*Does the Stock Market Fully Value Intangibles?*
*Employee Satisfaction and Equity Prices*

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# Does the Stock Market Fully Value Intangibles? Employee Satisfaction and Equity Prices*

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**Abstract**

This paper analyzes the relationship between employee satisfaction and long-run stock performance. A portfolio of stocks selected by *Fortune* magazine as the "Best Companies to Work For in America" in January 1998 earned average annual returns of 14% by the end of 2005, over double the market return, and a monthly four-factor alpha of 0.64%. The portfolio also outpeformed industry- and characteristics-matched benchmarks. These findings have two main implications. First, they suggest that employee satisfaction improves corporate performance rather than representing inefficiently excessive non-pecuniary compensation. Second, they imply that the stock market does not fully value intangibles, even when they are made visible by a publicly available survey. This suggests that intangible investment generally may not be incorporated into short-term prices, providing support for managerial myopia theories.

KEYWORDS: Employee satisfaction, market efficiency, short-termism, managerial myopia, human capital
JEL CLASSIFICATION: G14, J28, M14

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# 1 Introduction

This paper analyzes the relationship between employee satisfaction and long-run stock price performance. A portfolio of firms selected by *Fortune* magazine as the "Best Companies to Work For in America" in January 1998 would have earned average annual returns of 14% per year by the end of 2005, over double the return on the CRSP value-weighted index. Controlling for risk using the Carhart (1997) four-factor model, this translates into a statistically significant monthly alpha of 64 basis points. These figures are similar when the portfolio is rebalanced each year to reflect annual updates of the *Fortune* study, and when controlling for outliers. Risk-adjusted returns continue to be significant when calculated over industry- and characteristics-matched benchmarks, and an employee satisfaction regressor has explanatory power even when controlling for other characteristics known to affect returns. The outperformance is not confined to the 1998-2005 period. The "Best Companies" list was originally published in a book by Levering, Moskowitz and Katz in 1984, and later updated in 1993, before being published by *Fortune* in 1998 and then updated annually. Starting the portfolio in 1984 also leads to significant excess returns over all benchmarks.

These findings contribute principally to two strands of research. The first is the increasing importance of human capital in the modern corporation. The second is the equity market's failure to fully incorporate the value of intangible assets, which underpins managerial myopia theories.

The traditional firm that pervaded throughout much of the 20th century was predominantly capital intensive, and many companies attained leadership positions through cost efficiency generated by scarce physical assets. Many influential theories of the firm were formulated on this paradigm, and concerned outside investors' control rights over these assets. Nowadays, increased access to financial capital means that key physical assets are far less scarce (Zingales (2000)). Coupled with the growing importance of product quality rather than cost in modern consumer markets, human capital is increasingly seen as the key to competitive success (Pfeffer (1996)).

However, a strategy of building competitive advantage through people presents its own difficulties. Unlike physical assets, human capital is inalienable and owned by the workers themselves, not managers or shareholders. An employee may be able to appropriate a large portion of her firm's investment in her human capital by leaving or threatening to leave. Many firms therefore attempt to "tie" workers to their firms through measures such as superior working conditions. However, it is not obvious that such programs are desirable. Similar to excessive wages, they may simply represent inefficiently high compensation, although in a non-pecuniary form. Far from benefiting shareholders, employee-friendly programs may result from the manager's pursuit of private benefits (Cronqvist et al. (2006)), entrenchment (Pagano and Volpin (2005)), or laxity and enjoyment of the quiet life (Bertrand and Mullainathan (2003)). Indeed, Abowd (1989) finds that announcements of pay increases reduce stock market valuations dollar-for-dollar. Gorton and Schmid (2004) show that greater employee involvement reduces return on assets and the price-book ratio. Diltz (1995) demonstrates no link between shareholder re-

turns and the Council on Economic Priorities employee relations variable, and Dhrymes (1998) finds the same result for KLD Research & Analytics' employee relations measure. Surowiecki (2007) notes how the "seven percent rule" became commonly known among managers in the 1990s: when a company announces major layoffs, its stock price typically jumps seven percent.

This paper constitutes the first study that documents positive long-term stock price consequences of employee-friendly programs. These findings rationalize companies' increasing emphasis on their human resources in recent years, by showing that such a focus improves fundamental corporate value, rather than representing unnecessary expenditure.

Even if CEOs are aware that human capital investment improves long-run value, they may still underinvest. This problem has been formalized by a number of managerial myopia models, such as Narayanan (1985), Stein (1988, 1989), and Edmans (2007a, 2007b). The fundamental issue is that such investment is intangible. Since its benefits are difficult to observe, they may not be impounded into the short-term stock price. On the other hand, its costs manifest in the form of lower short-term earnings, which are observable. The combination of invisible benefits and visible costs lead to the stock price declining overall. Fearing such a decline, an equity-aligned manager may inefficiently forgo investment opportunities in the first place. Porter (1992) warns that this is an issue of national importance, since the U.S.'s ability to compete successfully on world markets hinges critically on whether its capital allocation system can promote such intangible investment. This problem is also frequently voiced by managers themselves: Graham, Harvey and Rajgopal's (2005) survey finds that 78% of executives would sacrifice long-term value to meet earnings targets. Since a cause of myopia is the manager's stock price concerns, this problem has likely intensified in recent years owing to increases in equity-based compensation (Hall and Liebman (1998)) and the sensitivity of CEO turnover to the stock price (Kaplan and Minton (2006)).

