 | (0.10) | 58.9 | (0.03) | 8.0 | 1.9 | -0.030 |
| 8392 | Oita Bank | 2,047.4 | 247.7 | (0.12) | 102.0 | (0.05) | 8.6 | 3.0 | 0.166 |
| 8544 | Keiyo Bank | 2,029.0 | 298.1 | (0.15) | 243.1 | (0.12) | 8.3 | 4.4 | 0.042 |
| 8360 | Yamanashi Chuo Bank | 2,024.9 | 60.6 | (0.03) | 58.4 | (0.03) | 4.0 | 1.0 | 0.132 |
| 8362 | Fukui Bank | 2,021.7 | 123.3 | (0.06) | 78.3 | (0.04) | 8.3 | 3.6 | -0.146 |
| 8530 | Chukyo Bank | 2,018.3 | 340.5 | (0.17) | 250.3 | (0.12) | 6.9 | 1.7 | 0.062 |
| 8396 | Eighteenth Bank | 1,986.9 | 214.6 | (0.11) | 98.1 | (0.05) | 9.4 | 3.3 | 0.080 |
| 8325 | Hokuetsu Bank | 1,916.6 | 148.6 | (0.08) | 66.4 | (0.03) | 9.6 | 2.7 | -0.138 |
| 8391 | Shinwa Bank | 1,896.3 | 217.7 | (0.11) | 188.3 | (0.10) | 5.1 | 2.9 | -0.114 |
| 8529 | Daisan Bank | 1,894.1 | 121.4 | (0.06) | 58.0 | (0.03) | 7.6 | 3.4 | 0.096 |
| 8337 | Chiba Kogyo Bank | 1,862.0 | 89.4 | (0.05) | 31.6 | (0.02) | 7.3 | 1.9 | -0.226 |
| 8342 | Aomori Bank | 1,861.3 | 191.1 | (0.10) | 87.6 | (0.05) | 11.4 | 4.6 | 0.174 |
| 8388 | Awa Bank | 1,827.3 | 395.6 | (0.22) | 288.9 | (0.16) | 8.7 | 2.3 | 0.162 |
| 8395 | Bank of Saga | 1,821.3 | 385.3 | (0.21) | 269.6 | (0.15) | 7.3 | 1.7 | 0.124 |
| 8345 | Bank of Iwate | 1,808.0 | 255.6 | (0.14) | 119.3 | (0.07) | 4.1 | 1.0 | 0.206 |
| 8343 | Akita Bank | 1,726.7 | 120.5 | (0.07) | 42.3 | (0.02) | 8.0 | 3.0 | 0.214 |
| 8393 | Miyazaki Bank | 1,709.3 | 229.9 | (0.13) | 142.9 | (0.08) | 8.0 | 3.3 | 0.098 |
| 8536 | Higashi Nippon Bank | 1,706.0 | 267.0 | (0.16) | 99.4 | (0.06) | 8.0 | 2.4 | -0.120 |
| 8399 | Bank of the Ryukyus | 1,705.3 | 402.0 | (0.24) | 101.0 | (0.06) | 7.1 | 1.7 | 0.014 |
| 8344 | Yamagata Bank | 1,687.6 | 141.7 | (0.08) | 93.9 | (0.06) | 5.9 | 2.3 | 0.272 |
| 8550 | Tochigi Bank | 1,686.4 | 139.4 | (0.08) | 111.6 | (0.07) | 4.0 | 2.3 | 0.164 |
| 8541 | Ehime Bank | 1,604.0 | 95.7 | (0.06) | 18.8 | (0.01) | 8.5 | 2.2 | 0.088 |
| 8350 | Michinoku Bank | 1,590.7 | 359.9 | (0.23) | 346.6 | (0.22) | 5.6 | 2.4 | 0.252 |

