

Employee Satisfaction and Firm Performance

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Abstract

Using a unique data set drawn from self administered employee surveys for 1495 US public corporations; I construct an Employee Satisfaction Index (ESI) and use it as a proxy for employee satisfaction. I find that ESI is higher for larger firms, high market to book ratio firms and firms that have low leverage. I also look at the effect of the changes in ESI on quarterly earnings announcements. I find that the changes in ESI are positively and significantly related to the future quarterly earnings surprises. Moreover, the effect is stronger for companies that have higher information asymmetries and are more human capital dependent. My results are robust to past returns, analyst information, alternative specifications of CAR windows and the information environment surrounding the earnings announcements. The results are consistent with the theories that state that employees are insiders in a company and have information relevant to the future corporate performance. Moreover, consistent with human-capital centric theories I find evidence that the change in employee satisfaction has a greater effect on the performance of human-capital dependent companies.

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Introduction

Do changes in employee satisfaction influence firm performance? Using a novel dataset based on self administered employee surveys, I find that the changes in employee satisfaction are positively and significantly related to the future quarterly earnings surprises. Moreover, the effect is stronger for companies that have higher information asymmetries and are more human capital dependent.

Most of the empirical work tying employee satisfaction to future performance of a company is limited to the Fortune magazine's list of the "100 Best Companies to Work for in America." The list is published every year in January and was first published in 1998. Filbeck and Preece (2003) analyze the effect of inclusion in the 1998 Fortune's Best Companies list on returns from 1987-1999. They find that companies in the Best Companies list do not outperform size- and industry-matched benchmarks.

However, recent studies have shown that employee satisfaction is positively related to the future performance of a company. Faleye and Trahan (2006) find that investors react positively to the announcement of inclusion of companies in the Best Companies list, and that list firms outperform a size-matched and industry-matched control group on productivity, profitability, and value creation. Edmans (2011), analyzes the relationship between employee satisfaction and long-run stock returns. He finds that portfolio of Best Companies earns a significant risk-adjusted alpha. He also finds that the companies in the Best Companies list had significantly more positive earnings surprises and announcement returns.

Above studies indicate that employee satisfaction has some information content, that is revealed to the market when the company is included in the Best Companies list. However, none of

these studies examine if the change in employee satisfaction has information that can influence the outcome of future information events such as mergers, dividend announcements, IPO success and earnings announcements. Primary reason for this deficiency is the absence of employee satisfaction data at a frequent level. Using a novel dataset based on self administered employee surveys, I overcome this limitation and study the information content of changes in employee satisfaction. Specifically, in this paper I analyze the relationship between changes in employee satisfaction and future earnings surprises.

Employees are insiders in a company who directly observe the effect of changes in products, services and policies taking place in the company. For example, employees who sell the new product or service know firsthand whether the product or service is successful. Working and being part of a successful launch boosts morale among the employees and gives them a sense of accomplishment. This may translate into a positive review of the company.

A priori it is not clear if the changes in employee satisfaction will have a positive or negative effect on future performance. If a company is making changes that lead to increase in employee satisfaction at the expense of shareholders, we can expect that the increase in employee satisfaction will lead to worst future performance. Abowd (1989) demonstrates that announcements of pay increases are associated with reduction in market value of a company. Gorton and Schmid (2004) find that greater employee involvement is associated with reduction in future profitability and valuation.

However, if a company makes investment in employees that motivate employees to perform better then we can expect that the increase in employee satisfaction will have a positive effect on future performance. McGregor (1960) argues that higher levels of employee satisfaction lead employees to identify with the company and its goals and thus induces effort. Akerlof and Yellen

(1986), (Akerlof, 1982) posit an efficiency wage theory, under which increased employee satisfaction can increase effort, because an employee does not want to get fired from a satisfying job. Alternatively, an employee reciprocates the “gift” of increased satisfaction with increased effort upon his part.

To test the above hypothesis, I use a dataset based on employee generated surveys for US public companies from January 2008 to May 2011. In each of the reviews, employees rate their company on seventeen variables such as career prospects, work-life balance and fairness and respect. Complete list of the variables is shown in appendix 1. Employees rate their employer on a scale of 1 to 5. 1 represents that an employee is highly dissatisfied while 5 represents she is highly satisfied. To determine the main sources of variation in the seventeen dimensional dataset, I run principal component analysis and find that one principal component explains almost 60% of the variation within the data. The first principal component is the weighted average of each of the variables, with weights being almost equally across all the variables. This component can be interpreted as the overall satisfaction of an employee with the company. Based on the first principal component, I construct an employee satisfaction index (ESI) by adding responses to each of the variables.

First, I check if the ESI is merely proxying for characteristics of a firm. I regress the three month average ESI index on the characteristics of a firm drawn from the quarterly announcements data from Compustat. I find that ESI tends to be higher for companies that have a high market to book ratio, are large and have low leverage. However, low R square of less than five percent indicates that most of the variation in ESI is not being explained by the firm characteristics.

To explore the information content of ESI, I look at information events, such as quarterly earnings announcements, and analyze if the past changes in ESI can predict quarterly earnings surprises. Earnings surprise is measured by the three-day or five-day cumulative abnormal return

around the earnings announcements. I find that for the overall sample changes in ESI weakly (significant at five-percent level) predicts future earnings surprises. Consistent with the information story, I find that the effect of ESI on future earnings surprises is stronger for firms where information asymmetries are higher. Results are also stronger when the quarters most affected by the 2008 financial crisis are excluded.

As a further support of the information hypothesis, I run the analysis for companies where human capital is deemed important. Employees of companies where human capital is relatively material will have greater influence, and their morale and satisfaction will have a greater impact on future performance. Moreover, the reviews by these talented employees will have a higher informational content. I find that firms where human capital is deemed to be important, the results are much stronger both in terms of significance and magnitude of the coefficients.