The invisibility issue may be partially addressed by independent verification of the intangible assets. The goal of this study is to investigate whether intangibles are rapidly impounded into prices even when made publicly observable. If even independently certified intangibles are not incorporated by the stock market, this would imply even greater disincentives to intangible investment in general, the vast majority of which is not verifiable. This objective explains both my use of a publicly observable variable (*Fortune* inclusion) and my analysis of long-horizon returns. Finding positive event-study reactions to *Fortune* inclusion would not violate semi-strong market efficiency, nor would documenting superior returns to employee-friendly companies based on a proprietary measure. This explains why my central results focus on the 1998-2005 period, when the lists were widely publicized by *Fortune*. As a robustness check, I extend the sample back to 1984 to ensure that outperformance is not specific to the 8-year period used for the core results.

This study confirms the potential importance of managerial myopia by documenting long-run drift to *Fortune* inclusion. Even though the *Fortune* list makes the unobservable (at least partially) observable, the market does not react fully. The failure to reflect public information need not result from behavioral biases (e.g. non-Bayesian updating causing underreaction to information): the market may simply not have recognized the positive effects of employee

satisfaction on shareholder wealth. For brevity, I call the market's failure to incorporate this information "market inefficiency", even though it need not stem from miscalibration or irrationality.

A number of other papers find a positive relationship between economic variables and long-run stock performance. Gompers, Ishii and Metrick (2003) show that firms with high shareholder rights significantly outperform companies with low rights. Since their shareholder rights index is complex to construct and not based on readily available information, they state that their findings do not necessarily imply market inefficiency. Also related to governance, Yermack (2006) documents long-horizon underperformance of companies that disclose the use of CEO corporate jets. Hong and Kacperczyk (2006) discover that a portfolio of "sin" stocks, such as tobacco and gambling, significantly outperform comparable companies. Their explanation is that social norms may deter certain investors (such as pension plans) from investing in such stocks. This rationalization does not rely on behavioral biases, but does require limited arbitrage.

A plethora of studies document long-horizon drift to corporate events, nearly always in the same direction as the initial event-study reaction. These events include earnings announcements (Bernard and Thomas (1989)), dividend initiations and omissions (Michaely, Thaler and Womack (1995)), takeovers (Loughran and Vijh (1997)), initial public offerings (Speiss and Affleck-Graves (1995)) and stock buybacks (Ikenberry, Lakonishok and Vermaelen (1995)).

This paper is organized as follows. Section 2 is a brief review of the literature on employee satisfaction that motivates this study. Section 3 discusses the data and methodology, Section 4 presents the results, and Section 5 concludes.

# 2 Motivation

In the archetypal firm that pervaded after the Industrial Revolution, managers focused on production and cost efficiency. Employees were seen as merely a cost to be minimized, no different to other costs such as raw materials, rather than a source of positive value creation. Management practices therefore centered around extracting as much effort as possible from workers, while minimizing their pecuniary and non-pecuniary compensation (see, e.g., Taylor (1912)). Allocating resources to improve employee satisfaction was viewed as irrational as overpaying for any other input. The vast majority of workers performed unskilled tasks and were seen as expendable; employee retention was not a concern as departures were nonchalantly met by new recruitment. Where incentives were employed, monetary payments were the most effective inducements. Given relatively less affluent economic conditions, workers were primarily concerns with meeting their physical needs, which could be addressed with cash. Supporting this zero-sum philosophy, Abowd (1989) finds that unexpected increases in collectively bargained labor costs lead to a dollar-for-dollar decrease in equity values.

Management philosophies have dramatically changed over the past fifty years. The current competitive environment places a significantly greater focus on quality and innovation, rather than cost minimization. Since innovation cannot be achieved by instructing employees to fol-

low prescribed routines, firms are challenged to reap the "positive aspects of labor" (Friedman (1977)), such as creativity and initiative. The human relations movement (e.g. Maslow (1943), Hertzberg (1959), McGregor (1960)) rapidly grew in influence half-way through the 20th century. It recognizes employees as key organizational assets, rather than expendable commodities, and focuses on management strategies to develop and retain critical workers. Manager-worker relations are a positive-sum game: whereas traditional approaches seek to increase shareholders' slice of the organizational "pie" by minimizing workers' share, the new philosophy recognizes that effective use of human resources can grow the pie and increase the surplus available to all stakeholders.

While the importance of human capital has long been recognized in organization theory, it has only recently been incorporated into theories of the firm in economics and finance. Notable examples include Rajan and Zingales (1998, 2001) and Berk, Stanton and Zechner (2006). These papers focus on a fundamental problem with human assets: that they are free to leave the firm. This issue can be addressed by paying workers in excess of their market wage or granting them a pecuniary share of surplus. It is still not automatic that employee satisfaction has a role, since it appears an inefficient means of retaining workers compared to cash, just as CEO perquisites are frequently seen as inefficient compensation (e.g. Yermack (2006)) since the CEO could simply buy the perk with cash. However, the human relations movement stresses that money is a less powerful incentive: in the current economic environment, most workers' basic physical requirements are met and they are increasingly motivated by non-pecuniary needs. Unlike perks, pleasant working conditions cannot be bought with cash, and so it is efficient for the firm to provide them.

