CAN A WORK ORGANIZATION HAVE AN ATTITUDE PROBLEM?
THE IMPACT OF WORKPLACES ON
EMPLOYEE ATTITUDES AND ECONOMIC OUTCOMES

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ABSTRACT

In this study we examine whether a workplace can induce good or bad attitudes among its
employees and whether any such "workplace attitudes" affect economic outcomes. This study
analyzes responses of thousands of employees working in nearly two hundred branches to the
employee opinion survey of a major U.S. bank in 1994 and 1996. The results document the existence
and persistence of a genuine workplace effect in how workers view their jobs and organizations.
Employee attitudes differ significantly across branches in ways that cannot be explained by branches
randomly drawing workers from a distribution of workers with different innate attitudes.
Furthermore, newly hired workers adopt the favorable or unfavorable attitudes that the branches
exhibited before they arrived. These workplace attitudes also have significant effects on economic
outcomes. Branches with less favorable attitudes have higher turnover, lower levels of sales, and
lower rates of sales growth than branches where workers have more favorable attitudes. Less
favorable branch attitudes are also a significant predictor of subsequent branch closings. The study's
results show that there are happy and unhappy workplaces, as well as happy and unhappy workers,
with very different patterns of turnover and productivity in these workplaces.

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Difficult individuals are often described as having an attitude problem. Can the same thing also be said of an entire work organization? In this paper, we use employee attitude surveys to consider whether a workplace can induce good or bad attitudes among its employees. We analyze whether workplaces can have their own distinctive attitudes, by which we mean attitudes that are related to the workplace but that are independent of workers' individual predispositions. We also examine whether any such workplace attitudes can be termed good or bad in the sense that they predict higher or lower levels of objective economic outcomes in the workplace.

Despite widespread use of employee attitude surveys among U.S. corporations[1] and an extensive body of research that analyzes job satisfaction,[2] existing research does not address these questions. National data sets that include information on worker attitudes do not identify the individuals' workplaces, while attitude surveys from specific workplaces cannot contrast attitudes across workplaces. As a result, existing research using worker attitude surveys tends to focus on individual job satisfaction and its determinants, while analyses of employee opinion surveys from a single workplace focus only on one organization, perhaps with some limited benchmarking to responses from other organizations.

To study workplace attitudes and their effects on economic outcomes, we analyze the responses to employee opinion surveys from several thousand employees who work in nearly two hundred establishments of a major U.S. bank. Because each worker responds to many questions about their workplace, and because each branch has multiple workers, we are able to identify systematic worker and workplace components to these survey responses. Because the bank

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[1] One survey of U.S. businesses reports that 50% conduct attitude surveys among their managers. For three other occupational groups, professionals, clerical workers, and production workers, the frequency of attitude surveys is less but still present in nearly 40% of U.S. businesses in each case. (U.S. Department of Labor, 1989)

[2] Employee satisfaction and attitudes toward work are among the most researched areas in the social sciences. In a review article, Spector (1996) estimated that by 1991 more than 12,400 studies had been published on job satisfaction.

1

administered the survey in 1994 and again in 1996, we also examine whether workplace effects on attitudes persist over time. Finally, by combining the employee attitude data with information on the branches' financial performance and employee turnover, we assess the relationship between a branch's attitude and turnover and productivity outcomes.

The empirical analysis supports two main conclusions. First, there is a genuine workplace effect in how workers view their jobs and organizations. Employee attitudes differ significantly across branches in ways that cannot be explained by branches randomly drawing workers from a distribution of workers with different innate levels of job satisfaction or attitudes; newly hired workers adopt the favorable or unfavorable attitudes that the branches exhibited before they arrived. Second, branches with less favorable attitudes have higher turnover, lower levels of productivity, and lower rates of productivity growth than branches where workers have more favorable attitudes. Less favorable branch attitudes are also a significant predictor of subsequent branch closings. This concentration of branch closings among poorer performing branches with less favorable attitudes limits our ability to conduct persuasive longitudinal tests of the effect of changes in a branch's attitudes on changes in the performance outcomes, and as a result, the finding of sizable effects of attitudes on productivity and turnover is exclusively cross-sectional.

Can Workplaces Have Attitudes that Affect Economic Outcomes?

This study examines the issue of how attitudes affect performance at the workplace level rather than the individual level. Studies that focus on the relation between the attitudes of an individual and his or her performance, for example, by correlating a worker's response to job satisfaction questions and a supervisor's performance ratings of that employee, have found small and insignificant correlations. As one recent review observes, "it is accepted among most

2

researchers that there is not a substantial relationship between job satisfaction and productivity."[3] (Judge, Hanisch and Drankoski, 1995, p.584) Our study, by contrast, examines whether there is a substantial relationship between attitudes and performance at the workplace level.[4]

The existence of a significant relationship between attitudes and performance at the workplace level presupposes that a "group attitude" exists. The principal motivation for the idea of a "group attitude" is the notion that individuals in a group will have shared attitudes because of common experiences (Gutek and Winter, 1992; Judge and Hulin, 1993, Watson and Slack, 1993, Ryan, Schmit and Johnson, 1996). For example, individuals who work for the same supervisor or have the same working conditions share a common experience and these individuals should therefore have similar attitudes towards their jobs. This attitude based on common experiences at the workplace is separate from any individual-level satisfaction the worker brings to the job. Schneider et.al. (1995) offer empirical support for this proposition by showing that the dispositions of people in the same organization become increasingly homogeneous over time.

The relationship between a group's attitude and its performance can differ from the relationship measured at the individual level for several reasons. The variation in attitudes among workers within a given organization offers no evidence about the degree of variation in attitudes across organizations or the relationship between attitudes and performance across organizations. Even when the employee performance in one organization exceeds employee performance in another, policies such as a forced rating scale can generate similar distributions of performance rankings in the two organizations. Furthermore, supervisor evaluations of individual-level performance may not reflect the interdependencies in the work process or the role of other

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[3] Iaffaldono and Muchinsky's review (1985) is commonly cited as evidence for this conclusion.
[4] Recently, some have questioned the long accepted conclusion of a weak relationship between attitudes and performance even at the individual level. In their recent meta-analysis of this literature, Judge, Bono, Thoresen and Patton (2001) conclude that the mean correlation between the two variables is much higher than previously reported after adjusting for methodological shortcomings in previous studies.

productivity-enhancing behaviors that can be important determinants of organizational performance. For example, some employees in a work setting where teamwork is important may only work hard because other team members exert peer pressure on them. Such employees may receive poor performance ratings from supervisors even though the poor ratings do not translate into poor performance of the work unit. More generally, unit performance need not be a simple sum of the performance evaluations of individual employees.

In the case of service sector organizations, such as the bank that we study, the inherent nature of how services are produced for consumers or businesses suggests *a priori* that employee attitudes can have large effects on organizational performance. Parkington and Schneider (1979) discuss the importance of face-to-face interactions between employees and customers. Disgruntled employees can negatively affect customers' purchasing decisions when they interact with customers. In her study of telecommunications call centers, Batt (2002) found that high-performance work practices have a significant impact on organizational performance because the high involvement practices helped employees to acquire knowledge that enabled them to interact effectively with customers. Indeed, organizations that compete in sales and service delivery often use a relationship management strategy in which they seek to build long-term relationships with customers by providing quality service. Heskett et.al. (1997) provide evidence in support of a "service profit chain" in which companies that provide high quality service have satisfied and loyal customers, satisfied and loyal employees, and higher revenue growth.

In spite of the arguments for expecting a stronger relationship between attitudes and performance on a group level than on an individual level (especially in service organizations), there has been relatively little empirical work that systematically measures the satisfaction-performance relationship at the level of the work unit. Still, the research that has been conducted at an organizational level tends to find stronger relationships than are typically found in individual-

4

level studies. At the firm level, Fulmer, Gerhart and Scott (2002) study the companies that are on

Fortune Magazine's "100 Best Places to Work" list and find that employees in those companies

had more positive attitudes than employees in a matched sample of companies and, further, that

companies on the list had better financial performance than the matched sample. In a sample of

352 schools, Ostroff (1992) documents a positive relationship between the attitudes of teachers

and the academic performance of students.

Several studies examine the relationship between employee attitudes and performance

outcomes across the multiple worksites of a large firm. Presumably, the shared experiences that

would create a common group attitude would more likely occur within individual establishments

where the employees work at the same location with the same manager or supervisor. In the first

of these studies, Katz, Kochan and Gobeille (1983) study General Motors plants during the 1970s

and find that managers and supervisors' assessments of the state of labor-management relations in

the plants were positively correlated with the plants' product quality and labor efficiency.

Schneider and Bowen's study (1985) of employees and customers in 28 branches of a U.S. bank

finds that customers' attitudes about overall service quality at the branch are positively correlated

with employees' ratings of the branch on the quality of supervision, work facilitation and career

facilitation. In a study of an automobile finance company, Ryan, Schmitt and Johnson (1996)

document positive significant correlations between branch-level employee attitudes and both

customer satisfaction and turnover, but do not find a significant relationship between employee

attitudes and branch profits. Koys (2001) finds a significant positive relationship between

employee satisfaction and subsequent customer satisfaction in 28 stores in a restaurant chain, but

an insignificant correlation between satisfaction and subsequent profitability. Bartel (2004) studies

160 branches of a Canadian bank and finds that branch performance is higher when employees are

satisfied with performance evaluation procedures, feedback, and recognition at the branch; further, improvements in these attitudes within a branch predict improvements in performance.