I also consider three alternative hypotheses that may explain the results. First, it is possible that the ESI is merely capturing characteristics of the firm such as size or market to book ratio. However, the results are robust to the inclusion of firm characteristics. Second, it is possible that ESI is merely reflecting the information contained in analyst reports. I control for changes in analyst forecast and information environment surrounding the earnings surprises and find that results are still significant. Third, it is possible that ESI is merely reflecting the broader investor satisfaction index (Dorn, Huberman, and Sengmueller (2008) and Barber, Odean, and Zhu (2009)). Results are robust to the inclusion of time fixed effects as well as past returns.

This paper is organized as follows: section 2 describes the data and salient issues related with the data used in the paper; section 3 presents the results and section 4 summarizes and concludes.

2. Data

2.1 Source of Data

Data for the project was provided by an online employee survey company. The company provides a forum where employees can rate the place where they work at. The company has been profiled by leading business magazines such as BusinessWeek and Forbes and is considered a leader among employee survey companies.

In present paper, I focus on the employee reviews of the companies. An employee can log onto the online forum and rate her employer. The survey company is completely independent of any employer or management and latter have no access to employee personal information or know whether a particular employee has reviewed the company or not. Review process is analogous to a customer buying a book on Amazon.com and reviewing it online on Amazon's website. The publisher of the book can read the customer review but cannot determine which customer wrote the review.

A typical review of an employer consists of a numerical review and a written review. An employee rates his employer based on seventeen dimensions such as work-life balance, fairness and respect within the company, and information and knowledge sharing. The complete list of seventeen questions appears in appendix 1. As can be seen from the appendix, there are primarily nine dimensions that are being covered by the seventeen survey questions. For example, following two questions are asking about employee morale -

Question 1. Company XYZ as a place you would recommend to others to work?

Question 2. Company XYZ as a place you are proud to work?

Employees rate their employer on a scale of 1 to 5. A rating of one implies the employee is very dissatisfied while a rating of five implies employee is very satisfied. Employees also write a paragraph or two about the company. In present paper, I restrict myself to the numerical reviews.

2.2 Data Description

Table 1 shows the snapshot of dataset that is used for the present paper. Each line represents a single review. Each review consists of the details about the company, date of the review and ratings entered by an employee for each of the seventeen variables. Employees rate the company on a specific dimension by assigning a numerical value from 1 to 5. A rating of 1 implies that an employee is very dissatisfied with that particular aspect of the company. A rating of 5 implies very satisfied, with 3 being neutral. In addition to rating a company, employees also enter their occupation and work location. Additionally, one can look at the number of people who found the review as helpful as well as see if an employee is a current or former employee.

2.3 Sample Description

Current sample is from January 2008 to May 2011. Jan 2008 is the first month the data was available. While May 2011 is the last month, the data was made available by the company for the present paper. While employees rate their company on a number scale as well as write a review of the company. I restrict myself to the numerical reviews. It is possible to glean additional information by doing keyword searches on the written part of the review. Reviews are of companies that are private or public, US based or Non-US based. I restrict my sample to the US public firms since it is

easy to find supplemental data from standard data sources such as CRSP and Compustat for these firms. This leaves me with a sample of 71,567 reviews.

Since I look at changes in the reviews prior to the earnings announcements, I drop all firms that have less than two reviews in the whole sample period from January 2008 to May 2011. Final sample consists of 1495 US public firms. Table 2 shows the distribution of reviews by SIC codes. Companies in the SIC code related to manufacturing constitute the largest fraction of the sample, while companies in the food industry constitute the smallest fraction.

As shown in Table 3a number of reviews per firm vary substantially. The median number of reviews per firm is 147 and standard deviation is 374. In general larger firms that have a larger number of employees tend to get reviewed more often than smaller firms. Table 3b shows the results of regression of the total number of reviews of a firm on firm characteristics for the first quarter of 2011. Clearly, size of a firm has a significant effect on the number of reviews a firm has. To explore the effect of industry on reviews, I add dummy variables for SIC codes. As shown in the Table 3 industry dummies do not have any significant coefficients that may explain the number of reviews a firm gets.

2.4 Variable Description

As shown in Table 4 employees rate their employers on 17 variables. A closer look at the questions shows that there are underlying nine dimensions in these 17 variables. The dimensions are:

- 1) Career opportunities
- 2) Compensation and benefits

- 3) Communication
- 4) Employee morale
- 5) Feedback and recognition
- 6) Senior management
- 7) Work life balance
- 8) Fairness and respect
- 9) Overall satisfaction with the company

For example, the following two questions are asking about recognition and feedback-

Question 1. Feedback you receive about your job performance?

Question 2. Recognition and praise you receive when you do a good job?

Since both questions are asking about the same underlying dimension (recognition and feedback), we can expect that the responses to the two questions will not be far apart. I utilize this aspect of redundancy to weed out reviews that are being entered randomly or nonsensically. For example, it will be odd if an employee rated the two feedback-related questions widely differently. If I find that an employee has rated a company vastly differently (defined as a difference of 3 or more) on two or more questions, I exclude that review. This leads to exclusion of 80 reviews in the final sample of US public firms.

In addition, employees also give an overall rating to the firm. To check for any systematic bias in the reviews, I look at the average value of reviews along each of the dimensions. Table 5 shows the average value and standard deviation of the ratings along the eight dimensions. While

some dimensions vary from the unbiased value of three, the relatively high standard deviation makes these variations insignificant. On average, the reviews do not seem to be biased negatively or positively.