In addition to increasing retention of key human assets, another channel through which employee satisfaction can improve firm value is through increasing on-the-job happiness. This may induce employees to exert greater effort than "optimal" given the explicit and implicit incentives in his employment contract, i.e. satisfaction may instill the "work ethic" analyzed by Carlin and Gervais (2007). Moreover, there may be additional feedback effects on the effort of other employees if there are complementarities in production (Gervais and Goldstein (2007)).

Despite the intuitive logic of the human relations movement, there is little decisive evidence on the value of employee-centric strategies. This void provides the motivation for this paper. Improving employee satisfaction may have as ambiguous effects as paying higher wages. Peters and Waterman's (1982) influential study argued that "excellent companies" valued their workers and sought to achieve "productivity through people". However, a number of Peters and Waterman's companies subsequently underperformed in the late 1980s (e.g. Atari, IBM, Xerox). Moreover, there are doubts that even their initially superior prior performance was due to employees: they may instead have been a "catch-all" variable for performance differentials that could not be attributed to visible characteristics (Guest (1992)).[1] This paper provides evidence that employee satisfaction is significantly associated with superior stock returns.

[1] In a similar vein, many commentators lauded Japan's employee-centric practices (Ouchi (1982)) and predicted that they would lead to Japan overtaking the U.S. in international competition. However, the Japanese economy has underperformed in recent years. Even if such practices are valuable in Japan, they may not be appropriate in the U.S. corporation.

The closest paper to this study is a contemporaneous working paper by Faleye and Trahan (2006). Their main results show that Best Companies exhibit superior accounting performance than benchmark firms. However, the causality of this relationship is unclear: persistently better performing companies may choose to share some of their surplus with employees in the form of higher satisfaction. This paper focuses on the link with future long-term stock-price performance. It is a more direct measure of shareholder value than accounting performance and suffers from fewer reverse causality issues: a better performing company should not exhibit superior future returns as its quality should already be incorporated in the stock price, if intangibles are fully valued. In addition, one of the key issues with investing in intangible assets is that the benefits may not manifest in accounting performance measures.[2] They do consider the event-study reaction to the publication of the *Fortune* list; the focus of this study is long-horizon returns as it wishes to show that the market does not fully incorporate intangibles even after they are made public.[3]

# 3 Data and Summary Statistics

My main data source is *Fortune* magazine's list of the "100 Best Companies to Work for in America". (I call firms included in this list "Best Companies" for brevity). The list has been published in late January for every year since 1998. It is arguably the most respected and prestigious measure of a firm's working conditions, receiving significant attention from shareholders, company management, employees and human resource departments.

The list is compiled from two principal sources. Two-thirds of the total score comes from employee responses to a 57-question survey created by the Great Place to Work® Institute in San Francisco. This survey covers topics such as attitudes toward management, job satisfaction, fairness in the workplace, and camaraderie. The remaining one-third of the score comes from the Institute's own evaluation of factors such as a company's demographic makeup, pay and benefits programs, and a company's response to a series of open-ended questions about the culture of the organization. The companies are scored in four areas: credibility (communication to employees), respect (opportunities and benefits), fairness (compensation, diversity), and pride/camaraderie (teamwork, philanthropy, celebrations). After evaluations are completed, if significant negative news about a firm's employee relations comes to light, the Institute may exclude that company from the list. It is important to note that *Fortune* has no involvement in the company evaluation process, else it may have incentives to bias the list towards advertisers (Reuter and Zitzewitz

[2]Employee satisfaction may show up in stock price performance without affecting accounting performance, as its effects may manifest in non-financial news releases (e.g. the invention of a new product or the filing of a patent).

[3]Filbeck and Preece (2003) examine the relationship between inclusion in the 1998 *Fortune* list and stock returns from 1987-1999. This suffers from reverse causality issues. They do not find that Best Companies outperform size- and industry-matched benchmarks. At a conference, Kurtz and Luck (2002) presented results of the Best Companies' performance using the BARRA and Northfield attribution models. This paper uses a broader range of controls for risk and characteristics. Anginer, Fisher and Statman (2007) investigate the returns to another *Fortune* list, "America's Most Admired Companies," and find negative returns to index inclusion, potentially as it is an overvaluation proxy.

(2006)).

Table 1 details the number of companies in the *Fortune* list with stock returns available through CRSP in each year. The table also gives the number of firms added to and dropped from the list.

The publication date of the *Fortune* magazine issue containing the Best Companies list is typically in mid-to-late January. In addition, the issue reaches the newsstands one week before the publication date. Therefore, if the stock market recognizes the importance of employee satisfaction and fully incorporates it into prices, the contents of the list should be impounded into prices by at least the start of February. Therefore, February 1 is the date for formation and rebalancing of the portfolios.

The tests focus on long-horizon returns for two reasons. First, event study returns are unlikely to capture the full economic benefits of satisfied employees. Since the market does not fully respond to announcements of tangible financial earnings (Bernard and Thomas (1989)), they are unlikely to fully incorporate news about intangibles. This scenario would lead to results being understated. Conversely, considering only short-horizon returns might lead to overstated results. Even if employee satisfaction is irrelevant for performance, the market might erroneously believe that it is important (especially given companies' increasing focus on this variable) and irrationally react to *Fortune* list inclusion. Gilbert et al. (2006) document that the market reacts to a meaningless variable that investors erroneously pay attention to, and Huberman and Regev (2001) document a firm-level case of reaction to non-information.