Table 3 (continued)

| GID | Name | Number of workers | | | | | Number of subsidiaries | | ROAA |
|---|---|---|---|---|---|---|---|---|---|
| | | | Subsidiaries | | | | | | |
| | | Parent | All | | 100% | | All | 100% | (Parent) |
| 8553 | Kumamoto Family Bank | 1,513.6 | 276.6 | (0.18) | 169.0 | (0.11) | 9.4 | 2.7 | -0.112 |
| 8372 | Senshu Bank | 1,451.4 | 83.4 | (0.06) | 14.3 | (0.01) | 10.3 | 2.1 | -1.348 |
| 8397 | Bank of Okinawa | 1,441.3 | 293.3 | (0.20) | 112.5 | (0.08) | 7.0 | 2.7 | -0.068 |
| 8375 | Bank of Ikeda | 1,372.4 | 192.0 | (0.14) | 111.3 | (0.08) | 12.0 | 3.0 | -0.232 |
| 8538 | Niigata Chuo Bank | 1,357.7 | 51.0 | (0.04) | 23.0 | (0.02) | 1.7 | 1.3 | -0.763 |
| 8545 | Bank of Kansai | 1,339.3 | 126.4 | (0.09) | 29.0 | (0.02) | 8.1 | 3.9 | -0.738 |
| 8556 | Kagawa Bank | 1,310.9 | 236.6 | (0.18) | 158.3 | (0.12) | 5.9 | 1.0 | 0.222 |
| 8551 | Kita Nippon Bank | 1,307.6 | 193.3 | (0.15) | 148.1 | (0.11) | 5.0 | 1.9 | 0.104 |
| 8348 | Hokuto Bank | 1,289.6 | 224.6 | (0.17) | 105.3 | (0.08) | 7.9 | 1.7 | 0.065 |
| 8374 | Mie Bank | 1,279.1 | 100.1 | (0.08) | 19.9 | (0.02) | 8.3 | 2.9 | 0.164 |
| 8552 | Biwako Bank | 1,273.0 | 264.3 | (0.21) | 207.1 | (0.16) | 7.1 | 1.4 | -0.104 |
| 8548 | Kyushu Bank | 1,250.3 | 108.7 | (0.09) | 52.9 | (0.04) | 3.7 | 1.0 | -0.164 |
| 8364 | Shimizu Bank | 1,239.9 | 67.6 | (0.05) | 11.7 | (0.01) | 6.9 | 2.6 | 0.212 |
| 8537 | Taiko Bank | 1,227.7 | 104.2 | (0.08) | 30.2 | (0.02) | 2.8 | 1.2 | 0.184 |
| 8338 | Kanto Bank | 1,150.3 | 129.9 | (0.11) | 45.6 | (0.04) | 6.0 | 2.0 | -0.404 |
| 8528 | Gifu Bank | 1,091.1 | 80.1 | (0.07) | 66.7 | (0.06) | 4.9 | 2.3 | -0.834 |
| 8562 | Fukushima Bank | 1,070.7 | 138.8 | (0.13) | 62.6 | (0.06) | 6.2 | 1.6 | -0.130 |
| 8549 | Setouchi Bank | 1,063.3 | 86.0 | (0.08) | 68.8 | (0.06) | 5.3 | 2.8 | -0.140 |
| 8561 | Tokushima Bank | 1,044.9 | 80.2 | (0.08) | 62.3 | (0.06) | 3.8 | 1.7 | 0.268 |
| 8531 | Sapporo Bank | 1,042.0 | 114.7 | (0.11) | 48.3 | (0.05) | 7.3 | 1.0 | 0.086 |
| 8554 | Minaminippon Bank | 960.9 | 66.7 | (0.07) | 33.7 | (0.04) | 4.9 | 1.0 | 0.070 |
| 8542 | Tomato Bank | 931.3 | 117.9 | (0.13) | 53.4 | (0.06) | 5.1 | 1.3 | 0.072 |
| 8347 | Shonai Bank | 832.4 | 145.1 | (0.17) | 58.6 | (0.07) | 6.4 | 1.4 | -0.050 |
| 8349 | Tohoku Bank | 728.1 | 186.3 | (0.26) | 119.1 | (0.16) | 6.9 | 1.4 | -0.020 |
| 8559 | Howa Bank | 728.0 | 20.3 | (0.03) | 12.7 | (0.02) | 3.0 | 1.0 | 0.106 |
| 8560 | Miyazaki Taiyo Bank | 706.3 | 24.3 | (0.03) | 13.7 | (0.02) | 2.5 | 1.0 | 0.082 |
| 8398 | Chikuho Bank | 653.4 | 70.3 | (0.11) | 21.0 | (0.03) | 4.7 | 1.0 | 0.130 |
| 8540 | Fukuoka Chuo Bank | 549.3 | 15.5 | (0.03) | 14.5 | (0.03) | 1.2 | 1.0 | 0.110 |
| | TOTAL | 2,149.1 | 268.0 | (0.12) | 137.4 | (0.06) | 8.2 | 2.8 | -0.002 |