2.5 Principal Component Analysis

To further reduce the number of dimensions and to look at the leading sources of variation in the data, I run principal component analysis (PCA) on the sample. Using PCA one can get a better understanding of the main sources of variation in a sample with many dimensions. PCA helps to analyze data that consists of various variables that are also inter-correlated. PCA helps to extract important dimensions from the data and expresses them in variables that are orthogonal to each other. These dimensions or variables are called principal components.

Table 6 shows the results of the PCA analysis. Three main components explain over seventy percent of the variation in the sample; with the first component explaining about 58% of the variation. First principal component weighs almost equally on each of the dimensions and can be interpreted as representing overall satisfaction of an employee with the company. Second principal component loads heavily on the compensation and benefits variables while the third principal component loads heavily on the work-life balance variables. Interpretation of other principal components is not as straight forward.

2.6 Employee Satisfaction Index

2.6.1 Construction

In present paper, I focus on the first principal component as my main explanatory variable. To simplify the construction of the variable, I sum the ratings along each of the dimensions and call this variable employee satisfaction index. Table 5 shows the summary statistics for this variable. The variable seems to be biased towards the positive side; however, high value of standard deviation makes the bias statistically insignificant.

2.6.2 Cross sectional Determinants of ESI

Since by construction the employee satisfaction index captures the overall satisfaction an employee feels for a company. It is worth looking at the firm characteristics that influence employee satisfaction. In Table 7, I empirically test if common firm characteristics affect the employee happiness. Dependent variable is log of the average of three-month employee satisfaction index measured after the quarterly earnings announcement date. Firm characteristic variables are measured at the quarterly level at the time of the earnings announcement. Following equation is evaluated in specification one in Table 7.

$$\begin{aligned} \text{LogESI}_{(i,t)} = & \alpha + \beta_1 \text{LogAssets}_{i,t-1} + \beta_2 \text{MkttoBook}_{i,t-1} + \beta_3 \text{LeverageMkt}_{i,t-1} \\ & + \beta_4 \text{ReturnOnAssets}_{i,t-1} + \beta_5 \text{SG\&A}_{i,t} + \varepsilon_{i,t-1} \end{aligned} \quad (EQ1)$$

Number of firms $i = 1, 2, \dots, N$

Number of quarterly earnings announcements $t = 1, 2, \dots, Nq$

In specification (2), industry dummies are added to the analysis. None of the industry dummies are significant and are not shown in the table. Specification (3) excludes all financial services firms.

Specification (4) uses two-stage Fama-Macbeth approach. In each of these specifications, employee satisfaction index is significantly higher for firms that are larger, have high value of market to book ratio and have lower leverage. Larger firms may provide more job security, recognition and opportunities to move around. Firms with high market to book ratio are most likely firms where human capital is more important and hence not only does the kind of work that employees do is more challenging but also the firms may be making extra efforts to keep the high-value employees. Higher leverage can be associated with financial distress and decrease in job security, and this may have an impact on employee satisfaction. To ensure that the high leverage financial firms are not having undue influence on the results, I rerun the analysis after excluding the firms in the SIC codes 6000-6999. The results are robust to the exclusion of these firms.

3 Empirical Results - Impact of employee satisfaction index on Earnings Surprises

3.1 Hypothesis Development

Earnings announcement periods provide the management of the company with an opportunity to aggregate the operating and financial results and share it with the public. Earnings surprise indicates that the company performed better or worse than the market expectations. Earnings surprise is the new information that while present in disaggregate form among the diverse employees and customers of the company, is revealed to the market only when the information has been aggregated by the management of the company and shared with the public on the day of the earnings announcement.

Changes in the ESI also mirror the above aggregation of information. A multitude of employees of the company observe the company's products and services first hand. Employees

being insider to the company observe the effect of change in policies, service or launch of new products firsthand. For example, employees who sell the new product or service know firsthand whether the product or service is experiencing success. Working and being part of a successful launch boosts morale of the employees and gives them a sense of accomplishment. This may translate into a positive review of the company they work for. If that is the case, we should expect that an uptick in the employee reviews of the company to have information content relevant to the future earnings surprises. The effect is also expected to be stronger for companies that have high information asymmetries.

I also consider alternative channels through which employee satisfaction index may affect future returns of the company. A priori it is not clear if the changes in employee satisfaction will have a positive or negative effect on future performance. If a company is making changes that lead to increase in employee satisfaction at the expense of shareholders, we can expect that the increase in employee satisfaction will lead to worst future performance.

However, a higher value of ESI can imply that a company takes good care of its employees. This in turn attracts better employees and increases the retention rate of star employees. Thus, a company develops a pool of valuable human capital that translates into better future performance. In such a case, we should expect that superior performance continues in future and is not just limited to the current earnings period.

Since human capital dependent firms tend to employ skilled and well-educated workers, we can expect that their reviews will be more informational. Moreover, since they have greater influence on the performance of the company changes in their satisfaction levels should have a greater impact on performance. Hence, we should expect that the effect of ESI on earnings will be greater for firms where human capital is more important.

3.2 Choice of Event - Quarterly Earnings Announcements

To test the above hypothesis, I consider events where information is dispensed to the public. The empirical question that is addressed using this method is to check whether the ESI can predict the outcome of the announcement. Possible candidates for such events are merger announcements, dividend changes announcements and earnings announcements. I chose earnings announcements as the event to study in this paper. There are various advantages to using earnings announcements. Mergers and dividend announcements suffer from potential selection bias issues since companies making these announcements are not randomly distributed. All public firms are obligated by law to announce earnings every quarter. Additionally, this also leads to more observations since I have four data points for each firm each year. Moreover, there is a rich information environment surrounding the earnings announcements such as analyst reports that lets me proxy for market expectations.