The second reason is the purpose of this study is not only to examine the importance of employee satisfaction, but also to investigate whether the stock market fully incorporates intangibles. Event-study abnormal returns (with no drift) is fully consistent with semi-strong market efficiency, particularly since employee satisfaction is difficult to observe before the release of the *Fortune* list. Positive drift indicates that the market fails to fully value intangibles, even when such intangibles are made visible by a study as widely disseminated as the *Fortune* one. It would also imply a profitable and actionable trading strategy.

On February 1, 1998, I form an equally-weighted portfolio containing the 68 publicly traded "Best Companies" in that year, and measure the returns to this portfolio from February 1998 to January 1999. The portfolio is reformed on February 1, 1999 to contain the 67 firms included in the new *Fortune* list, and returns are calculated from February 1999 to January 2000. This process is repeated until December 2005 and I call this "Portfolio I".

If a "Best Company" only becomes publicly traded mid-way through the year (e.g. Goldman Sachs in 1999), its returns are included from the month in which it becomes public (i.e. as if the portfolio bought the company's shares in an IPO).[4] Portfolio I thus contains 69 companies from March 1998, since Steelcase becomes public in March. If a "Best Company" is acquired by another "Best Company", its delisting return is used in its final month and only the parent is included in the portfolio going forwards to avoid double counting. If a "Best Company" is acquired by a company not on the list, I remove it from the portfolio. (Results are unchanged

[4]The results are little changed if the company is included in the month after it becomes public, to ensure that the portfolio is not simply capturing any initial IPO underpricing.

if I also include the parent's returns going forward, under the rationale that at least part of the merged entity enjoys superior employee satisfaction.) Including the 1984 and 1993 lists (see Section **??**, 6 Best Companies only have ADRs traded in the U.S.. The results include these companies, since an investor constrained to hold U.S. shares would have been able to invest in such firms. The results are slightly stronger excluding these companies.

I run all my tests on three other portfolios. Portfolio II does not rebalance the portfolio each year: it simply calculates the returns to the original 68 Best Companies from February 1998 to December 2005. The motivation is that this represents the simplest trading strategy, as no rebalancing is required. An investor could have simply invested in the companies in the original survey, and taken no action over the next eight years. Portfolio III adds to the original portfolio of 68 any new companies which appear on subsequent lists, but does not drop any company that is taken off the list. The motivation is that some companies may have dropped out of the Top 100, but still exhibited superior employee satisfaction than the average firm (e.g. now be in the Top 150). Portfolio IV includes only companies dropped from the list. Specifically, it is created on February 1, 1999 and includes any companies that were in the 1998 list but not in the 1999 list. On February 1, 2000, any companies that were in the 1999 list but not in the 2000 list are added, and so on. If a firm is later added back to the list, it is removed from Portfolio IV. The purpose of this portfolio will be explained shortly.

Table 2 presents summary statistics on the original 68 "Best Companies". The mean market capitalization is $22 billion, with the median being a significantly lower $5 billion. One notable statistic is that 17 companies do not pay dividends. The 44 that do have an average payout rate of 1.7%, leading to an average yield of 1.2% across the sample.[5] This low payout rate is consistent with significant investment in human capital.

The most common industries are consumer goods (7 companies), financial services (6), software (5), pharmaceuticals (5), hardware (4), and electronic equipment (4). Human capital is plausibly an important input in all of these industries, with the link less obvious perhaps only for consumer goods. However, the average market-book ratio is a high 5 and the mean proportion of total assets accounted for by intangibles is only 5%. Together, these results suggest that these companies have little human capital on the balance sheet. This likely results from accounting standards hindering capitalization of this asset. Nearly all investment in human capital is expensed, which may make it difficult for the market to value such investment. Similarly, note that in any given year, approximately one-third of the Best Companies is private. This is consistent with the view that it is easier to develop human capital away from the constant scrutiny of the stock market.

[5]Since the dividend yield is calculated each July and held constant through the following June (see Section 4), companies need 1996 Compustat data to be included. This data is missing for 4 companies. In addition, three firms (Glaxo, Honda and Shell) are excluded from the table as they are ADRs: while the Compustat data is for the whole firm, the share data is only for ADRs.

# 4 Analysis and Results

## 4.1 Hypothesis

My principal hypothesis is that Portfolios I-III generate significant excess returns over relevant benchmarks, which are described in the next section. This is a joint test of two sub-hypotheses: employee satisfaction is positively associated with corporate performance, and the market fails to fully incorporate the value benefits of employee satisfaction even when the *Fortune* list is published. I also predict that Portfolio IV performs worse than Portfolios I-III, since the former contains companies outside the Top 100 for employee satisfaction. Whether its returns are also negative depends on market efficiency. If the market is fully efficient, the stock price would at all times incorporate the value of employee satisfaction. The removal of a company from the list likely signals that employee satisfaction is lower than previously believed. Therefore, under the assumption that employee satisfaction does improve corporate performance, Portfolio IV should earn negative returns.

However, if employee satisfaction is important but the market is inefficient, such a prediction is not generated. In the extreme, if the *Fortune* list is completely ignored, employee satisfaction only feeds through to returns when it manifests in future tangible news releases and earnings announcements. Hence the abnormal return of firm $i$ depends on its level of employee satisfaction compared to the average firm, rather than the market's previous assessment of firm $i$'s level of employee satisfaction. If firm $i$ is outside the Top 100, it may still exhibit above-average employee satisfaction (e.g. be in the Top 150) and thus generate superior abnormal returns.