Our research strategy is to study the effects of a "group attitude" at individual workplaces within a firm that operates multiple work sites to produce similar services and products under the same company-wide human resource policies. Unlike previous work, we provide detailed tests of the existence and persistence of workplace attitudes, and we also document the linkages between these attitudes and turnover and productivity.

Data on Bank Branches and Employees

The data set assembled for this study describes the operations and workforces of branches of a large New York metropolitan bank. The data come from 193 bank branches in 1994 and 143 branches in 1996. This represents the universe of New York area branches of the bank in the two years with the smaller number of branches in 1996 due to a large number of branch closings between 1994 and 1996.

The bank conducted an employee opinion survey in all of its branches in 1994 and 1996, providing us data on employee attitudes about their work environments. In 1994, 59 percent of employees, or 2245 workers, in the bank's 193 branches completed the survey; in 1996, 52 percent of employees, or 1439 workers, in the bank's 143 branches filled out the survey. The bank's employee attitude survey is fairly representative of employee opinion surveys that large firms in the U.S. use to gauge employee sentiment. The survey asks employees to respond to statements about their attitudes toward their work environment according to a five-point scale, ranging from 1 (the least favorable response) to 5 (the most favorable response). There are over 100 questions on each survey with many questions in common on the surveys in the two years.

In much of the analysis to follow, we focus on 18 survey items regarding the following workplace issues: employee compensation and performance measurement, teamwork, training and

6

development, information sharing and communication, and supervisor-staff relationships. Table 1 lists these 18 questions and gives the mean responses for each question across all workers in each year. Average responses to questions range from a low of 2.98 for the question about whether compensation is consistent with performance, to a high of 4.32 for the question about the importance of service to the customer.

As a summary statistic of employee attitudes about their work environment, we calculated the average value of these 18 items for each employee and call this 18-item average the "employee attitude index" (EAI). EAI has a mean value of 3.74 and a standard deviation of 0.71 in 1994, and a mean value of 3.78 with a standard deviation of 0.67 in 1996. To assess whether the EAI statistic is a reasonable summary of the 18 responses, we computed Cronbach's alpha to measure the consistency of responses to these items. Cronbach's alpha compares the variance in the sum of the items to the variance that one would obtain if the items were not related. The average alpha in our data was .44, which indicates that individuals reported fairly consistently about their workplace across the 18 items. To further assess whether different workers gave similar reports about the characteristics of their branch, we also computed the correlation coefficient for items among individuals. On average, the correlation among items was 0.43 in 1994 and 0.41 in 1996. In general, workers who gave favorable ratings on one item tended to give favorable ratings on other items, and the EAI statistic offers a useful summary of a typical response from a given employee.

The attitude survey identifies the respondent's branch, which enables us to investigate the extent to which different workplaces have their own distinctive responses to these surveys. However, to preserve confidentiality of responses, the surveys do not report workers' identities. We therefore cannot match a worker's 1994 responses with his or her 1996 responses. This precludes any longitudinal analysis of changes in attitudes of a given employee.

Branch Outcomes – Turnover and Productivity

The data on the bank's branches allow us to study two outcomes – employee turnover and branch productivity.

Employee turnover can be costly for businesses due to the direct costs of hiring and training new workers and the expected lower productivity of new hires while they are learning their jobs. We construct two measures of turnover. First, the attitude survey asks the respondent's intention to quit with the following survey item: "I intend to leave [the bank] within the next 12 months." Responses are measured on the same 1-to-5 scale as other survey questions, with higher numbers indicating stronger agreement with the statement and a stronger intention to quit. We can analyze the relationship between employee attitudes about work practices and the responses to this question at the individual level, and we can examine the same relationship with branch-level aggregates. The intended turnover measure varies considerably among branches. For example, in 1994, the branch average for this intention-to-quit question ranges from 1.0 to 3.07.[5] The mean across 193 branches in 1994 is 1.92, with a standard deviation of 0.38.

Employee responses to these questions are likely to provide a good indication of actual levels of turnover in subsequent periods. Several studies document a significant positive correlation between responses on intention-to-leave questions on attitude surveys and actual employee turnover, and conclude that this correlation is often larger than the correlation between turnover and any other survey item (Hulin, 1966; Hom, Katerberg, and Hulin, 1979). Even if these questions are not perfect predictors of actual turnover, responses to the intended turnover question can be important on their own as an indicator of problems with employee commitment.

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[5] In two branches all the employees surveyed stated that they had no intention of leaving. The two branches account for the minimum branch average of 1.0 on this question.

Workers who intend to leave but do not do so because the outside job market is poor, could create greater problems than those who leave.

Still, a measure of actual turnover would be desirable.[6] We therefore construct a measure of actual employee turnover in the branches between 1994 and 1996 from categorical measures of the tenure of the survey respondents. First, using survey information that identifies respondents who have less than two years of service at the branch, we calculate the percent of all 1996 respondents who are new employees. Then, using data on the total number of branch employees in the two years, we calculate the percent change in branch employment. We then subtract this percentage change from the percentage of 1996 respondents who are new to obtain an estimate of actual branch turnover between 1994 and 1996. In a workplace that had no growth, all of the persons with less than two years of tenure would be replacements for persons who left, so we would know the number of persons who separated from the workplace. In a workplace with 10% growth, we would expect 10% of the employees to have less than two years of tenure, so the proportion of employees with less than two years would have to exceed 10% for us to assign a positive turnover rate to the establishment. If employment growth of the branch exceeds the percent of respondents who are new employees, we assume the turnover rate is zero.[7]

In addition to employee turnover, we also consider the effects of attitudes on branch-level productivity. Because of inherent difficulties in measuring productivity in the service sector, we conducted interviews with managers at corporate headquarters and at several branches to

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[6] One problem with relying exclusively on intended quits as a measure of turnover in our analysis is the danger of a "common source" reporting bias. The attitudes about work practices come from the same survey as the intention-to-quit question, so that dissatisfied employees may simply be reporting negative answers to all questions even if they do not expect to change jobs.

[7] The reason this calculation can yield negative turnover is that the employment change data are from actual branch level data on number of employees, whereas we only have data on the percentage of workers with less than two years tenure from the opinion survey, which covered 50%-60% of employees.

understand branch productivity.[8] These managers described how branches earned income for the bank. The largest component of a branch's income is its "spread" income. Each financial product that a branch offers has a certain "spread" factor that equals the profit margin on the product. Spread income is the product of this spread factor and the total value of the sales of the product. Total spread income is the spread income earned on the total value of "footings" (or the sum of deposits and loans) given on the branch's balance sheet. Because growth in footings on a branch's balance sheet translates into more spread income[9] and a larger financial contribution to the bank's overall performance, branches are ultimately evaluated on growth in footings – or the net sales of financial products.[10]

Branch productivity is therefore defined as the growth in footings, or the net sales of deposits and loans at a branch during the year. Data on the dollar value of deposits and loans come from bank records on the balance sheets of each branch. The net sales variable is the change in deposit and loans on a branch's balance sheet from the beginning to the end of the year. The annual net sales measure varies considerably in the sample. In 1994, footings grew at an average rate of 5.8% across all branches. The range in this "growth in footings" variable extends from -.33 to .53 with a standard deviation of .08 in 1994. Branch performance was, on average, higher in

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[8] Triplett and Bosworth (2000) conclude that productivity measurement in this sector is perhaps best done on an industry-by-industry basis, since each industry has its own idiosyncracies.
[9] While spread income is the largest component of branch income, branches also derive income from: liability fees such as fees from stop payments, bounced checks, low balances, wire transfers, etc.; asset fees such as fees from loan applications, loan processing, and late payments; transaction fees for travelers' checks, safe deposit boxes, and ATM transactions; and brokerage commissions.
[10] The views of the bank's managers about the best way to measure productivity of bank branches are consistent with the literature on measurement of bank efficiency. These studies conclude that a "production approach" for measuring bank productivity is preferable to other possible methods when studying the relative efficiency of branches within a given bank (Berger, Leusner and Mingo, 1994), and argue that branches should be evaluated on how successfully they are able to "produce" deposits and loans. Berger and Humphrey (1992) discuss the production approach for measuring bank efficiency and compare it to alternative methods such as the "asset approach" and the "user cost approach."

1996 than in 1994 with a mean value of .13 in 1996. The standard deviation, minimum and

maximum values for net sales in 1996 were .10, -.25, and .51 respectively.