3.3 CAR as a measure of earnings surprises

Earnings surprise occurs when the actual numbers are better or worse than what the market was expecting. Market expectations can be proxied in various ways. I will consider the two most common methods. First method uses analyst forecasts as a proxy for market expectations. For example, median or mean earnings per share number is calculated using the I/B/E/S dataset prior to the earnings announcements. Actual EPS is subtracted from the median or mean forecasted number and divided by the standard deviation of the analysts forecasts to come up with Standardized Unexpected Earnings (SUE). Standard deviation of analyst forecasts for that quarter proxies for the information uncertainty surrounding the earnings announcements.

One can also measure an earnings surprise by looking at CAR centered on the earnings. There are various advantages to using CAR as a measure of earnings surprise. First, CAR does not suffer from the measurement error that SUE suffers from since for SUE one has to estimate the market's unobservable expectations of earnings. Moreover, during the earnings announcement management discloses other information apart from earnings. Management provides extensive disclosure through financial reports, footnotes, management discussion of the results, forecasts and other forward-looking information.

In addition, many firms engage in conference calls where top executives of the firm present the last quarter's results and answer questions from analysts and investors. It is very difficult to capture the full information content of earnings surprise by looking at SUE alone. This is consistent with the findings of Francis, Schipper and Vincent (2002) who find that earnings announcements increasingly serve as a conduit for information different from merely the earnings per share numbers. In present paper, I use CAR centered on earnings announcement date as a measure of earnings surprise.

3.3.1 Quarterly Earnings Announcements Date

Publicly owned companies are required by law to file quarterly earnings reports with the SEC. Many companies announce the earnings announcement dates in advance, but several companies miss these dates and report late. To determine the actual date of earnings announcements, I use Compustat. Compustat records the earnings date as the date when the earnings report appears in the Wall Street Journal or other newspapers. However, the coverage of the Wall Street Journal is biased towards well known large stocks, and it is possible that earnings

announcement dates of smaller stocks are not accurate. To be certain that I have the correct earnings announcement dates, I cross check the earnings dates for smaller stocks against the Factiva database. I check for news stories to confirm that the date in Compustat is the actual earnings announcement date. In case of conflict, I use the date provided by the news story in Factiva.

3.4 Results

3.4.1 Effect of changes in ESI on earnings surprises

CAR centered on earnings announcement date is regressed on Log ESI and control variables. General specification for the regression equation is -

$$CAR_{(i,t-2,t+2)} = \alpha_{1i} + \alpha_{2t} + \beta_1 \text{LogESI}_{i,t-90} + \beta_2 \text{LogAssets}_{i,t-1} + \beta_3 \text{MkttoBook}_{i,t-1} + \beta_4 \text{LeverageMkt}_{i,t-1} + \beta_5 \text{ReturnOnAssets}_{i,t} + \beta_6 \text{SG\&A}_{i,t} + \beta_7 \text{AnalystStddev}_{i,t} + \varepsilon_{i,t} \quad (EQ2)$$

Number of firms $i = 1, 2, \dots, N$

Number of quarterly earnings announcements $t = 1, 2, \dots, Nq$

CAR is five days cumulative abnormal return centered on the earnings announcement date. Abnormal return is defined as the return minus the value weighted market return. ESI is calculated by averaging the reviews in the 90-day window prior to the earnings announcement date and taking the log of the average. Since reviews are randomly distributed over time and are not periodic it is important to have a large enough window so that one can draw upon a substantial number of reviews before each earnings date. 90-day window is the maximum duration window that can be

selected between the quarterly earnings announcement dates. In the 90-day window, I exclude 10 days prior to the announcement date to take into account any leakage of earnings information. As a robustness test, I also exclude ten days after the previous earnings announcement date, to account for any immediate effect that previous earnings announcement may have on the ESI.

Lagged values of Size, Book to Market Ratio and Leverage variables are added to the equation to control for their affect on returns and to account for the fact that ESI is significantly related with these firm characteristics. Lagged value of profitability measure controls for the effect of firm profitability on employee satisfaction. Lagged value of SG&A expense divided by total assets proxies for effect of advertising and marketing on employees that may influence their reviews. Standard deviation of analyst's forecasts is used as a proxy for the uncertainty surrounding the earnings announcement period.

Specification in Table 8 shows the results of regressing five-day CAR (from day-2 to day +2, where day zero is the day of the earnings announcement) on ESI and control variables. Specification (1) and all specifications that appear after that use firm fixed effects. Standard errors clustered by firm are shown in parenthesis. As shown in Table 8 specification (1) a 10% increase in ESI index is related with a 14 basis points of excess return. Specification (2) includes quarterly time fixed effects to account for any observable or unobservable variables that are constant over time. Results hold both in magnitude and significance with this specification.

Specification (3) includes one month return 30 days prior to the earnings announcement and two-month return 60 days prior to the earnings announcement. These are included to control for momentum effect and to check if the results are being driven by past extreme returns. Results are robust to inclusion of these two variables.

3.4.2 Financial crisis of 2008

Sample period from January 2008 to May 2011 was marred by the financial crisis in late 2008. To mitigate the effect of the crisis on the results, I exclude last quarter of 2008 and first quarter of 2009. Table 8, specification (4) shows the results of this regression. Once the most troubled quarters are taken out the results are stronger in terms of both significance and magnitude. Specifically, the magnitude of the coefficient of ESI increases by almost 35% and is significant at 1% level in contrast to being significant at 5% level earlier. As a robustness check, I also confirm that I get similar results when I exclude the last quarter of 2008 and the first two quarters of 2009.