In sum, my hypotheses are the following:

**H1: Portfolios I-III outperform their benchmarks.**

**H2: Portfolio IV underperforms Portfolios I-III, but does not underperform its benchmark.**

## 4.2 Results

Table 3 presents the annual returns to each portfolio and the market benchmark. Portfolio I generates an average annual return of 13.8% over the period, over double the market return of 5.6%. Portfolios II and III display similar outperformance, with Portfolio II generating a slightly higher return of 14.2%. While Portfolio I reflects the most current *Fortune* list, it suffered in 2001 (compared to Portfolio II) due to its hi-tech exposure. The outperformance is consistent, with all three portfolios beating the market in 7 of the 8 years. This includes 2001 and 2002 when the market declined – the portfolios continue to generate superior returns in weak market conditions. Hence the Best Companies' outperformance is not because the time period contains an outlier year. While Portfolio II shows that a simple buy-and-hold strategy generates superior returns when initiated in February 1998, unreported results also document

significant outperformance for a buy-and-hold strategy regardless of which year it is started. Portfolio IV earns an average annual return of 10.1%, 3-4 percentage points below the returns of the first three portfolios but still comfortably above the market.

Table 4 documents monthly returns in excess of a benchmark portfolio. Three benchmark portfolios are chosen. The first is the market portfolio, taken to be the CRSP value-weighted index. The second is an industry-matched portfolio using the 49-industry classification of Fama and French (1997). This is to ensure that outperformance is not simply because the Best Companies operated in industries that enjoyed strong performance. It also partially controls for risk, although additional controls are introduced shortly. The third is the characteristics-adjusted benchmark used by Daniel et al. (1997) and Wermers (2003)[6], which matches each stock to a portfolio of stocks with similar size, book-market ratio and momentum. This is to ensure that the outperformance is not simply because the Best Companies are exploiting the size, value and/or momentum anomalies. This adjustment also partially controls for risk.

The benchmark-adjusted returns reinforce the results in Table 3. Portfolios I–III outperform both all three benchmarks by 45-70 basis points, with benchmark adjustment only slightly reducing the returns. Portfolio IV also outperforms, but by a lower margin.[7]

An alternative explanation is that employee satisfaction is irrelevant for stock returns, and instead that outperformance is due to risk. I therefore run monthly regressions of portfolio returns on the four Carhart (1997) factors, as specified by equation (1) below:

$$R_{it} = \alpha + \beta_{MKT} MKT_t + \beta_{HML} HML_t + \beta_{SMB} SMB_t + \beta_{MOM} MOM_t + \varepsilon_{it} \qquad (1)$$

where:

$R_{it}$ is the return on Portfolio $i$ in month $t$, either in excess of the risk-free rate (taken from Ibbotson Associates), the return on the industry-matched portfolio, or the return on the characteristics-matched portfolio.

$\alpha$ is an intercept that captures the abnormal risk-adjusted return, and is the key variable of interest.

$MKT_t$ is the return on the CRSP value-weighted index in excess of the risk-free rate. This represents a market factor.

$HML_t$ is the return on a zero-investment portfolio which is long (short) high (low) book-market stocks. This represents a value factor.

$SMB_t$ is the return on a zero-investment portfolio which is long (short) small (large) stocks. This represents a size factor.

$MOM_t$ is the return on a zero-investment portfolio which is long (short) past winners (losers). This represents a momentum factor.

$\varepsilon_{it}$ is a generic error term which is uncorrelated with the independent variables.

All the regressors are taken from Ken French's website. There remains considerable academic

[6] The benchmarks are available via http://www.smith.umd.edu/faculty/rwermers/ftpsite/Dgtw/coverpage.htm

[7] The excess returns over the market for Portfolio IV are closer to the other three portfolios than the CAGR in Table 3, since the former reflects a simple average rather than compounding.

debate as to whether the four factors proxy for economic risk or mispricing. I do not take a stance on this issue as the alternative hypothesis can equivalently be stated in terms of omitted variables bias. Employee satisfaction may be itself irrelevant but correlated with firm attributes that are positively related to stock returns - either because of risk or mispricing. The alpha in equation (1) reflects the excess return compared to passive investment in a portfolio of the factors. It is conservative, but not necessarily superfluous, to subtract the returns on the Daniel et al. (1997) benchmarks before running the four-factor regression, as characteristics are different from covariances (Daniel and Titman (1997)). Standard errors are calculated using Newey-West (1987), which allows for $\varepsilon_{it}$ to be heteroskedastic and serially correlated; results are very similar if spherical standard errors are assumed.

Table 5 presents the results. Portfolios I-III all generate alphas of at least 0.4%, regardless of the benchmark, which are statistically significant at the 1% level. Portfolio IV earns positive alphas which is significant at the 10% level in one specification. Taken together with the findings that suggest employee satisfaction affects corporate performance, the positive alphas of Portfolio IV further imply market inefficiency. Note that, in many of the specifications, the coefficient on the momentum factor is significantly negative. This is inconsistent with the idea that good stock performance leads employees to respond positively to the survey, and that the Best Companies simply capture a momentum effect.

In untabulated results, the outperformance is even stronger when the portfolio contains only the companies in the Top 50 of the *Fortune* list each year. The annualized return to this portfolio is 17.2%, representing a four-factor alpha of 86 basis points. This is consistent with the classification of these companies as exhibiting even higher employee satisfaction. Also untabulated are the results to value-weighted portfolios, which are similar (for example, a value-weighted Portfolio I is significant at the 5% level in all specifications). The tabulated results focus on equal-weighted returns for brevity, as these are most commonly used in the literature on cross-sectional anomalies. The Daniel et al. (1997) benchmarks ensure that I am not simply rediscovering the size effect.