This net sales measure does not deduct branch expenses from sales. This decision was

guided by the judgment of the managers we interviewed. Managers reported that many branch

expenses are not tied to the accounts but to customer activity at the branches regardless of where

the account was opened and therefore housed. If we subtracted expenses from sales, we would

penalize branches that were busy service centers that process large number of transactions on

previously opened accounts. We therefore used the net sales measure to capture the basic notion

that new sales mean more money for the bank, regardless of where subsequent transaction costs

are incurred.[11]

Other Covariates

The empirical models below that estimate the relationship between attitudes and the turnover

and productivity outcomes include a diverse set of covariates relating to the characteristics of each

branch and its work force. Branch-level variables measure characteristics of the market and

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[11] As the description of the sample indicates, the data cover 193 branches in 1994 and 143 branches in 1996, with the decline in branches due to branch closings. The large number of branch closings creates an additional issue in how to measure performance in 1996, because accounts of closed branches were assigned to a nearby branch that remained open. Over time, however, some of these transferred accounts, called "rollups," migrated to other branches. The simplest adjustment we made to account for this issue in our productivity analyses was to do all analyses excluding accounts from the "rollups." The pre-existing accounts from a continuing branch were kept separate from accounts that got rolled into that branch from a closed branch, so we could do the analyses excluding data from rollups. A second method we used to account for rollups in productivity models was to include rollups as part of the dependent productivity variable, but to include a control for the level of rollups on the right hand side of the productivity equations. The idea here is that footings can grow between 1994 and 1996 due to rollups but we can control for how much is due to that factor. The coefficient on the originally rolled-up footings would be less than one if these accounts drift to other branches over time. The productivity analyses we report here are based on the first method, but those obtained using the second method to adjust for this factor are in all cases very similar.

location of each branch. The branches operate in different parts of the New York metropolitan area. Some branches operate in central city locations, and some of these are in commercial business centers while others are in more residential neighborhoods. Other branches operate in suburban areas, and again these branches vary in the degree to which their neighborhoods are commercial or residential. Among city or suburban branches, those that operate in more residential neighborhoods vary in terms of the wealth and demographic characteristics of the populations. In our analyses of employee turnover, these differences in local areas should reflect differences in employment opportunities for branch employees. In productivity models, these differences in the nature of the branches' neighborhoods and client base can impact a branch's ability to increase its deposits and loans, since some areas may have more business activity or wealthier residents.

Data on the characteristics of the branches' local market areas were collected by the Claritas data service for the bank. The variables measure a given characteristic for the zip code in which a branch is located. Variables measuring characteristics of the population living in the zip code are: population, number of households, per capita income, average household wealth, number of owner occupied households, median value of housing, and median years of schooling completed for the population. Variables measuring business activity in the zip code are: number of employees in all establishments, estimated sales in all establishments, and the zip code's unemployment rate. These data are derived from census establishment data and pertain to 1995 and thus give no information on changes over time.

The data set also contains some information on worker characteristics. Limited data on the individual survey respondents is available directly from the attitude surveys. The surveys collect categorical information on respondents' tenure and their "grade" level (which corresponds roughly to occupations). These data pertain only to survey respondents. In addition, the data set also

includes the following establishment-level data on the entire workforce (respondents and non-respondents) for each branch – the average age of branch employees and total number of branch employees. While these variables are calculated from bank personnel records, the personnel record data cannot be linked directly to attitude survey responses since the survey does not include employee identification numbers. These characteristics of the entire branch workforce are available for both 1994 and 1996. Table 2 reports means and standard deviations for the demographic characteristics of the branches' zip code areas and for the characteristics of the branches' workforces.

Do Workplaces Have Their Own Attitudes?

As a first step in testing whether branches have their own distinctive attitudes, we analyze the branch-level average values of responses to all of the items on the bank's employee opinion survey and the branch-level average values of the summary EAI statistic. With sufficiently large samples of employees randomly assigned to each branch, we could infer the existence of a branch effect from the average of individual responses within a branch – significant differences in branch averages would imply distinctive branch attitudes. But bank branches are typically small, with an average of 25 employees, and just over half of them responded to the opinion survey. This yields an average number of respondents of just 13 employees per branch.

The small samples for many branches create a potential problem of sampling variability. Average attitudes for some branches may by chance be more or less favorable than those for others. Say the population consists of people who like their workplace and those who do not like the workplace, evenly distributed in the employment pool, and that there is no genuine branch effect to the attitude survey responses. In a small sample, some branches would have a disproportionate number of workers with positive or negative attitudes purely due to chance. To address this issue, we calculate a "null distribution" of branch averages under the assumption that

branches draw workers randomly from a distribution of attitudes of workers that follows the distribution in the entire firm. Here, a "branch effect" is not measured simply by a difference in average response across branches. Rather, a branch effect is measured by whether the observed distribution of branch averages differs from this expected distribution of averages if each branch drew its workers randomly from the firm-wide population of workers. With distinctive branch attitudes, the actual distribution of branch averages would presumably have more branches with extreme branch averages than the simulated distribution of branch averages.

Figure 1 compares the distribution of the EAI index across branches with our estimate of the "null distribution" – the distribution that would result if each branch randomly hired workers (with replacement) from a distribution of attitudes among all employees in both years. To compute the null, we randomly assigned workers to a branch and calculated the branch average. Consider, for example, a branch with 10 workers. Using a random number procedure, we drew 10 observations from the firm-wide distribution of employee attitudes. This simulated ten-employee branch therefore has employee attitudes that would occur had the branch randomly selected its employees from a pool of workers that had the same distribution of attitudes as the distribution of attitudes among all of the firm's employees. We then assign this simulated branch the average EAI score from those 10 randomly drawn observations. Similarly, for a branch that had 8 employees, we drew 8 observations randomly from the underlying firm-level distribution and then calculated its average EAI. Doing this calculation for all of the branches in the sample gives us a distribution of mean branch attitudes with the same number of branches as in the actual data. We compare this simulated distribution of average branch EAI scores to the actual distribution of average EAI scores in the branches.[12] As Figure 1 shows, the actual distribution of branch

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[12] For the 143 branches for which we had observations in 1994 and in 1996, we pooled the numbers reporting in each year to form a single branch, treating the branch as having more reports on its average

averages is more dispersed than this null distribution would predict. There are more branches showing either high or low values of the employee attitude index in the actual distribution than in the simulated distribution. The finding that the standard deviation of the actual distribution of branches is greater than the standard deviation of the simulated null distribution is the first evidence that there are branch effects to attitude survey responses.

Our data allow us to conduct a more detailed test of the existence of a systematic workplace or branch component to the attitude survey responses. Because we have attitude surveys from two time periods, and because each survey has answers to multiple questions from each respondent and many employees per branch, we can estimate the following ANOVA model:

(1) $OBS_{ijqt} = INDIVIDUAL_i + QUESTION_q + BRANCH_j + YEAR_t + e_{ijqt}$

where OBS_{ijqt} is the response from the opinion survey for the i-th individual in the j-th branch to the q-th question in year t. Equation (1) decomposes the variation in employee responses to the survey instrument into: an individual effect, a question effect; a branch effect, and a year effect. The error term e_{ijqt} in equation (1) captures all interactions among these main effects. In addition, we can expand Equation (1) to allow for interaction effects between the main factors – for instance, branch x question effects. As noted in the description of the data above, the attitude surveys do not report the identities of the workers. We cannot determine which 1994 and 1996 surveys come from the same worker, so we cannot examine changes in the responses of the same individual over time.

To test for the existence of a branch effect in attitudes, we pooled the individual responses to the questions on the bank's attitude surveys in 1994 and 1996 and performed an analysis of variance. Absent individual identifiers, our "person effect" treats each worker survey in 1994 and

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attitude over the two years than we would have for a single year (i.e. if a branch had 7 people reporting in one year and 8 in the second year, we treated it as having 15 reports on attitudes). This assumption is a

1996 as coming from completely separate sets of individuals. In fact, given that some workers report more than two years of service at their branch in 1996 and that some of these workers will have responded to the survey in both years, there are a substantial but unknown number of persons who reported in both 1994 and 1996. By treating those persons as two separate people, we presumably understate the variation among people. This is because the same person is likely to give more similar responses than two different people.[13]

Table 3 reports results of this ANOVA analysis. Panel A presents the ANOVA results from all 108 questions on the opinion survey. Most important for the purposes of this study, the main branch effect is highly significant, consistent with the earlier evidence shown in figure 1. The importance of the interaction of branch with question is relatively modest, while the interaction of branch and year is more significant. The degrees of freedom for the branch*year interaction are below the degrees of freedom for the branch effect because some of the branches were closed in 1996. The results in panel A of Table 3 show that the largest contributor to the sum of squares is the individual effect, due to the sizable number of respondents. This variation could result from individual workers having different innate attitudes toward their workplace or to workers experiencing the work environment differently because they do different things at the site or interact with branch managers in different ways.[14] The second largest contributor to the sum of

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conservative one that should minimize the difference between the actual and simulated branch average EAIs. For the remaining 50 branches, we used the only available data from 1994.

[13] Because the inclusion of "extra" person dummies increases the total amount of variance that "person effects" will explain, one might reasonably expect that the Table 3 ANOVA tests in this section will provide a conservative estimate of how much variance the branch effects can explain. Still, the direction of the bias on the importance of branch effects due to the inclusion of "extra" person dummies is unclear. Therefore, we also re-estimated the Table 3 ANOVA's, but restricted the sample to only 1996 responses and to 1996 responses for workers with less than two years tenure. These analyses include the correct number of person dummies, and branch effects remain sizeable and significant in all cases.

[14] Studies of job satisfaction among twins suggest that 30% of the variance in satisfaction is due to genetic components (Arvey, Bouchard, Segal, and Abraham, 1989), which gives a lower bound estimate of the potential effect of differences in preferences in our data. The finding from studies of family environments that siblings share only a modest amount of their environment suggests that genuine environmental

squares is variation in responses among questions. Given that the there are many fewer questions than workers (107 versus 2761 in panel A), the question effect obtains the highest F-statistic.