3.4.3 Results for companies where information asymmetries are higher

If indeed, ESI is capturing information pertaining to future performance of the company, the information should be more valuable for companies where information asymmetries are higher. In general, smaller companies have lower analyst following, less news coverage and are not major part of institutional investors' holdings. In specifications (5) and (6) in Table 8, I test if ESI performs better for smaller companies versus larger companies. The full sample is divided into three bins based on size. "Small Firms" constitute the firms in the smallest size bin while the "Large Firms" constitute the firms in the largest size bin. Specification one is run for the firms in the smallest size bin, and specification (2) is run for firms in the largest size bin. Coefficient of ESI for smaller firms is significant at 1% level and is greater than the coefficient of the overall sample by over 60%. ESI is more strongly associated with future surprises for firms where information asymmetries are higher.

3.4.4 Results for companies where human capital is important

In current paper, I propose that the changes in ESI predicts future earnings surprises since employees reviews reflect the condition of the company from point of view of an insider. Hence we should expect that in companies where human capital is important the results will be stronger. Specifically, employees of such companies will be a more influential factor in production, and hence their morale and satisfaction will have a greater impact on future performance. Moreover, the reviews by these talented employees will have a higher informational content.

In the existing literature, there are no good proxies for human capital in a firm. For my purpose, I only need to proxy for companies where human capital is more important. I use three proxies for human capital:

- a) Market to Book Ratio
- b) R&D expense scaled by lagged total assets
- c) SG&A expense scaled by lagged total assets

I argue that firms that have more intangible assets with respect to tangible assets are firms where human capital is potentially more important. As a simple measure, I use market to book ratio for the firms to proxy for the importance of human capital in a firm. Firms that have a higher market to book ratio tend to have a greater number of intangible assets per unit of tangible assets than firms with a lower market to book ratio. The full sample is divided into three bins based on the market to book (m/b) ratio. “High m/b” constitutes the firms in the largest market to book ratio bin while the “Low m/b” constitute the firms in the smallest market to book ratio bin. Specification (1) is run for the firms in the smallest market to book ratio bin and specification (2) is run for firms in the largest

market to book ratio bin. Coefficient of ESI for high market to book ratio firms is significant at 1% level while it is insignificant for the low market to book ratio firms. As shown in Table 9, I get similar results when I divide the sample based on R&D expense to assets and SG&A to sales. ESI is more strongly associated with future surprises for firms where R&D expense to assets and SG&A to assets are higher.

4. Conclusion

Using a novel dataset based on self-administered employee surveys, I construct an Employee Satisfaction Index (ESI) variable. I find that ESI is higher for larger firms, high market to book ratio firms and firms that have low leverage. I also look at the effect of the changes in ESI on future corporate events. In this paper, I focus exclusively on quarterly earnings announcements. I find that the changes in ESI are positively and significantly related to the future quarterly earnings surprises. Moreover, the effect is stronger for companies that have higher information asymmetries and are more human capital dependent. This is consistent with the theories that purport that employees are insiders in a company and have information relevant to the future corporate performance. Moreover, consistent with human-capital centric theories I find evidence that the change in employee satisfaction has a greater effect on the performance of human-capital dependent companies.

Appendix I: Survey Questions

In a typical review an employee rates his/her company for the following are survey questions:

Survey Questions for IBM

How satisfied are you with...

- Q1 Your opportunities for professional growth at IBM?
- Q2 Your opportunities for career advancement within IBM?
- Q3 Your compensation compared with similar jobs elsewhere?
- Q4 Your benefits package compared with similar employers?
- Q5 Information and knowledge sharing within IBM?
- Q6 Communications from management about important issues and changes?
- Q7 IBM as a place you would recommend to others to work?
- Q8 IBM as a place you are proud to work?
- Q9 Feedback you receive about your job performance?
- Q10 Recognition and praise you receive when you do a good job?
- Q11 Leadership abilities of Senior management?
- Q12 Competence of Senior management?
- Q13 Management support in permitting time off when you think it's necessary?
- Q14 Employer support in balancing between work life and personal life?
- Q15 Fairness in how promotions are given and people are treated?
- Q16 The level of respect shown by management toward employees?
- Q17 Overall, how satisfied are you with IBM as a place to work?

Employees rate each of the questions on the following scale:

- 1 - Very Dissatisfied 2 - Dissatisfied
- 3 - Neutral
- 4 - Satisfied 5 - Very Satisfied

Appendix II: Variable Definitions

Main accounting variables used in the paper are defined as follows:

Log Assets is natural log of total assets (Compustat item atq).

MktValue is market value of common equity and is defined as common shares outstanding times the quarter end price (Compustat cshoq*prccq).

ReturnonAssets is income before extraordinary items divided by lagged assets value (Compustat ibq/l.atq)

Market to Book Ratio is market to book ratio and is defined as the sum of total assets and market value of equity minus the book value of equity divided by total assets (Compustat (atq-seq+cshoq*prccq)/atq).

LeverageMkt is defined as long-term debt plus current liabilities divided by long-term debt plus current liabilities plus market value of common equity (Compustat (dlcq + dlttq) / (dlcq + dlttq + cshoq*prccq)).

SG&A over Sales is SG&A expense for the quarter divided by lagged value of sales (Compustat xsgaq/sale).

R&D over Assets is R&D expense for the quarter divided by lagged value of total assets (Compustat xrdq/l.atq).

Analyst Forecast Standard Deviation is the standard deviation of analyst's forecasts in the 90 day period prior to the earnings announcement.

Return3060 is the 30 day return from day -30 to day -60. Day 0 is the earnings announcement date

Return60120 is the 60 day return from day -60 to day -120. Day 0 is the earnings announcement date

Table 1. Employee Review Data

This table shows the snapshot of data that is used for the present paper. Each line represents a single review. Each review consists of the details about the company, date of the review and ratings entered by an employee for each of the seventeen variables. Employees rate the company on a particular dimension by assigning a numerical value from 1 to 5. Q1-Q17 correspond to questions detailed in appendix I.