Table 4
The Timing of Capital Injection and the Planned Reconstruction

| | | | | Employment level | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Actual | | Plan (as of FY2000) | | | | | | Bank |
| GID | Name | FFSA | PRA | 1999 | 2000 | 2000 | | 2001 | | 2002 | | tier |
| 8332 | Yokohama Bank | 1998, 03 | 1999, 03 | 5,323 | 4,815 | 4,888 | (.082) | 4491 | (.081) | 4286 | (.046) | 1 |
| 8533 | Hiroshima Sogo Bank | | 1999, 09 | 2,067 | 1,946 | 2,030 | (.018) | 2799 | (-.379)* | 2763 | (.013) | 2 |
| 8335 | Ashikaga Bank | 1998, 03 | 1999, 09, 11 | 4,043 | 3,716 | 3,771 | (.067) | 3322 | (.119) | 3025 | (.089) | 1 |
| 8357 | Hokuriku Bank | 1998, 03 | 1999, 09 | 3,976 | 3,598 | 3,757 | (.055) | 3440 | (.084) | 3361 | (.023) | 1 |
| 8399 | Bank of Ryukyus | | 1999, 09 | na | 1,414 | 1,450 | | na | | 1332 (2004) | | 1 |
| 8553 | Kumamoto Family Bank | | 2000, 02 | 1,637 | 1,536 | 1,605 | (.020) | 1437 | (.105) | 1371 | (.046) | 2 |
| 8353 | Hokkaido Bank | | 2000, 02 | 2,584 | 2,376 | 2,396 | (.073) | 2332 | (.027) | 2280 | (.022) | 1 |
| 8337 | Chiba Kogyo Bank | | 2000, 09 | 1,660 | 1,472 | 1,497 | (.098) | 1430 | (.045) | 1430 | (.000) | 1 |
| 8536 | Higashi Nihon Bank | | 2001, 03 | 1,611 | 1,553 | 1,562 | (.030) | 1547 | (.010) | 1514 | (.021) | 2 |
| 8528 | Gifu Bank | | 2001, 04 | 911 | 860 | 868 | (.047) | 835 | (.038) | 778 | (.068) | 2 |
| 8539 | Fukuoka City Bank | | 2002, 01 | | | | | | | | | 2 |
| 8548 | Kyushu Bank | | 2002, 03 | | | | | | | | | 2 |

Notes: PRA = Prompt Recapitalization Act), FFSA = Financial Function Stabilization Act). The figures for planned and actual employment levels are reconstruction reports for the period ending 2001, 03 published in 2001, 08. The figures need not correspond to those reported in the financial statements due to a discrepancy in the definition of employees. Figures are as of the end of JFY. The numbers in square brackets are annual targeted reduction. * This planned increase is due to the planned merger with the Setouchi Bank.