Panel B reports results from a similar ANOVA test, in which we focus exclusively on the 18 survey items listed in Table 1 that relate to employee attitudes about HR policies. The results in Panel B show a similar pattern of results to those in panel A. With many fewer questions in the analysis, the impact of the question effect on the sum of squares fall, but the overall ANOVA pattern is comparable to that in Panel A. Most important, the finding that there is a substantial branch effect on employee attitude responses remains highly significant.

Finally, in panel C, we extend the panel B analysis to examine whether the branch effect on attitudes is affected by two observable characteristics of the workers in the branches – the grade (or occupation) of the workers and the workers' tenure. The number of observations for this analysis drops due to missing data on these grade and categorical tenure questions. Workers in officer positions in the bank have more positive attitudes than other employees, while workers with greater tenure at the branch have slightly less favorable attitudes than those with less experience.[15] Inclusion of these two measures of the position of the worker reduces the significance of the branch effect, but the branch component to employee attitudes still remains large and significant.

The analyses presented in Table 3 thus support the claim that there is a genuine workplace-specific component to employee attitudes. The next question to ask is whether or not the measured workplace attitude persists over time. While it is possible to have distinct workplace

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differences are also likely to be important at work sites (Arvey, Bouchard, Segal, and Abraham, 1989, and Ryan, Schmidt and Johnson, 1996).

[15] For instance, a regression of the EAI of an individual on a dummy for whether they were a bank officer or not and a measure of years of tenure in a branch in a pooled data set for 1994 and 1996 gives a coefficient of 0.22 with a standard error of 0.03 on the officer dummy and a coefficient of -.022 with a standard error of .010 on tenure in the branch. This regression uses a sample of 3724 observations and includes all of the other measures of individual and branch characteristics in the data set.

attitudes that change substantially over time (for example, if a firm has two work places and two managers, one who establishes good relations with workers and one who establishes bad relations, and the firm shifts the managers between work places, the distinct attitudes created by these managers would produce negative correlations between attitudes over time), we expect workplace effects on attitudes to persist over time. If work routines and the identities of managers and supervisors tend to be reasonably stable between 1994 and 1996, then the shared experience of branch employees will generate a consistent "group attitude" in the two time periods. Given some stability in branches' managers, work practices, and organizational routines, we should not expect the branches with positive attitudes in 1994 to switch to negative attitudes in the second period only two years later. While the ANOVA results in Table 3 provide some clues about the persistence of attitudes over time,[16] we can test the persistence of "branch attitudes" directly.

Specifically, for the 143 branches that exist in both 1994 and 1996, we calculate the average value of EAI for the branch. A bivariate regression of the branches'1996 EAI on their 1994 EAI tests whether branches that had high (low) values of EAI in 1994 continue to have high (low) values of EAI in 1996. The coefficient (t-value) on 1994 EAI from this regression is .421 (and 5.04). While there is regression to the mean, the 1994 value of a branch's EAI persists into 1996. However, this significant effect of a branch's 1994 EAI on the 1996 value of its EAI could simply be due to the fact that the branch has the same (happy or unhappy) employees in the two years. Because the response rates to the opinion survey in 1994 and 1996 are 59% and 52% respectively, a large number of respondents in the two years are likely to be different workers.[17]

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[16] In the Table 3 results, the branch x year effects in all three panels are less important in accounting for variation in attitudes than are the main branch effects. Still the branch x year effects are always significant implying some degree of change in branch effects over the two years.

[17] If worker's decision to complete the survey is random in both years and there was no turnover among employees, 31% of the respondents would be the same in 1996 and 1994 (i.e., 0.59 x 0.52 = .31). With an annual turnover rate in bank branches of roughly 10% per year, this estimate of the percent of respondents who would be the same in both years would drop to approximately 25%. If persons who responded in 1994

We can directly test whether the persistence of workplace attitudes is due to the branch influencing worker attitudes or to the same employees filling out surveys in the two years, by exploiting data on the tenure of the survey respondents. Persons with less than two years of tenure in 1996 were not at the branch in 1994 and thus could not have filled out surveys in 1994. By separating out the attitude survey data on these new employees, we can analyze whether new employees are adopting the pre-existing workplace attitude. Following this line of analysis, we decompose a branch's 1996 average EAI into two parts – the average EAI among workers with less than two years of tenure and the average EAI among workers with two or more years of service. We then estimate two regressions. The attitudes of the employees in 1996 with less than two years of tenure and the attitudes of workers with more than two years of tenure are each regressed on the branch level EAI for all workers in the earlier (1994) time period. When 1996 EAI among new employees is the dependent variable, the coefficient (standard error) on the 1994 EAI variable is .456 (.154). When 1996 EAI among workers with greater than 2 years of tenure is the dependent variable, the coefficient (standard error) on the 1994 EAI variable is .391 (.086). Since the correlation between the attitudes of employees hired after 1994 and the attitudes that were prevalent in the branch in 1994 is at least as large as the comparable correlation for employees in the bank in both periods, we conclude that new employees tend to adopt the attitudes of the branch where they were hired.[18]

The regression results using data on individual employees presented in Table 4 tell much the same story as the preceding branch-level regressions. The sample for the regression in column 1 of Table 4 consists of the 1517 employees who responded to the 1996 survey and who report

were twice as likely to respond in 1996 as persons who did not respond in 1994, the percentage responding in both periods would be approximately 40%.

[18] There is one other possibility – that the branch hired workers with attitudes similar to those of existing employees. We regard this possibility as unlikely, especially for branches where workers have negative attitudes, since it makes little sense for a firm to hire people it knows have such attitudes.

their tenure. The individual worker's 1996 EAI is the dependent variable and the three independent variables are: the branch-level EAI in 1994; a dummy for whether the individual worker's tenure is less than two years; and an interaction between 1994 branch EAI and worker tenure less than two years. The results show that 1994 branch-level EAI determines the worker's EAI in 1996 and that the magnitude of this effect is not significantly different for those workers who have less than two years of service than for workers with more than two years of service. Columns 2 and 3 of Table 4 record separate regressions for the impact of the 1994 branch attitude on 1996 individual attitudes for employees who were in the branch in 1994 and for those who joined the branch since 1994. These regressions allow all of the control variables to have separate effects on the 1996 attitudes of the new and older employees. They show that the result in column 1 is not due to the restricted nature of the interactions in that specification but holds up when all of the explanatory variables have separate effects. Workers who joined the branch after 1994 adopt the attitudes that existed in their branches in 1994 just as much as the longer tenured branch employees do.

In sum, the results of this section support the conclusion that, even within this sample of employees working for a common parent firm in the same industry, *employee attitudes are shaped in distinctive ways by the place of work.* Average values for employee attitude responses by branch show more variation than these branch averages would show if the branches were simply selecting their workers randomly from the firm's population of workers. ANOVA results show that the branch component to employee attitudes is distinct from worker effects and question effects, and this branch effect is significant and substantial. The positive or negative nature of this branch effect persists over time. Finally, and perhaps most decisively, newly hired workers take on the positive or negative attitudes that existed in the branch before they were hired. *Workplaces do indeed have their own distinctive attitudes.*

20

Employee Attitudes and Economic Outcomes

Firms survey their employees to identify attitudes that can affect retention, productivity, and other performance outcomes. Consulting firms that administer these surveys market their survey products using precisely these claims.

> *"Done right, an employee survey can provide you with an understanding of the employee behaviors and perceptions that impact important business outcomes, such as employee retention, customer satisfaction and performance"*
> (*www.imercer.com/globalcontent/surveys/eesurveys.asp*)

Yet, with researchers concentrating on the link between individual satisfaction and performance, there has been relatively little investigation of the relationship between employee attitudes and organization-level outcomes. To what extent, if at all, are the branch level differences in employee attitudes linked to turnover and productivity?

Employee Attitudes and Turnover

To estimate the effect of employee attitudes on turnover, we estimate the equations:

(2) $\text{ITURNOVER}_{ibt} = a + b_1 X_{bt} + b_2 L_{ibt} + b_3 \text{EAI}_{ibt} + u_{ibt}$

(3) $\text{TURNOVER}_{bt} = a + b_1 X_{bt} + b_2 L_{bt} + b_3 \text{EAI}_{bt} + u_{bt}$

Equation (2) is an individual-level regression using respondent's 1-to-5 answers to the intention-to-quit survey question as the dependent variable. Equation (3) is a branch-level regression using our estimate of actual employee turnover in the branch between 1994 and 1996. The X vector includes the set of zip-code specific characteristics of the branches' local labor market, populations, and demographic characteristics. The L vector includes branch-specific measures of the average age of employees in the branch, the number of employees in the branch and, for equation (2), individual-level measures of the employees' grade level and tenure.

Table 5 reports the coefficients on the EAI attitude index for individual-level, intention-to-quit regressions. Column 1 gives the results of regressions for the 1994 sample. Column 2 gives results for the 1996 sample. Column 3 gives results for the pooled sample. The line 1 models

report results from simple bivariate regressions. In the line 2 models, the regressions include all of the characteristics of the branch, its employees, and the surrounding community. In line 3, we replace those branch-level characteristics with a complete set of branch dummy variables. In all intention-to-quit regressions, the coefficient on the EAI measure is negative and highly significant. Coefficients on the EAI variable are typically about –0.50.