EmployerName	City	Occupation	ReviewDate	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
Walgreens	Dallas	Pharmacy Manager	9/1/2009	5	5	5	5	5	4	5	4	5	3	4	4	5	2	5	5	4
Sikorsky	Fort Worth	Design Engineer	9/1/2009	1	1	4	4	2	2	3	3	4	3	2	2	4	2	2	2	3
Marsh USA	New York	Vice President	9/1/2009	3	3	2	4	3	4	3	3	2	1	3	3	5	5	2	2	2
Fastenal	Burlington	General Manager	9/1/2009	3	3	3	2	4	1	1	2	2	1	1	1	3	2	1	2	1
VMware	Palo Alto	Consulting Architect	9/1/2009	2	2	2	3	2	1	2	2	1	3	2	2	4	3	2	1	1
3M Precision Optics	Cincinnati	NULL	9/1/2009	4	3	5	3	5	4	2	3	4	4	4	4	5	2	3	4	3
ICF International	Fairfax	Associate	9/1/2009	2	2	2	3	3	3	2	3	3	4	3	3	3	2	2	3	2
Shell Oil	Houston	NULL	9/1/2009	4	4	4	5	3	3	3	3	3	3	2	3	4	3	2	3	3

Table 2. Distribution of Sample Firms

Following table lists the distribution of sample companies by SIC Codes. The sample period is from January 2008 to May 2011.

SIC Codes	Industry Discription	Number of Companies	Percent
0-1000	Food products	3	0.2%
1000-1999	Mining and construction	53	3.5%
2000-2999	Consumer products	200	13.4%
3000-3999	Manufacturing	348	23.3%
4000-4999	Utilities and transportation	141	9.4%
5000-5999	Wholesale, retail and some services	196	13.1%
6000-6999	Financial services	233	15.6%
7000-7999	Personal & business services	245	16.4%
8000-8999	Miscellaneous	76	5.1%
Total		1,495	100%

Table 3a. Number of Reviews per Firm I

This table shows the summary statistics for the number of reviews per firm for the sample 1495 US public firms. The sample period is from January 2008 to May 2011.

Percentiles	Number of Reviews
1%	2
5%	6
10%	12
25%	44
50%	147
75%	455
90%	820
95%	1,175
99%	1,566
Mean	309.21
Std. Dev.	373.60

Table 3b. Number of Reviews per Firm II

Following table shows the results of regression of total number of reviews per firm on firm characteristics for the first quarter of 2009. Industry dummies were used for each one digit SIC Code.

Number of Reviews by Firm	Coefficient	Standard Error
Food products	-34.43007	45.652
Mining and construction	-30.11084	44.554
Consumer products	14.34385	44.336
Manufacturing	15.65385	45.135
Utilities and transportation	51.95731	44.526
Wholesale, retail and some services	6.975378	44.882
Financial services	42.04352	44.527
Personal & business services	37.71163	45.299
Miscellaneous	-184.5965***	67.939
Log Assets	13.845***	1.958
Market to Book Ratio	0.964	2.198
Leverage (market)	-9.456	16.695
Return on Assets	2.386	122.119
SG&A over Assets	33.912***	12.391
Constant	-113.615**	46.664
Adjusted R-squared	0.3923	
Number of observations	1,265	

Table 4. Primary Dimensions of Survey Questions

Following table matches the survey questions with the primary underlying dimensions.

Question Number	Survey Questions	Classified in the present paper as:
	How satisfied are you with:	
1	Your opportunities for professional growth at IBM?	Career Opportunities 1
2	Your opportunities for career advancement within IBM?	Career Opportunities 2
3	Your compensation compared with similar jobs elsewhere?	Compensation and Benefits 1
4	Your benefits package compared with similar employers?	Compensation and Benefits 2
5	Information and knowledge sharing within IBM?	Knowledge Sharing 1
6	Communications from management about important issues and changes?	Knowledge Sharing 2
7	IBM as a place you would recommend to others to work?	Employee Morale 1
8	IBM as a place you are proud to work?	Employee Morale 2
9	Feedback you receive about your job performance?	Feedback and Review 1
10	Recognition and praise you receive when you do a good job?	Feedback and Review 2
11	Leadership abilities of Senior management?	Sr. Leadership 1
12	Competence of Senior management?	Sr. Leadership 2
13	Management support in permitting time off when you think it's necessary?	Work Life Balance 1
14	Employer support in balancing between work life and personal life?	Work Life Balance 2
15	Fairness in how promotions are given and people are treated?	Fairness and Respect 1
16	The level of respect shown by management toward employees?	Fairness and Respect 2
17	Overall, how satisfied are you with IBM as a place to work?	Overall

Table 5. Summary Statistics

This table shows the summary statistics for the primary variables that constitute the survey questions for the sample 1495 US public firms. The sample period is from January 2008 to May 2011. ESI is Employee Satisfaction Index and is sum of all the scores for each variable in the survey.

Variable	Observations	Mean	Std. Dev.	Min	Max
Overall	71,567	3.07	1.17	1	5
Work Life Balance	71,567	3.48	1.16	1	5
Career Opportunities	71,567	2.98	1.13	1	5
Compensation and Benefits	71,567	3.30	0.98	1	5
Knowledge Sharing	71,567	3.03	1.09	1	5
Employee Morale	71,567	3.13	1.22	1	5
Feedback and Review	71,567	3.11	1.14	1	5
Sr. Leadership	71,567	2.84	1.25	1	5
Fairness and Respect	71,567	2.85	1.16	1	5
ESI	71,567	52.55	15.67	17	85

Table 6. Principal Component Analysis

Following table shows the results of the Principal Component Analysis run on the whole sample of 71,567 reviews for 1495 US public corporations. Loadings of variables on each component are shown in the table. Three main components explain over seventy percent of the variation within the sample; with the first component explaining about 58% of the variation. First principal component weighs almost equally on each of the dimensions and can be interpreted as representing overall satisfaction of an employee with the company. Second principal component loads heavily on the compensation and benefits variables while the third principal component loads heavily on the work-life balance variables. Based on the first principal component Employee Satisfaction Index is sum of all the survey scores for each variable in the survey.