## 4.3 Further Robustness Tests

The above subsection showed that the Best Companies' outperformance was not due to covariance with the Carhart (1997) factors nor to selecting industries or characteristics associated with abnormal returns. This subsection conducts further robustness tests.

To test whether the results are driven by outliers, I winsorize the top 10% and bottom 10% of returns. The winsorization is conducted by portfolio and by month: for example, the returns of the top decile of firms in Portfolio I in June 2000 are replaced by the 90th percentile return among all firms in Portfolio I in June 2000. Table 6 illustrates the four-factor alphas for the winsorized portfolios. The alphas are significant for Portfolios I-III, regardless of the benchmark, and insignificant for Portfolio IV. Hence the results of Table 5 do not appear to be driven by outliers. (The results in other tables are also robust to winsorization).

Another concern is that the sample size is small, limited by the fact that the *Fortune*

lists only started in 1998. Typically, small samples bias the results against finding statistical significance, but this paper is able to document significant results despite such a small time series. A stronger issue is that the outperformance may result from the 1998-2005 period being anomalous. I therefore extend the sample by including the companies in the "100 Best Companies to Work For in America" book. This was published in March 1984 by Levering, Moskowitz and Katz, and updated in February 1993 by Levering and Moskowitz.[8] From 1998, *Fortune* magazine started to feature the lists which significantly enhanced their publicity. Since a core objective of this paper is to test whether intangibles are incorporated into prices even when made public by a widely available survey, the results thus far have focused on the 1998-2005 period during which *Fortune* published the lists. However, it is legitimate to extend the sample back to 1984 to verify the robustness of the second principal result of this paper, that employee satisfaction improves stock returns rather than reflecting inefficiently excessive non-pecuniary compensation.

Table 7 documents the results. The portfolios are formed analogously to the main paper: for example, Portfolio I is formed in April 1984, updated in March 1994 and thereafter every February from 1998-2005. The results confirm the Best Companies' outperformance over all benchmarks, with Portfolio I displaying statistical significance at the 1% level in all specifications. Compared to Table 5, the alpha drops slightly to around 30 basis points per month, or 4% per year, but remains economically significant. The average annualized return exceeds 16%, compared with the market's return of 12%, and the portfolio outperformed the market in 19 out of the 22 years from 1984-2005. While Portfolios III and IV also generate highly significant alphas, Portfolio II is surprisingly marginally insignificant (although a value-weighted Portfolio II is significant at the 5% level in all specifications). This is because the 1984 list contained firms such as Polaroid, Delta Airlines, Dana and Armstrong that did not feature in the 1998 list, and suffered very weak performance from 1998 onwards.[9] In sum, the extension of the time series confirms that an investor could have made significant risk-adjusted returns by investing in the Best Companies in the 1984 list and rebalancing his portfolio with each update.

A final alternative hypothesis is that the explanatory power of *Fortune* list inclusion stems only from its correlation with firm characteristics associated with superior returns other than the size, book-to-market or momentum variables already studied in Table 4. Calculating the returns on a benchmark portfolio with similar characteristics is only feasible when the number of characteristics is small, else it is difficult to form a benchmark. I therefore use a regression approach to control for a wider range of characteristics than the three studied by Daniel et. al (1997). Specifically, I run a Fama-MacBeth (1973) estimation of equation (2) below:

$$R_{it} = a_t + b_t X_{it} + c_t Z_{it} + \varepsilon_{it} \tag{2}$$

[8] These dates are for the hardback edition. The paperback editions were published approximately a year later, but it is the hardback publication date that is relevant as investors became aware of the contents of the list once it was released.

[9] The high alphas for Portfolio IV (relative to the other portfolios) are because it exists only from 1993. While Portfolios I-III outperformed all benchmarks from 1984-1992, the outperformance is even greater from 1993-2005, and thus the alphas are lowered by including 1984-1992. Focusing on the 1993-2005 period for all portfolios, the alphas for Portfolios I-III are higher than for Portfolio IV by a similar margin to in Table 5.

where:

$R_{it}$ is the return on stock $i$ in month $t$, either unadjusted or in excess of the return on the industry-matched portfolio.

$X_{it}$ is a dummy variable that equals 1 if firm $i$ was included in the most recent *Fortune* survey.

$Z_{it}$ is a vector of firm characteristics.

$\varepsilon_{it}$ is a generic error term which is uncorrelated with the independent variables.

The firm characteristics included in $Z_{it}$ are taken from Brennan, Chordia and Subrahmanyam (1998). These are as follows:

$SIZE$ is the natural logarithm of $i$'s market capitalization at the end of month $t-2$.

$BM$ is the natural logarithm of $i$'s book-to-market ratio. This variable is recalculated each July and held constant through the following June.

$YLD$ is the ratio of dividends in the previous fiscal year to market capitalization measured at calendar year-end. This variable is recalculated each July and held constant through the following June.

*RET2-3* is the natural logarithm of the cumulative return over months $t-3$ through $t-2$.

*RET4-6* is the natural logarithm of the cumulative return over months $t-6$ through $t-4$.

*RET7-12* is the natural logarithm of the cumulative return over months $t-12$ through $t-7$.