In lines 4 and 5, we extend this individual-level analysis to examine the extent to which an employee's intention-to-quit response is more closely correlated with the branch's average EAI or the person's own EAI response. In line 4, the EAI variable is the branch-specific EAI average. The estimated coefficient on the branch level EAI shows that employees' intentions-to-quit are higher in branches with negative attitudes.   In line 5, we include both the branch-level EAI and the employee's own EAI. In this model, a significant negative coefficient on branch level EAI implies that all employees in branches with "bad attitudes," regardless of whether the individual employee has a high or low value for his EAI, are more likely to quit. A significant negative coefficient on the individual-level EAI implies that individuals with negative EAI values are more likely to expect to quit, regardless of the branch's EAI. In fact, the effect of the employee's individual EAI dominates the regression in line 5. The average value of the EAI index for all employees in a branch does not have a significant effect on the intention-to-quit responses once individual-level EAI is included. Higher turnover in branches where employees express negative attitudes is concentrated among those (more common) employees who report negative attitudes. The employees who express more positive attitudes despite the negative sentiments that prevail in their branches are no more likely to plan to leave than employees surrounded by co-workers with positive attitudes toward the workplace.

This result does not imply that "branch policies don't matter." To the contrary, the table shows that branch level policies matter by influencing the proportion of workers with positive or

22

negative attitudes. For instance, a manager may implement a policy that has a negative (positive) effect on a majority of the branch's employees. Those employees who have the negative (positive) reaction are the ones more (less) likely to quit in coming months, in response to the policy. One possible example of this dynamic would be the case of a manager who plays favorites. Most employees would report negative attitudes and express greater intentions to quit, while the employees receiving beneficial treatment would not express those sentiments. Still, the manager's branch-wide policy would be responsible for the observed results.

As a further test of the relationship between employee attitudes and turnover, we estimate branch-level turnover regressions in Table 6, Panel A. In columns 1 and 2, the dependent variable is the branch-level average of the intention-to-quit survey response for 1994 and 1996, respectively. The branch's average EAI has a large significant negative partial correlation with the average intention-to-quit response in both years. Because the EAI measure and the intention-to-quit question come from the same surveys, these column 1 and 2 results may be due in part to a common source survey bias. The correlation between EAI and intention-to-quit here could be due to employees simply giving consistently favorable or unfavorable responses to all survey questions. In the column 3 specification, we re-estimate the 1996 branch-level intention-to-quit regression but include the 1994 branch EAI variable as the independent variable. When the branches' EAI and intention-to-quit variables are calculated from these two different surveys, the partial correlation between EAI and intention to quit remains negative and highly significant.

In columns 4 and 5, the branch-level turnover regressions are re-estimated using our estimate of the actual employee turnover in a branch between 1994 and 1996 and the independent variable of main interest is the branch-level EAI in 1994. Because the estimated turnover variable relies on information from the 1996 employee survey that identifies whether employees have less than two years of tenure, the sample can include only those branches that were still in operation

23

when the 1996 survey was administered, or n=143 branches. Column 4 of table 6 reports results from a model in which the1994 branch EAI is the only independent variable, while the column 5 model includes the 1994 branch EAI variable along with a full set of branch-specific workforce and zip-code characteristics. The coefficient on the EAI variable in column 4 again reveals that the correlation between employee attitudes in the branch in 1994 and this alternative measure of employee turnover between 1994 and 1996 is negative and significant. However, once the complete set of branch-level characteristics is added to this regression in the column 5 specification, the partial correlation between EAI and the imputed 1994-1996 turnover rate becomes insignificant.[19] While the negative relationship between branch EAI and this turnover rate is not independent of the effects of all of the branch-level control variables,[20] the results in panel A of table 6 do show that negative employee attitudes about their jobs and workplaces are significant predictors of subsequent intentions to quit. These results also reveal that negative employee attitudes are more common in 1994 among branches that will experience higher turnover rates between 1994 and 1996, although this particular negative correlation does not persist when detailed characteristics of the branch's environment are included in the turnover model.

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[19]We also estimated the models in columns 4 and 5 of Table 6 allowing our estimate of branch turnover to be negative when employment growth in the branch exceeded the percent of survey respondents with less than two years of tenure. The justification for this is that those establishments had the least turnover, and were given negative values due to sampling variability. (Recall from the description of the data that our estimated turnover figure is negative in branches where employment grew proportionately more rapidly than the proportion of workers reporting less than 2 years of tenure in 1996.) When we do not impose a zero turnover rate in these cases and leave the estimated turnover rate as negative, we obtain similar results to those in the table.

[20] The reduction in significance of the EAI variable between the column 4 and 5 specifications appears to be due primarily to the inclusion of the variable measuring the area's unemployment rate. However, the effect of unemployment on turnover in column 5 is positive (and one would instead predict a negative effect of the unemployment rate on turnover if turnover is largely voluntary), so a more specific interpretation of this result is difficult.

Employee Attitudes and Annual Sales in the Branch

Do employee attitudes also help predict which branches have better or worse productivity outcomes? To investigate this question, we estimate the following branch-level productivity equation:

(4) $\text{Ln (Net Sales)}_{bt} = a + b_1 X_{bt} + b_2 L_{bt} + b_3 EAI_{bt} + u_{bt}$

where the dependent variable is the net sales measure of the branch which gives the change in "footings" on a branch's balance sheet from the beginning to the end of the given calendar year.

Panel B of Table 6 reports the coefficients on the variable for the branch-specific EAI index in a least squares analysis of equation (4). Column 1 of panel B gives the coefficient on this variable for the 1994 cross section model. Column 2 in panel B gives the coefficient from the 1996 cross-section model. Column 3 of panel B gives the coefficient from the regression of 1996 log productivity on 1994 EAI – a specification that allows attitudes to have a lagged effect on productivity. The estimates show that workplaces with more positive employee attitudes are associated with higher levels of sales during the year, with coefficients on the EAI variable ranging from .039 to .051. According to the column 1 model for 1994, a one standard deviation increase in the EAI variable (or .34 units) is associated with an increase in net sales of about 1.3 percentage points (or roughly 22% of the mean level of net sales in 1994 and 16% of the standard deviation of net sales). The estimates in columns 2 and 3 show that we obtain essentially the same results when we use 1994 employee attitudes or 1996 employee attitudes to explain 1996 productivity. Given the high persistence of attitudes, this is not surprising, but it does highlight that our data are consistent with models in which lagged attitudes affect outcomes as well as with models where current attitudes affect outcomes. Appendix Table A reports complete results for the 1994 and 1996 cross-section productivity models when individual survey questions are used in

25

place of the summary EAI measure, and these results again support the conclusion that favorable

employee attitudes are associated with higher sales.[21]

Branch Closings

The 1996 cross-section performance equations in table 6 are based on a smaller sample of

branches than are the 1994 cross-section performance equations due to the closing of fifty bank

branches between 1994 and 1996.[22] Before estimating performance equations that examine the

effects of changes in a branch's employee attitudes between 1994 and 1996 on changes in the

branch's sales growth over the same period, it is important to determine whether the bank

systematically picked certain kinds of branches when it made its branch closing decisions. We

therefore estimate a series of probit models that examine the determinants of the probability that a

branch that was open in 1994 closed by 1996. The sample size for these probits is 193 branches,

50 of which were closed by 1996.

Column 1 of table 7 shows that in a simple bivariate model that relates the probability of a

branch closing with only a single variable, the level of its 1994 sales performance, the bank was

more likely to close branches with low levels of net sales in 1994.   When we add zip-code area

characteristics to the branch closing model in column 2 of table 7, the coefficient on 1994 net sales

becomes insignificant. Coefficients from this column 2 model show that the variable for average

household wealth has a large negative significant effect on branch closings, so that the poor

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[21] Some survey questions exhibit stronger correlations with productivity than others. Coefficients on the
following variables are significant in both the 1994 and the 1996 cross-section models: one variable related
to performance and rewards (Reward Performers); two variables related to teamwork among branch
employees (People Cooperate and Share Knowledge); and the variable measuring the employees sentiment
that he has a "Good Supervisor." While coefficients on variables for other survey items are significant in
one time period or the other, no survey item measuring employees' attitudes toward training and
development is significant in these models.
[22] During the 1990s, the U.S. banking industry was characterized by increased competition and
technological change. See Autor, Levy and Murnane (2000) and Hunter, Bernhardt, Hughes and
Skuratowicz (2000) for a discussion of the impact of these changes on job content and earnings at a number
of U.S. retail banks.

performing branches most likely to be closed were branches in less affluent neighborhoods. The column 3 branch closing model adds the branch-level EAI variable to the specification. This calculation shows that even after controlling for 1994 performance levels and zip-code characteristics, poor employee attitudes are a significant determinant of the probability of a branch closing by 1996. These results show that the bank closed branches with poor performance and attitudes rather than attempting improvements, say through appointment of new managers. The truncation of the potential sample has implications for our ensuing fixed effects analysis since it eliminates a group of branches where new managers or other changes might have produced changes in attitudes that would have illuminated the relationship between attitudes and productivity.