Variable	Component 1	Component 2	Component 3	Component 4	Component 5
Overall	0.2934	0.0374	-0.019	-0.0051	-0.1199
Career Opportunities 1	0.2491	0.2114	-0.1722	-0.39	-0.287
Career Opportunities 2	0.2442	0.216	-0.2025	-0.4339	-0.2815
Compensation and Benefits 1	0.1717	0.5478	0.258	-0.0305	0.1613
Compensation and Benefits 2	0.1642	0.5336	0.3493	0.2523	0.2109
Knowledge Sharing 1	0.2354	0.0694	-0.0938	0.295	0.1228
Knowledge Sharing 2	0.2468	-0.0953	-0.1569	0.3326	0.1085
Employee Morale 1	0.2797	0.0701	-0.0523	0.1017	-0.1594
Employee Morale 2	0.2642	0.0866	-0.0458	0.1245	-0.1337
Feedback and Review 1	0.232	-0.1573	-0.0512	-0.2831	0.6022
Feedback and Review 2	0.2448	-0.167	-0.0329	-0.2823	0.5001
Sr. Leadership 1	0.2644	-0.1353	-0.2267	0.2709	-0.0337
Sr. Leadership 2	0.2593	-0.1272	-0.2179	0.3046	-0.0767
Work Life Balance 1	0.1993	-0.2748	0.566	-0.0377	-0.1693
Work Life Balance 2	0.2084	-0.3106	0.5278	-0.0457	-0.1733
Fairness and Respect 1	0.2559	-0.0818	-0.0226	-0.2024	-0.0451
Fairness and Respect 2	0.2682	-0.1744	0.0118	0.0322	-0.0544
Proportion Of Variance	0.5754	0.0655	0.0626	0.0449	0.0401
Number of obs	71,567				

Table 7. Cross-Sectional Determinants of ESI

Following table shows the results of regression of Log ESI on firm characteristics. Dependent variable is log of the average of three-month employee satisfaction index (ESI) measured after the quarterly earnings announcement date. Firm characteristic variables are measured at the quarterly level at the time of the earnings announcement. Details of the accounting variables are shown in appendix II. Specification (1) is simple pooled regression. Specification (2) includes one digit SIC code dummies. Specification (3) is same as Specification (2) with firms in financial services industry excluded. Specification (4) is along the lines of Fama-Macbeth two stage procedure. Robust Standard errors are in parentheses. The sample period is from January 2008 to May 2011. ***, **, * denote 1%, 5% and 10% significance levels, respectively.

	Pooled Regression	With Industry Dummies	Excluding Financial Services	Two-stage Fama- Macbeth
Log ESI_t	(1)	(2)	(3)	(4)
Log Assetst _{t-1}	1.0921*** (0.1145)	0.9423*** (0.1196)	1.1157*** (0.1274)	1.2526*** (0.2131)
Market to Book Ratio _{t-1}	0.8482*** (0.2733)	0.8069*** (0.2691)	0.9320*** (0.2807)	1.2144*** (0.2030)
Leverage (market) _{t-1}	-3.8968*** (1.1472)	-3.679*** (1.1725)	-3.8141*** (1.2589)	-4.2474*** (1.1809)
Return on Assets _{t-1}	-9.1466 (7.3481)	-7.8971 (7.3098)	-8.9222 (7.4314)	8.0573 (10.5343)
SG&A over Sales _{t-1}	0.7664 (0.9424)	0.3738 (0.8952)	0.5477 (0.9208)	2.5635 (1.8232)
Constant	41.142*** (1.1369)	41.371*** (5.559)	40.875*** (1.2546)	39.238*** (2.3092)
Observations	6,586	6,586	6,083	7,752
R-squared	0.0275	0.03	0.0287	0.0422

Table 8. Returns Around the Earnings Announcements

Specifications 1, 2 & 3 show the results of quarterly regression of the five-day cumulative abnormal return, centered on the earnings announcement date, on the lagged log Employee Satisfaction Index (ESI). ESI is the average of three-month employee satisfaction index (ESI) measured 80(-10,-80) days prior to the quarterly earnings announcement date (day 0). Abnormal return is calculated by subtracting the value weighted market return from the stock return. Accounting variables are based on the previous quarter's numbers: Log Assets is natural log of total assets. MarketToBook ratio is defined as the sum of total assets and market value of equity minus the book value of equity divided by total assets. Leverage is defined as long-term debt plus current liabilities divided by long-term debt plus current liabilities plus market value of common equity. ReturnOnAssets is income before extraordinary items divided by lagged assets value. SG&ARatio is the SG&A expense divided by lagged value of sales. Return60120 is the two-month return in the period from (-60,-120). Return3060 is the one-month return in the period from (-30,-60). Analyst Forecast Standard Deviation is the standard deviation of analyst's forecasts in the 90 day period prior to the earnings announcement.

Specification (4) excludes two quarters (last quarter of 2008 and first quarter of 2009) to account for financial crisis. Specifications 5, 6 show the results of the regressions run on small and large firms separately. The sample is divided into three bins based on total assets. "Small Firms" constitute the firms in the smallest size bin while the "Large Firms" constitute the firms in the largest size bin. Standard errors in parentheses are White standard errors clustered by firm. The sample period is from January 2008 to May 2011. ***, **, * denote 1%, 5% and 10% significance levels, respectively.