Table 5
Baseline model

| | Parent | | | | Partially owned subsidiaries | | | | Wholly owned subsidiaries | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dependent variable: log of employment | (1) FE | (2) FE | (3) AB | (4) AB2 | (5) FE | (6) FE | (7) AB | (8) AB2 | (9) FE | (10) FE | (11) AB | (12) AB2 |
| y1996 | -0.046** | -0.047** | -0.034** | -0.056** | 0.025 | -0.013 | -0.051** | -0.092* | -0.069 | -0.106* | 0.012 | -0.114+ |
| | (0.006) | (0.006) | (0.002) | (0.007) | (0.075) | (0.075) | (0.011) | (0.045) | (0.043) | (0.048) | (0.017) | (0.061) |
| y1998 | -0.063** | -0.064** | -0.066** | -0.062** | -0.210 | -0.268+ | -0.249** | -0.297* | -0.228* | -0.284** | -0.086* | -0.245* |
| | (0.009) | (0.010) | (0.004) | (0.009) | (0.142) | (0.142) | (0.042) | (0.122) | (0.096) | (0.107) | (0.036) | (0.095) |
| y2000 | -0.151** | -0.152** | -0.165** | -0.128** | -0.326** | -0.391** | -0.504** | -0.310** | -0.097 | -0.162+ | -0.091* | -0.109 |
| | (0.013) | (0.013) | (0.007) | (0.011) | (0.098) | (0.098) | (0.046) | (0.078) | (0.081) | (0.087) | (0.046) | (0.083) |
| y2001 | -0.115** | -0.116** | -0.193** | -0.067** | -0.266* | -0.338** | -0.627** | -0.261** | -0.301** | -0.372** | -0.232** | -0.159 |
| | (0.015) | (0.016) | (0.007) | (0.015) | (0.110) | (0.103) | (0.045) | (0.078) | (0.109) | (0.120) | (0.049) | (0.106) |
| y2002 | -0.121** | -0.122** | -0.221** | -0.063** | -0.231* | -0.297** | -0.579** | -0.193* | -0.337** | -0.402** | -0.267** | -0.242* |
| | (0.017) | (0.018) | (0.008) | (0.014) | (0.107) | (0.104) | (0.041) | (0.088) | (0.103) | (0.116) | (0.049) | (0.102) |
| y2004 | -0.151** | -0.153** | -0.273** | -0.085** | 0.007 | -0.077 | -0.362** | 0.045 | 0.141 | 0.057 | 0.062 | 0.119 |
| | (0.021) | (0.022) | (0.009) | (0.021) | (0.102) | (0.094) | (0.042) | (0.074) | (0.100) | (0.097) | (0.053) | (0.115) |
| y2006 | -0.139** | -0.141** | -0.290** | -0.062** | -0.117 | -0.205* | -0.413** | -0.165* | -0.115 | -0.198* | 0.013 | -0.089 |
| | (0.021) | (0.023) | (0.009) | (0.023) | (0.108) | (0.093) | (0.046) | (0.077) | (0.083) | (0.091) | (0.049) | (0.079) |
| injection $_{t}$ | -0.026 | -0.026 | -0.029** | -0.092** | 0.147 | 0.145 | 0.158* | 0.240 | 0.139 | 0.137 | 0.048 | 0.048 |
| | (0.028) | (0.028) | (0.005) | (0.034) | (0.186) | (0.186) | (0.072) | (0.271) | (0.197) | (0.192) | (0.090) | (0.217) |
| injection $_{t-1}$ | -0.056* | -0.056+ | -0.060** | -0.023 | -0.364+ | -0.349+ | -0.023 | -0.323 | 0.309 | 0.323 | 0.276* | 0.271 |
| | (0.028) | (0.028) | (0.005) | (0.035) | (0.208) | (0.201) | (0.112) | (0.245) | (0.289) | (0.297) | (0.119) | (0.291) |
| injection $_{t-2}$ | -0.052** | -0.052** | -0.067** | -0.018 | -0.229+ | -0.229+ | -0.003 | -0.044 | 0.110 | 0.108 | 0.144 | 0.023 |
| | (0.018) | (0.018) | (0.005) | (0.036) | (0.127) | (0.124) | (0.121) | (0.085) | (0.221) | (0.214) | (0.108) | (0.308) |
| ln(employees) $_{t-1}$ | 0.660** | 0.660** | 0.115** | 0.965** | 0.422** | 0.427** | -0.097** | 0.696** | 0.436** | 0.436** | -0.024** | 0.828** |
| | (0.060) | (0.060) | (0.011) | (0.051) | (0.084) | (0.089) | (0.017) | (0.082) | (0.059) | (0.058) | (0.007) | (0.173) |
| ln(nominal wage) | | 0.020 | -0.018 | 0.030 | | 1.236 | 0.738** | -0.125 | | 1.200+ | 1.103** | 0.262 |
| | | (0.052) | (0.017) | (0.051) | | (0.818) | (0.191) | (0.474) | | (0.666) | (0.182) | (0.491) |
| Constant | 2.595** | 2.474** | 6.876** | 0.111 | 2.623** | -4.873 | 0.750 | 2.229 | 2.629** | -4.632 | -1.975+ | -0.690 |
| | (0.456) | (0.487) | (0.157) | (0.280) | (0.408) | (5.178) | (1.160) | (2.942) | (0.274) | (4.057) | (1.106) | (3.117) |
| Observations | 615 | 615 | 615 | 615 | 577 | 577 | 568 | 577 | 575 | 575 | 566 | 575 |
| Number of group id | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| *R*-squared | 0.85 | 0.85 | | | 0.25 | 0.25 | | | 0.23 | 0.23 | | |