First Difference Analysis

With observations on branches in 1994 and 1996, we can examine the link between changes in productivity over the 1994-1996 period and changes in branch attitudes over the same period using a first difference (fixed effects) model. The sample for the first difference change in net sales model is 143 branches – those branches open in both 1994 and 1996. Given that we have only two observations per branch, that the time link between attitudes and performance is uncertain (our table 6 regressions show that 1994 branch EAI had a positive effect on 1996 performance), and that the sample has lost 50 poor performing branches due to closure, it would be striking if such a fixed effects model documented the same strong link between attitudes and productivity that is found in the cross-section models in Table 6 panel B. Column 1 of Table 8 reports the coefficient on the variable that measures the change-in-EAI in this branch-level change-in-performance regression. The coefficient on the change in EAI variable is insignificant negative, contrary to the cross section finding. One interpretation is that some omitted branch-specific factor could be the true cause for the observed cross-sectional relationships between

27

attitudes and performance. Alternatively, it could be that we have misspecified any lags in the

relationship between attitudes and productivity. If, for example, performance responded to

attitudes with a two year lag, the 1994 branch level EAI would be positively related to the change

in EAI while the first difference equation would fail to show the positive link.[23] In fact, column 2

of table 8 shows that the 1994 branch EAI is positively and significantly related to the growth of

sales. This interpretation fits with our cross section results but with only two years of data, we

cannot rule out other interpretations such as the importance of omitted branch factors. Finally, the

noise-to-signal ratio for the EAI measure may be greater in first difference models than in the

cross sections. If the noise-to-signal ratio is greater in the change in EAI than in the cross sectional

EAI measure, then the cross-section analysis would give a more accurate estimate of the true

effect of the EAI variable on net sales than would the fixed effects models.

Columns 3 and 4 of table 8 explore the effect of one other of our key variables – turnover –

on the growth in net sales between 1994 and 1996. In column 3a, the growth in net sales model

includes the variable which measures employee turnover in the branch from 1994 to 1996. This

turnover variable has a significant negative effect on the growth in net sales. In column 3b, we

extend this analysis. Given the significant negative effect of favorable employee attitudes on

branch turnover shown in table 6 above, we investigate whether it is the turnover associated with

poor employee attitudes that is responsible for the effect of turnover on growth in net sales found

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[23] Consider the case where true relationship is that attitudes affect performance with a two-year lag
(consistent with the model in table 6, panel B, column 3). In cross-section analysis, a contemporaneous
regression of 1996 output on 1996 EAI would still find significant effects of EAI and capture much of the
true (lagged) relation because of the persistence in EAI over time. The 1996 value of EAI is a close proxy
for 1994 EAI. However, a first-difference regression (of 1996 output – 1994 output on 1996 EAI – 1994
EAI) is less likely to capture the true (lagged) relationship as long as there is a relatively weak correlation
between EAI96 – EAI94 (which is the regressor in the incorrectly specified first-difference regression) and
EAI 94 – EAI92 (which would be the correct variable to enter in the regression). Here, a contemporaneous
first difference model does not capture the true lagged relationship, because EAI94 enters with a negative
sign in the contemporaneous first difference variable but enters the true model with a positive sign.

in table 8 column 3a model. To do this, we first decompose a branch's turnover rate into two components – the parts associated and not associated with EAI – and then enter the two separate components of turnover into the growth in net sales regression.[24] When these two components of a branch's turnover rate are entered as separate regressors in the growth in net sales model, the results in column 3b are obtained. These results show that the part of turnover that is associated with EAI is a significant predictor of the growth in net sales, while turnover due to other factors does not help predict what will happen to the growth in net sales. Column 4a and 4b replicate the analyses shown in columns 3a and 3b, but use the branch's average value for the intention-to-quit variable as the measure of turnover. The results in columns 4a and 4b show that the overall intention-to-quit variable has an insignificant effect on the growth in net sales, but the specific component of the branch intention-to-quit variable that is correlated with EAI is again a significant predictor of the growth in net sales.

While column 1 in table 8 finds no significant relationship between the change in EAI between 1994 and 1996 and the growth in the net sales variable over the same time period, other models in table 8 demonstrate other ways that EAI still matters for understanding what happens to the growth in net sales between 1994 and 1996. First, the base year level of EAI has a significant effect on growth in net sales, indicating that branches with poor attitudes in 1994 will experience lower growth in net sales over the next two years. Second, turnover, and more specifically the part of turnover associated with EAI, also helps explain the growth in net sales that a branch will experience.

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[24] To calculate these two components of turnover, we regress the turnover variable on EAI. We estimate the part of turnover due to EAI as the EAI coefficient in the turnover regression times the given branch's value of EAI. The part of turnover not associated with EAI is given by a branch's turnover rate minus the first component.

In sum, this section finds evidence that poor branch attitudes are significant predictors of higher employee turnover, lower levels of sales, and lower rates of subsequent sales growth, but changes in attitudes are unrelated to changes in sales.

Conclusion

This study has examined the responses of thousands of employees working in nearly two hundred branches to the employee opinion survey of a major U.S. bank in 1994 and 1996. The results document the existence and persistence of a genuine workplace effect on how workers view their jobs and organizations. Employee attitudes differ significantly across branches in ways that cannot be explained by branches randomly drawing workers from a distribution of workers with different innate attitudes. Newly hired workers adopt the favorable or unfavorable attitudes that the branches exhibited before they arrived.   Moreover, branches with less favorable attitudes have higher turnover, lower levels of sales, and lower rates of sales growth than branches where workers have more favorable attitudes.

The conventional view based largely on studies of individuals has long been that employee attitudes and satisfaction are not strongly related to economic performance. The results of this study however support a conclusion that employee attitudes are strongly correlated with economic outcomes of work organizations, consistent with the findings of a small but growing body of other studies that focus on organization-level outcomes. While more definitive statements about the precise mechanisms that cause this significant relationship will require additional research, ideally through experimental designs that change workplace attitudes and measure subsequent changes in performance outcomes, the results here indicate that there is important economic content in workers' responses to attitude surveys. There are happy and unhappy workplaces, as well as happy and unhappy workers, with very different patterns of turnover and productivity in these workplaces.
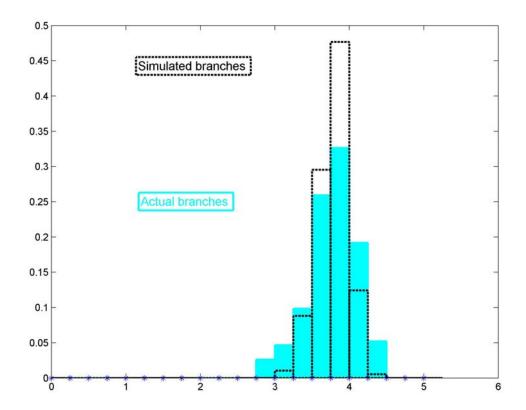
Bibliography

Arvey, Richard, Thomas Bouchard, Nancy Segal, and Lauren Abraham, "Job Satisfaction: Environmental and Genetic Components," *Journal of Applied Psychology*, Vol. 74, No.2, 1989, pp. 187-192.

Arvey, Richard, Gary W. Carter, and Deborah Buerkley, "Job Satisfaction: Dispositional and Situational Influences," *International Review of Industrial Organizational Psychology*, ed. C.L. Cooper and I. T. Robertson, John Wiley and Sons Ltd.,1991, pp.359- 383.

Autor, David, Frank Levy and Richard Murnane, "Upstairs, Downstairs: Computer-Skill Complementarity and Computer-Labor Substitution on Two Floors of a Large Bank," *Industrial and Labor Relations Review* 53, (2001).

Bartel, Ann P., "Human Resource Management and Organizational Performance: Evidence from Retail Banking," *Industrial and Labor Relations Review*, January 2004, forthcoming.

Batt, Rosemary, "Managing Customer Services: Human Resource Practices, Quit Rates and Sales Growth," *Academy of Management Journal*, 2002.

Berger, Allen N. and David B. Humphrey, "Measurement and Efficiency Issues in Commercial Banking," in Zvi Griliches, ed., *Output Measurement in the Service Sector*, NBER Studies in Income and Wealth Volume 56, University of Chicago Press, 1992.

Berger, Allen N., John H. Leusner and John J. Mingo, "The Efficiency of Bank Branches," Board of Governors of the Federal Reserve System Working Paper, August 1997.

Fulmer, Ingrid Smithey, Barry Gerhart and Kimberly S. Scott, "Are the 100 Best Better? An Empirical Investigation of the Relationship Between Being a "Great Place to Work" and Firm Performance," mimeo, 2002.

Gutek, B.A. and S.J. Winter, "Consistency of Job Satisfaction Across Situations: Fact or Framing Artifact?" *Journal of Vocational Behavior* 41 (1992): 61-78.

Heskett, James L., W. Earl Sasser, Jr. and Leonard A. Schlesinger, *The Service Profit Chain* (New York: The Free Press), 1997.

Hom, S.J., R. Katerberg and C. Hulin, "Comparative Examination of Three Approaches to the Prediction of Turnover," *Journal of Applied Psychology* 68 (1979): 280-290.

Hulin, Charles, "Job Satisfaction and Turnover in a Female Clerical Population," *Journal of Applied Psychology*, 50 (1966): 280-285.

Hunter, Larry, Annette Bernhardt, Katherine L. Hughes and Eva Skuratowicz, "It's Not Just the ATMs: Technology, Firm Strategies, Jobs, and Earnings in Retail Banking," *Industrial and Labor Relations Review* 53 (March 2001).

Iaffaldano, M.T. and P.M. Muchinsky, "Job Satisfaction and Job Performance: A Meta-Analysis," *Psychological Bulletin* 97 (1985): 251-273.