$DVOL$ is the natural logarithm of the dollar volume of trading in security $i$ in month $t-2$.

$PRC$ is the natural logarithm of $i$'s price at the end of month $t-2$.

The results are presented in Table 8 for the core period of 1998-2005 (the results are similar for the extended period). For both the unadjusted and industry-adjusted specifications, the Best Companies variable is statistically and economically significant. Consistent with the point estimates of previous tables, *Fortune* inclusion is associated with an abnormal return of over 50 basis points.[10] This suggests that the Best Companies' outperformance does not result from their correlation with the observable characteristics studied by Brennan et al. (1998).

However, we cannot rule out the explanation that *Fortune* inclusion is correlated with *unobservable* characteristics that significantly impact returns. For example, good management may lead to both satisfied employees and superior stock performance. While this does not change the results on market underreaction and the profitability of a trading strategy, it is distinct from the explanation that satisfied employees directly cause higher performance. Fama-MacBeth regressions can only control for observables. Panel datasets and firm fixed effects are frequently used to control for unobservables, but this technique is not possible in here given the short-time series.

A second caveat is that the analysis of future long-run returns does not entirely avoid the reverse causality issues suffered by using contemporaneous accounting variables. If employees have private information about the firm's future stock performance, workers with particularly optimistic forecasts may be more satisfied and answer the survey questions positively. As with

[10] *SIZE* and *BM* enter with the usual sign, but are statistically insignificant. This is because of the large number of regressors. In univariate regressions, both are highly statistically significant.

the previous explanation, this does not change the results on market underreaction and the profitability of a trading strategy. In addition, Benartzi (2001) and Bergman and Jenter (2007) find that workers do not have superior information about their employer's future stock returns, which casts doubt on this hypothesis.

# 5 Conclusion

This paper documents statistically and economically significant long-horizon returns to portfolios containing companies with high employee satisfaction, even when controlling for industries, factor risk or a broad set of observable characteristics. This result suggests that employee satisfaction is positively related to corporate performance, rather than representing inefficiently excessive non-pecuniary compensation. Moreover, the findings imply that the market fails to incorporate intangible assets fully into stock valuations - even if the existence of such assets is verified by a widely respected survey. This suggests that the market may have even greater difficulty in valuing other forms of intangible investment, and provides empirical support for theoretical models of managerial myopia.

**Table 1: Summary Statistics**

The second column details the number of Best Companies in the relevant year that had returns available on CRSP at any point during the year (from February to January). The third column gives the number of new companies added to the *Fortune* list in that year. The fourth column contains the number of companies on the previous year's *Fortune* list which no longer feature in the current year.

| Year | Best Companies | Added | Dropped |
|---|---|---|---|
| 1998 | 69 | | |
| 1999 | 67 | 26 | 28 |
| 2000 | 61 | 21 | 27 |
| 2001 | 56 | 16 | 21 |
| 2002 | 56 | 14 | 14 |
| 2003 | 62 | 14 | 8 |
| 2004 | 57 | 11 | 16 |
| 2005 | 58 | 11 | 10 |

**Table 2: Summary Characteristics**

This table illustrates summary statistics for the 68 companies in *Fortune* magazine's 1998 "100 Best Companies to Work For in America" list that were public on February 1, 1998. All data are of the end of January 1998 and taken from CRSP and Compustat. To calculate book equity for the Market/Book ratio, I start with stockholders' equity (Compustat item 216) if it is not missing. If it is missing, I use total common equity (item 60) plus preferred stock par value (item 130) if both of these are present. Otherwise, I use total assets (item 6) minus total liabilities (item 181), if both are present. To obtain book equity, I subtract from shareholders' equity the preferred stock value, where we use redemption value (item 56), liquidating value (item 10), or carrying value (item 130), in that order, as available. Finally, if not missing, I add in balance sheet deferred taxes (item 35) to this book-equity value, and subtract the FASB106 adjustment (item 330). The last three items are based on Compustat data for 1996. They are missing for 4 companies that were not traded in 1996. In addition, they are excluded for 3 companies for which only the ADRs are traded.

| | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Market Cap ($ bn) | 21.51 | 39.78 | 0.03 | 204.59 |
| Price ($) | 50.99 | 25.48 | 5.38 | 127.56 |
| Volume (m) | 34.27 | 71.67 | 0 | 406.38 |
| Dividend yield (%) | 1.22 | 1.20 | 0 | 5.97 |
| Market/book | 4.89 | 4.81 | -3.14 | 29.10 |
| Intangibles as a % of total assets (%) | 5.01 | 7.50 | 0 | 28.88 |

**Table 3: Annual Portfolio Returns**

This table documents the annual returns of the four portfolios and the CRSP value-weighted portfolio. The 1999-2005 figures are for January-December and the 1998 figures are for February-December (non-annualized). CAGR represents the Compound Annual Growth Rate (annualized) for February 1998-December 2005 for Portfolios I-III, and February 1999-December 2005 for Portfolio IV.

| | I | II | III | IV | CRSP VW |
|---|---|---|---|---|---|
| 1998 | 20.90% | 22.42% | 20.90% | | 21.74% |
| 1999 | 36.20% | 24.08% | 30.19% | 12.43% | 25.26% |
| 2000 | 9.66% | 17.95% | 10.27% | 9.91% | -11.04% |
| 2001 | -7.11% | 2.25% | -0.43% | 6.53% | -11.27% |
| 2002 | -13.53% | -10.68% | -17.26% | -20.60% | -20.84% |
| 2003 | 45.54% | 38.21% | 47.75% | 49.59% | 33.15% |
| 2004 | 22.72% | 18.64% | 18.62% | 15.59% | 13.00% |
| 2005 | 7.52% | 6.82% | 7.86% | 8.11% | 7.31% |
| *CAGR* | *13.81%* | *14.23%* | *13.39%* | *10.17%* | *5.59%* |