Robust standard errors in parentheses; FE = fixed effects estimator; AB = Arellano–Bond estimator; AB2 = augmented Arellano–Bond estimator; + significant at 10%; * significant at 5%; ** significant at 1%

Table 6
Alternative specification

| | Parent | | | | Partially owned subsidiaries | | | | Wholly owned subsidiaries | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dependent variable: log of employment | (1) FE | (2) FE | (3) AB | (4) AB2 | (5) FE | (6) FE | (7) AB | (8) AB2 | (9) FE | (10) FE | (11) AB | (12) AB2 |
| y1996 | -0.046** | -0.047** | -0.031** | -0.052** | 0.045 | -0.007 | -0.021 | -0.110* | -0.057 | -0.084 | 0.057 | -0.075 |
| | (0.005) | (0.006) | (0.005) | (0.007) | (0.086) | (0.084) | (0.039) | (0.048) | (0.047) | (0.053) | (0.060) | (0.060) |
| y1998 | -0.063** | -0.064** | -0.062** | -0.061** | -0.124 | -0.198 | -0.187* | -0.287* | -0.245* | -0.285* | -0.056 | -0.239* |
| | (0.009) | (0.010) | (0.008) | (0.010) | (0.145) | (0.141) | (0.092) | (0.114) | (0.107) | (0.116) | (0.114) | (0.099) |
| y2000 | -0.150** | -0.152** | -0.158** | -0.121** | -0.350** | -0.436** | -0.513** | -0.398** | -0.070 | -0.117 | -0.037 | -0.041 |
| | (0.014) | (0.014) | (0.014) | (0.011) | (0.104) | (0.096) | (0.119) | (0.075) | (0.089) | (0.096) | (0.132) | (0.089) |
| y2001 | -0.127** | -0.129** | -0.188** | -0.065** | -0.217+ | -0.310** | -0.560** | -0.289** | -0.341** | -0.393** | -0.246+ | -0.213* |
| | (0.019) | (0.020) | (0.016) | (0.014) | (0.118) | (0.105) | (0.123) | (0.090) | (0.114) | (0.123) | (0.137) | (0.098) |
| y2002 | -0.136** | -0.137** | -0.215** | -0.059** | -0.196+ | -0.284** | -0.521** | -0.242* | -0.343** | -0.392** | -0.337* | -0.205* |
| | (0.023) | (0.024) | (0.018) | (0.014) | (0.114) | (0.105) | (0.116) | (0.095) | (0.107) | (0.123) | (0.147) | (0.098) |
| y2004 | -0.166** | -0.168** | -0.268** | -0.082** | 0.058 | -0.055 | -0.299** | -0.005 | 0.136 | 0.073 | -0.056 | 0.158 |
| | (0.024) | (0.025) | (0.020) | (0.021) | (0.105) | (0.092) | (0.105) | (0.083) | (0.102) | (0.106) | (0.145) | (0.117) |
| y96xtreat | 0.008 | 0.008 | -0.014 | -0.012 | -0.101 | -0.101 | -0.117+ | 0.019 | -0.058 | -0.058 | -0.252+ | -0.142 |
| | (0.018) | (0.018) | (0.016) | (0.018) | (0.102) | (0.111) | (0.064) | (0.136) | (0.111) | (0.116) | (0.151) | (0.148) |
| y98xtreat | -0.015 | -0.016 | -0.031 | -0.031 | -0.546 | -0.564 | -0.133 | -0.431 | 0.229 | 0.218 | -0.104 | 0.193 |
| | (0.019) | (0.019) | (0.019) | (0.021) | (0.467) | (0.458) | (0.405) | (0.475) | (0.165) | (0.167) | (0.205) | (0.147) |
| y00xtreat | -0.072+ | -0.072+ | -0.100** | -0.142** | 0.126 | 0.127 | -0.185 | 0.452 | -0.031 | -0.033 | -0.104 | -0.088 |
| | (0.039) | (0.039) | (0.034) | (0.045) | (0.231) | (0.234) | (0.341) | (0.372) | (0.221) | (0.223) | (0.284) | (0.210) |
| y01xtreat | -0.074* | -0.075* | -0.134** | -0.028 | -0.648** | -0.657** | -0.606* | -0.324 | 0.628* | 0.621* | 0.346 | 0.521* |
| | (0.030) | (0.030) | (0.039) | (0.027) | (0.191) | (0.193) | (0.292) | (0.250) | (0.299) | (0.307) | (0.288) | (0.207) |
| y02xtreat | -0.094* | -0.094* | -0.175** | -0.047 | -0.738** | -0.697** | -0.763** | -0.391 | 0.107 | 0.125 | 0.346 | 0.023 |
| | (0.036) | (0.037) | (0.062) | (0.032) | (0.234) | (0.235) | (0.287) | (0.335) | (0.311) | (0.318) | (0.399) | (0.437) |
| y04xtreat | -0.104* | -0.104* | -0.191** | -0.025 | -0.943** | -0.892** | -1.067** | -0.475* | -0.149 | -0.124 | -0.027 | -0.165 |
| | (0.040) | (0.040) | (0.055) | (0.030) | (0.223) | (0.203) | (0.345) | (0.205) | (0.337) | (0.349) | (0.623) | (0.378) |
| ln(employees) $_{t-1}$ | 0.566** | 0.566** | 0.083+ | 0.978** | 0.386** | 0.394** | -0.166 | 0.637** | 0.401** | 0.402** | -0.126 | 0.848** |
| | (0.097) | (0.096) | (0.051) | (0.044) | (0.085) | (0.092) | (0.117) | (0.077) | (0.052) | (0.051) | (0.084) | (0.158) |
| ln(nominal wage) | | 0.031 | 0.019 | 0.017 | | 1.637* | 1.027* | 0.303 | | 0.886 | 1.081* | -0.003 |
| | | (0.061) | (0.052) | (0.065) | | (0.758) | (0.517) | (0.565) | | (0.720) | (0.498) | (0.512) |
| Constant | 3.312** | 3.125** | 6.864** | 0.090 | 2.773** | -7.165 | -0.683 | -0.108 | 2.777** | -2.586 | -1.370 | 0.814 |
| | (0.735) | (0.791) | (0.411) | (0.305) | (0.419) | (4.893) | (3.278) | (3.421) | (0.234) | (4.349) | (3.123) | (3.228) |
| Observations | 548 | 548 | 548 | 548 | 526 | 526 | 524 | 526 | 525 | 525 | 523 | 525 |
| Number of group id | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| R-squared | 0.83 | 0.83 | | | 0.26 | 0.27 | | | 0.21 | 0.21 | | |