Judge, Timothy, Joyce E. Bono, Carl J. Thoresen and Gregory K. Patton, "The Job Satisfaction-Job Performance Relationship: A Qualitative and Quantitative Review," *Psychological Bulletin* 127 (2001): 376-407.

Judge, T.A., K.A. Hanisch and R.D. Drankoski, "Human Resources Management and Employee Attitudes,"in G.R. Ferris, S.D. Rosen and D.T. Barnum (eds), *Handbook of Human Resources Management*, Oxford, England: Blackwell, 1995.

Judge, T.A. and C.L. Hulin, "Job Satisfaction as a Reflection of Disposition: A Multiple Source Causal Analysis," *Organizational Behavior and Human Decision Processes* 56 (1993): 388-421.

Katz, Harry C., Thomas A. Kochan and Kenneth R. Gobeille, "Industrial Relations Performance, Economic Performance, and QWL Programs: An Interplant Analysis," *Industrial and Labor Relations Review* 37 (1983): 3-17.

Koys, Daniel J., "The Effects of Employee Satisfaction, Organizational Citizenship Behavior, and Turnover on Organizational Effectiveness: A Unit-Level Longitudinal Study," *Personnel Psychology* 54 (2001): 101-114.

Ostroff, Cheri, "The Relationship Between Satisfaction Attitudes, and Performance: An Organizational Level Analysis," *Journal of Applied Psychology*, 77, 6, 1992, pp. 781-787.

Parkington, J.J. and Benjamin Schneider, "Some Correlates of Experienced Job Stress: A Boundary Role Study," *Academy of Management Journal* 22 (1979): 270-281.

Ryan, Marie, R., Mark Schmit, and Raymond Johnson, "Attitudes and Effectiveness: Examining Relations at an Organizational Level," *Personnel Psychology*, vol. 49, (1996), pp. 853-82.

Schneider, Benjamin and David E. Bowen, "Employee and Customer Perceptions of Service in Banks: Replication and Extension," *Journal of Applied Psychology* 70 (1985): 423-433.

Schneider, B., H.W. Goldstein and D.B. Smith, "The ASA Framework: An Update," *Personnel Psychology* 48 (1995): 747-774.

Spector, P.E., *Industrial and Organizational Psychology: Research and Practice*. New York, N.Y. John Wiley and Sons, 1996.

Triplett, Jack, and Barry Bosworth. 2000. "Productivity in the Service Sector." *Brookings Economic Papers*, Washington, D. C., January 2000.

U.S. Department of Labor, "Human Resource Policies and Practices in American Firms," Bureau of Labor-Management Relations and Cooperative Programs Report #137, (U.S. Government Printing Office), 1989.

Watson, D. and A.K. Slack, "General Factors of Affective Temperament and Their Relation to Job Satisfaction Over Time," *Organizational Behavior and Human Decision Processes* 54 (1993): 181-202.

Figure 1: Distribution of Actual EAI Index Across Branches

Compared to Distribution of Simulated EAI Index[a]

Actual Branch: Mean= 3.77 Std. Dev.=0.34
Simulated Branch: Mean= 3.78 Std. Dev.=0.19

[a] See text for discussion of simulated distribution

TABLE 1
Human Resources Attitude Survey Questions Administered to Bank Employees

	VARIABLE NAME	SURVEY QUESTION	1994 MEAN	1996 MEAN
(A) Employee Performance and Rewards				
1.	JUDGE PERFORMANCE	I know the basis on which my performance will be judged.	4.00 (0.93)	3.99 (0.93)
2.	SERVICE & PERFORMANCE	Service to the customer is an important part of the way my performance is measured.	4.32 (0.88)	4.28 (0.94)
3.	REWARD PERFORMERS	In my work unit, people who do a good job are rewarded more than those who don't.	3.11 (1.17)	3.17 (1.10)
4.	REWARD CONSISTENT	Decisions about my compensation have been consistent with my performance.	2.98 (1.15)	3.09 (1.11)
5.	RECOGNIZED FOR QUALITY	I am recognized for efforts to gain quality improvements.	3.39 (1.06)	3.44 (1.02)
(B) Teamwork				
6.	TEAMWORK ENCOURAGED	My manager/supervisor encourages teamwork among group members.	4.00 (1.00)	4.00 (0.98)
7.	PEOPLE COOPERATE	The people I work with cooperate to get the job done.	3.83 (0.87)	3.80 (1.03)
8.	SHARE KNOWLEDGE	The people in my work group share their knowledge and experience when it can benefit others.	3.95 (1.05)	3.92 (0.96)
9.	IMPROVEMENT ENCOURAGED	My manager/supervisor encourages continuous improvement.	4.01 (0.86)	4.02 (0.85)
10.	QUALITY COUNTS	Day-to-day decisions and activities in my work group demonstrate that quality is a top priority.	3.93 (1.09)	4.00 (0.86)
(C) Training and Development				
11.	INVESTS IN EMPLOYEES	The bank invests in the development of employees.	3.55 (1.18)	3.58 (1.00)
12.	SATISFIED WITH TRAINING	How satisfied are you with the training you receive for your current job?	3.80 (0.15)	3.75 (1.07)
13.	SUPERVISOR COACHES	The manager/supervisor provides coaching and/or guidance to help improve my performance.	3.62 (1.12)	3.63 (1.07)
(D) Information and Communication				
14.	JOB INFORMATION	I have enough information to do my job well.	4.05 (0.86)	4.04 (0.86)
15.	SUPERVISOR LISTENS	My manager/supervisor listens to my ideas and concerns.	3.78 (1.09)	3.87 (1.02)
16.	SUPERVISOR FEEDBACK	I regularly get feedback from my supervisor/manager about my performance.	3.51 (1.18)	3.53 (1.14)
(E) Supervisor Ratings				
17.	SUPERVISOR RESPECTS	My manager/supervisor respects his/her employees.	3.93 (1.15)	3.96 (1.07)
18.	GOOD SUPERVISION	Overall, how good a job do you feel is being done by your immediate supervisor/manager?	3.99 (1.11)	4.00 (1.04)
	EAI	Average of 18 items of satisfaction	3.74 (0.71)	3.78 (0.67)

Responses to question 12 are measured from 1 - very dissatisfied to 5 - very satisfied. Question 18 is measured from 1 - very poor to 5 - very good. For all other items, employee responses are measured on a scale from 1 - strongly disagree to 5 – strongly agree.

Table 2

Summary Statistics for 1994

Variable	Mean	Std. Dev.
Growth Rate of Footings	.058	.081
Total Population	40894	24853
Number of Households	17152	12375
Per Capita Income	32188	21420
Household Wealth	146268	74805
Owner-Occupied Households	6314	4420
Average Education	13.77	1.50
Unemployment Rate	.065	.032
Median Housing Value	292357	130188
Total Employees in Area	26762	38399
Total Sales in Area	3997	6570
Age of Branch Employees in 1994	36.36	4.98
Branch Employment in 1994	11.57	7.17

Table 3

ANOVA Estimates of Key Determinants of Employee Satisfaction for Branch Employees
Panel A: ANOVA with 106 Questions

	Degrees of Freedom	Total Sum of Squares	Mean Squares	F Value	*p*-value
Person Effects	4037	137942.7	34.2	53.5	.00
Branch Effects	192	21872.1	113.9	178.2	.00
Question Effects	105	62309.4	593.4	928.3	.00
Year Effects	1	146.0	146.0	228.4	.00
Branch * Question	20160	25457.6	1.3	2.0	.00
Question * Year	105	416.3	4.0	6.2	.00
Branch * Year	142	6977.2	49.1	76.9	.00
Model	24742	255121.3	10.3	16.1	0.00
Error	392311	250787.4	0.6		
Total	417053	505908.7			

Panel B: ANOVA with 18 Satisfaction Questions

	Degrees of Freedom	Total Sum of Squares	Mean Squares	F Value	*p*-value
Person Effects	4037	34699.4	8.6	18.16	.00
Branch Effects	192	5850.5	30.5	64.38	.00
Question Effects	17	7291.3	428.9	906.23	.00
Year Effects	1	16.1	16.1	33.95	.00
Branch * Question	3264	3520.2	1.1	2.28	.00
Question * Year	17	37.7	2.2	4.69	.00
Branch * Year	142	1758.2	12.4	26.16	.00
Model	7670	53173.3	6.9	14.7	0.00
Error	64010	30294.7	0.5		
Total	71680	83468.1			

Panel C: ANOVA with18 Satisfaction Questions (Adds Grade and Tenure)

	Degrees of Freedom	Total Sum of Squares	Mean Squares	F Value	*p*-value
Person Effects	3482	29580.6	8.5	19.2	.00
Branch Effects	192	5208.3	27.1	61.3	.00
Question Effects	17	6192.8	364.3	823.0	.00
Year Effects	1	15.9	15.9	35.9	.00
Branch * Question	3264	3253.5	1.0	2.3	.00
Question * Year	17	41.2	2.4	5.5	.00
Branch * Year	142	1644.7	11.6	26.2	.00
Grade	6	780.5	130.1	293.9	.00
Tenure with bank	4	507.9	127.0	286.8	.00
Model	7125	47225.5	6.6	15.0	.00
Error	55105	24391.2	0.4		
Total	62230	71616.7			

Table 4
The Effects of 1994 Branch Level Attitudes on Employee Attitudes of New and Longer Tenured Employees in 1996[1]

Dependent Variable: Individual EAI in 1996

Independent Variables	All (N=1517)	Tenure< 2 (N=242)	Tenure >= 2 (N=1275)
1994 Branch EAI	0.421*** (5.04)	0.647*** (4.47)	0.413*** (4.91)
Tenure less than 2 years	-0.450 (-.94)		
1994 Branch EAI * Tenure less than 2 years	0.151 (1.17)		

*   - Significant at 0.10 level.
**   - Significant at 0.05 level.
***   - Significant at 0.01 level.