Five Day CAR					Small Firms	Large Firms
	(1)	(2)	(3)	(4)	(5)	(6)
Log ESI_{t-1}	0.01369** (0.0067)	0.01378** (0.0067)	0.01446** (0.0067)	0.02026*** (0.0075)	0.02564** (0.0128)	0.002715 (0.0107)
Log Assets_{t-1}	-0.02761* (0.0143)	-0.03195* (0.0163)	-0.03339** (0.0165)	-0.02880 (0.0184)	-0.07200* (0.0431)	-0.05864** (0.0263)
Market to Book Ratio_{t-1}	-0.01257** (0.0053)	-0.01346** (0.0058)	-0.01625** (0.0064)	-0.02031*** (0.0077)	-0.02105 (0.0132)	-0.03546*** (0.0092)
SG&A over Sales_{t-1}	0.01559** (0.0071)	0.01483** (0.0066)	0.01444** (0.0064)	0.009005* (0.0050)	0.01977** (0.0096)	-0.01970 (0.0270)
Return on Assets_{t-1}	-0.1040 (0.1079)	-0.1134 (0.1057)	-0.1119 (0.1067)	-0.1703* (0.0921)	-0.05597 (0.1388)	0.1352 (0.1413)
Analyst Forecast Standard Deviation_{t-1}	-0.00001789 (0.0000)	-0.00002079* (0.0000)	-0.00001862 (0.0000)	0.000004367 (0.0000)	-0.0008758 (0.0057)	-0.00001913 (0.0000)
Return3060			-0.02516 (0.0160)	-0.005049 (0.0179)	-0.01918 (0.0299)	-0.007398 (0.0209)
Return60120			-0.02121** (0.0107)	-0.03745*** (0.0124)	-0.04613** (0.0219)	-0.02845* (0.0149)
Constant	0.1936 (0.1189)	0.2315* (0.1336)	0.2905** (0.1373)	0.1829 (0.1564)	0.4437* (0.2641)	0.6652** (0.2613)
Observations	4,861	4,861	4,861	3,892	1,472	1,773
R-squared	0.0089	0.0152	0.0183	0.0235	0.0414	0.0266
Number of Firms	1,103	1,103	1,103	1,084	454	333
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	No	Yes	Yes	Yes	Yes	Yes

Table 9. Human Capital Dependent Firms

Following table repeats the analysis of Table 8 by dividing the sample according to proxies for human capital. In each of the specifications, dependent variable is the five-day cumulative abnormal return, centered on the earnings announcement date. The sample is divided into three bins based on each proxy for human capital. “Low” constitutes the firms in the smallest value bin while the “High” constitute the firms in the largest value bin. Specifications 1, 2 show the results of the regressions run on Low and High Market to Book ratio firms separately. Specifications 3, 4 show the results of the regressions run on Low and High R&D Ratio (R&D expense for the quarter divided by lagged value of total assets) firms separately. Specifications 5, 6 show the results of the regressions run on Low and High SG&A Ratio (SG&A expense for the quarter divided by lagged value of total sales) firms separately. Standard errors in parentheses are White standard errors clustered by firm. The sample period is from January 2008 to May 2011. ***, **, * denote 1%, 5% and 10% significance levels, respectively.

	Five Day CAR		Five Day CAR		Five Day CAR	
	Low Mkt. to Book Ratio	High Mkt. to Book Ratio	Low R&D Ratio	High R&D Ratio	Low SG&A Ratio	High SG&A Ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Log ESI_{t-1}	-0.009638 (0.0161)	0.02486*** (0.0093)	0.01475 (0.0148)	0.03797** (0.0177)	0.01592 (0.0115)	0.02593* (0.0132)
Log Assets_{t-1}	-0.09487*** (0.0329)	-0.04552 (0.0297)	-0.03977 (0.0362)	-0.08609** (0.0359)	-0.06071** (0.0303)	-0.02045 (0.0247)
Market to Book Ratio_{t-1}	-0.1671*** (0.0523)	-0.01000* (0.0060)	-0.03032** (0.0124)	-0.005745 (0.0075)	-0.03613*** (0.0107)	-0.01405** (0.0063)
SG&A over Sales_{t-1}	-0.002942 (0.0386)	0.01395*** (0.0043)	0.4936** (0.1932)	0.01416** (0.0056)		
Return on Assets_{t-1}	-0.1925 (0.1721)	0.05215 (0.1205)	-0.07499 (0.1669)	-0.1463 (0.1323)	-0.5319** (0.2245)	-0.004899 (0.1746)
Analyst Forecast Standard Deviation_{t-1}	-0.000009510 (0.0000)	-0.000008949 (0.0000)	-0.0004158 (0.0005)	-0.00009795* (0.0001)	-0.000001034 (0.0000)	-0.0001101** (0.0001)
Return3060	-0.01575 (0.0294)	-0.04774* (0.0245)	-0.02374 (0.0316)	0.002202 (0.0448)	-0.02241 (0.0306)	-0.03851 (0.0316)
Return60120	-0.002937 (0.0199)	-0.01758 (0.0144)	-0.03416 (0.0233)	-0.06521*** (0.0238)	-0.01664 (0.0189)	-0.01621 (0.0195)
Constant	1.0665*** (0.2884)	0.3439 (0.2349)	0.2758 (0.2896)	0.5236* (0.2723)	0.5589** (0.2701)	0.1239 (0.1943)
Observations	1305	1919	1003	964	1577	1588
R-squared	0.0464	0.0238	0.0645	0.0592	0.0427	0.0312
Number of Firms	413	471	234	254	417	408
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

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