Robust standard errors in parentheses; FE = fixed effects estimator; AB = Arellano–Bond estimator; AB2 = augmented Arellano–Bond estimator; + significant at 10%; * significant at 5%; ** significant at 1%

Table 7
The Employment of the UFJ bank and its subsidiaries

| End of month | Individual data for UFJ Holding + UFJ Bank + UFJ Trust | Consolidated data for all UFJ banking entities | | Consolidated data for the rest of the UFJ subsidiaries | |
|---|---|---|---|---|---|
| | | Regular employees | Part-time employees | Regular employees | Part-time employees |
| March 2002 | 24,205 | 28,256 | 6,586 | 6,442 | 694 |
| March 2003 | 22,327 | 25,817 | 9,068 | 9,986 | 864 |
| | | (-8.63%) | (37.69%) | (55.01%) | (24.50%) |
| March 2004 | 20,395 | 24,667 | 8,326 | 9,602 | 1,176 |
| | | (-12.70%) | (26.42%) | (49.05%) | (69.45%) |
| March 2005 | n.a. | 24,345 | 8,910 | 7,085 | 901 |
| | | (-13.84%) | (35.29%) | (9.98%) | (29.83%) |

Sources: Reproduction of Table 6 in Hoshi and Kashyap (2005) except the last row.
Notes: Percentage differences from the March 2002 levels are in parentheses. Row 5 figures come from the financial statement for the accounting year beginning April 2004.