[1]With branch controls of total population, number of households, number of owner-occupied households, per capita income, house wealth, average education, unemployment rate, median housing value, total employees in area, total sales in area, average age of branch employees, and number of employees in branch. Standard errors are adjusted for group bias.

Table 5
The Effects of Employee Attitudes about Their Work Environment on Intention to Quit

Dependent Variable: Individual's Intention to Quit in Next Twelve Months (1 to 5 ranking) [a]
(absolute t-statistics in parentheses)

Model Specification	1994 Data (1)	1996 Data (2)	Pooled 94&96 Data (3)
1. Individual's EAI only	-.541*** (17.5)	-.469*** (12.1)	-.515*** (21.4)
2. Individual's EAI Plus Controls For Characteristics of Branch Employees and Characteristics Of Community	-.537*** (17.1)	-.460*** (11.9)	-.507*** (20.8)
3. Individual's EAI Plus Vector of Branch Dummy Variables	-.547*** (15.9)	-.454*** (10.3)	-.506*** (19.5)
4. Average EAI in the Employee's Branch	-.318*** (4.83)	-.557*** (6.94)	-.410*** (8.08)
5(a). Individual's EAI	-.525*** (-14.95)	-.430*** (-8.43)	-.491*** (-15.83)
(b). Average EAI in the Employee's Branch	-.028 (0.34)	-.130 (-1.52)	.037 (-0.58)

a – The sample sizes are: n=2245 in column 1 for 1994; n= 1439 in column 2 for 1996; and n=3684 in column 3 for pooled sample of 1994 and 1996 data. No fixed effect model can be estimated with individual-level data since responses for individual employees cannot be matched across the two time periods. Standard errors are adjusted for group bias.

***Significant at .01 Level

Table 6
Cross Section Estimates of the Effects of Employee Attitudes on Turnover and Sales [a]

<u>A: Turnover Regressions</u>   <u>B: Sales Regressions</u>

	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
	Branch Intention to Quit 1994 (n=193)	Branch Intention to Quit 1996 (n=143)	Branch Intention toQuit 1996 (n=143)	Estimated Branch Turnover, 1994-96 (n=143)	Estimated Branch Turnover, 1994-96 (n=143)	1994 Ln Net Sales[c] (n=193)	1996 Ln Net Sales[c] (n=143)	1996 Ln Net Sales (n=143)
Branch EAI 1994	-.345*** (-4.25)	-----	-.238*** (-2.36)	-.085*** (-2.37)	-.026 (-0.71)	.039*** (2.50)	-----	.051** (1.94)
Branch EAI 1996	-----	-.454*** (-5.49)	-----	-----	-----	-----	.043* (1.88)	-----
Branch Controls[b]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes

 * - Significant at .10 level
 ** - Significant at .05 level
 *** - Significant at .01 level

 [a] Absolute t-statistics in parentheses. In columns (4) and (5), turnover is the calculated approximate 1994-96 branch turnover as described in the text.
 [b] In all regressions except column (4), the control variables are: zip code specific variables, total population, number of households, number of owner-occupied households, per capita income, average household wealth, average education, unemployment rate, median housing value, total employees in area, total sales in area, average age of branch employees and number of employees in branch.
 [c] See appendix Table A for specifications that use each of the 18 survey questions as the independent variable.

Table 7
The Effects of Prior Performance and Employee Attitudes on Branch Closing by 1996

Dependent Variable: Pr (Branch Closed in 1996)
Probit Model (N=193)[a]

	(1)	(2)	(3)
1994 Branch Performance	-.080*	-.054	-.034
	(-1.70)	(-1.08)	(-.70)
1994 EAI	------	------	-0.25***
			(-2.84)
Branch Controls [b]	No	Yes	Yes

*   - Significant at 0.10 level.
**   - Significant at 0.05 level.
***   - Significant at 0.01 level

a- marginal effects reported; absolute t-statistics in parentheses.
b- Control variables are 1994 zip code specific variables : Total population, number of households, number of owner-occupied households, per capita income, house wealth, average deduction, unemployment rate, median housing value, total employees in area and total sales in area, as well as average age of branch employees and number of employees in branch.

Table 8
Determinants of Growth in Net Sales
Dependent Variable: 1996 Log Net Sales Minus 1994 Log Net Sales
(n=143)

	(1)	(2)	(3a)	(3b)	(4a)	(4b)
Independent Variable [a]						
1. 1994-1996 Change in EAI	**-.**031 (-1.20)	-----	-----	-----	-----	-----
2. 1994 Branch EAI	-----	.058* (1.93)	-----	-----	-----	-----
3. 1994-1996 Turnover	-----	-----	-.125* (-1.81)	-----	-----	-----
4a. 1994-1996 Turnover Predicted by EAI	-----	-----	-----	-.683* (-1.94)	-----	-----
4b. "Residual" 1994-1996 Turnover	-----	-----	-----	-.103 (-1.47)	-----	-----
5. 1994 Intended Turnover	-----	-----	-----	-----	-.015 (-0.57)	-----
6a. 1994 Intended Turnover Predicted by EAI	-----	-----	-----	-----	-----	-.188* (-1.93)
6b. "Residual" 1994 Intended Turnover	-----	-----	-----	-----	-----	-.0014 (-0.05)

*   - Significant at 0.10 level.
**   - Significant at 0.05 level.
*** - Significant at 0.01 level

[a] Regressions in columns (1) and (2) include change in age of branch employees and change in branch employment. Regressions in column (3a) through (4b) include change in branch employees' age, but not change in branch employment since change in branch employment is used to define 1994-1996 turnover (see Data section). t-statistics are in parentheses.

The Effects of Employee Attitudes about Their Workplace on Productivity
Dep Variable: ln(Net Sales)[a,b]

		1994 Performance (n=193)	1996 Performance (n=143)	Pool 1994-1996 performance (n=336)
(A) Employee Performance and Rewards				
1.	**JUDGE PERFORMANCE**	0.037** (2.55)	0.033 (1.61)	0.034** (2.38)
2.	**SERVICE & PERFORMANCE**	0.008 (0.47)	0.025 (1.21)	0.012 (0.84)
3.	**REWARD PERFORMERS**	0.025** (2.43)	0.039** (2.34)	0.034*** (3.19)
4.	**REWARD CONSISTENT**	0.019* (1.67)	0.017 (0.94)	0.030*** (2.68)
5.	**RECOGNIZED FOR QUALITY**	0.021* (1.78)	0.019 (1.08)	0.022* (1.91)
(B) Teamwork				
6.	**TEAMWORK ENCOURAGED**	0.025** (2.32)	0.023 (1.31)	0.021* (1.91)
7.	**PEOPLE COOPERATE**	0.021** (2.06)	0.034** (2.12)	0.023** (2.19)
8.	**SHARE KNOWLEDGE**	0.024** (2.03)	0.037** (2.01)	0.024** (2.01)
9.	**IMPROVEMENT ENCOURAGED**	0.023 (1.71)	0.023 (1.09)	0.021 (1.52)
10.	**QUALITY COUNTS**	0.021 (1.52)	0.042* (1.72)	0.040*** (2.74)
(C) Training and Development				
11.	**INVESTS IN EMPLOYEES**	0.012 (0.99)	0.019 (1.05)	0.015 (1.25)
12.	**SATISFIED WITH TRAINING**	0.017 (1.40)	0.012 (0.69)	0.010 (0.79)
13.	**SUPERVISOR COACHES**	0.011 (1.04)	0.027 (1.64)	0.015 (1.46)
(D) Information and Communication				
14.	**JOB INFORMATION**	0.033** (2.13)	0.018 (0.75)	0.025 (1.56)
15.	**SUPERVISOR LISTENS**	0.017* (1.64)	0.030* (1.87)	0.028*** (2.66)
16.	**SUPERVISOR FEEDBACK**	0.017* (1.70)	0.018 (1.12)	0.018* (1.74)
(E) Supervisor Ratings				
17.	**SUPERVISOR RESPECTS**	0.014 (1.60)	0.017 (1.25)	0.015* (1.78)
18.	**GOOD SUPERVISION**	0.018** (1.94)	0.027* (1.76)	0.023** (2.33)
	Number of T-value<1	**2**	**3**	**2**
	Number of T-value 1-2	**10**	**12**	**8**
	Number of T-value 2-3	**6**	**3**	**7**
	Number of T-value >3	**0**	**0**	**1**

a. Absolute t-Statistics in parenthesis. * -Significant at 0.10 level;** - Significant at 0.05 level;*** - Significant at 0.01 level.b. The control variables in columns 1-3 are: zip code-specific variables, total population, number of households, number of owner-occupied households, per capita income, house wealth, average education, unemployment rate, median housing value, total employees in area, total sales in area, average age of branch employees and number of employees in branch.