**Table 4: Monthly Portfolio Returns**

This table documents the average excess monthly returns to the four portfolios. The second row gives the excess returns over the CRSP value-weighted index. The third row gives the excess returns over a benchmark portfolio constructed using the 49 Fama-French (1997) industries corresponding to the companies in the portfolio. The fourth row gives the excess returns over a benchmark portfolio constructed using the Daniel et al. (1997) characteristics of size, book-to-market and momentum. The sample period is February 1998-December 2005.

| | I | II | III | IV |
|---|---|---|---|---|
| Excess return over market | 0.68% | 0.66% | 0.65% | 0.64% |
| Excess return over industry-matched portfolio | 0.58% | 0.46% | 0.52% | 0.45% |
| Excess return over characteristics-matched portfolio | 0.56% | 0.54% | 0.48% | 0.34% |
| Number of observations | 95 | 95 | 95 | 83 |

**Table 5: Risk-Adjusted Returns**

This table documents the results of monthly regressions of portfolio returns on the four Carhart (1997) factors, $MKT_t$, $HML_t$, $SMB_t$, $MOM_t$. The regression is specified in equation (1). The dependent variable is the portfolio return less either the risk-free rate, the industry-matched portfolio return, or the characteristics-matched portfolio return. The regressors are the returns to zero-investment portfolios designed to capture market, value, size, and momentum effects. The alpha is the excess risk-adjusted return. The sample period is February 1998-December 2005.

| | I | II | III | IV |
|---|---|---|---|---|
| **Panel A** (excess returns over risk-free rate) | | | | |
| $\alpha$ | 0.64 | 0.61 | 0.61 | 0.49 |
| | (3.72***) | (3.29***) | (3.77***) | (1.65) |
| $\beta_{MKT}$ | 1.12 | 0.98 | 1.11 | 1.06 |
| | (20.87***) | (21.73***) | (29.86***) | (17.63***) |
| $\beta_{HML}$ | 0.10 | 0.24 | 0.15 | 0.22 |
| | (1.69*) | (4.37***) | (3.18***) | (2.35**) |
| $\beta_{SMB}$ | 0.13 | 0.11 | 0.17 | 0.23 |
| | (1.82*) | (1.92*) | (3.86***) | (2.81***) |
| $\beta_{MOM}$ | -0.11 | -0.11 | -0.15 | -0.23 |
| | (2.99***) | (2.88***) | (5.10***) | (5.18***) |
| **Panel B** (excess returns over industry-matched portfolios) | | | | |
| $\alpha$ | 0.46 | 0.44 | 0.45 | 0.36 |
| | (3.32***) | (3.51***) | (3.83***) | (1.52) |
| $\beta_{MKT}$ | 0.12 | -0.06 | 0.07 | -0.01 |
| | (2.75***) | (1.63) | (2.22**) | (0.14) |
| $\beta_{HML}$ | 0.08 | 0.07 | 0.07 | 0.08 |
| | (1.58) | (1.60) | (2.22**) | (0.94) |
| $\beta_{SMB}$ | 0.14 | 0.09 | 0.16 | 0.18 |
| | (2.91***) | (2.05**) | (5.13***) | (2.34**) |
| $\beta_{MOM}$ | -0.26 | -0.04 | -0.06 | -0.13 |
| | (0.98) | (1.73*) | (3.14***) | (2.85***) |

**Table 5: Risk-Adjusted Returns (cont'd)**

| | I | II | III | IV |
|---|---|---|---|---|
| **Panel C** (excess returns over characteristics-matched portfolios) | | | | |
| $\alpha$ | 0.54 | 0.54 | 0.51 | 0.39 |
| | (3.84***) | (3.66***) | (3.90***) | (1.75*) |
| $\beta_{MKT}$ | 0.14 | 0.00 | 0.09 | 0.03 |
| | (3.38***) | (0.11) | (2.92***) | (0.49) |
| $\beta_{HML}$ | 0.82 | 0.09 | 0.02 | -0.04 |
| | (1.81*) | (1.51) | (0.43) | (0.48) |
| $\beta_{SMB}$ | -0.02 | 0.00 | 0.05 | 0.13 |
| | (0.43) | (0.06) | (1.68*) | (1.79*) |
| $\beta_{MOM}$ | -0.06 | -0.05 | -0.10 | -0.15 |
| | (2.40**) | (1.55) | (3.39***) | (3.46***) |
| Number of observations | 95 | 95 | 95 | 83 |

*: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level

**Table 6: Risk-Adjusted Returns of Winsorized Portfolios**

This table documents the results of monthly regressions of portfolio returns on the four Carhart (1997) factors, $MKT_t$, $HML_t$, $SMB_t$, $MOM_t$. The regression is specified in equation (1). For each portfolio and for each month, the returns of the constituent stocks are winsorized at the 10% and 90% levels. The dependent variable is the winsorized portfolio return less either the risk-free rate, the industry-matched portfolio return, or the characteristics-matched portfolio return. The regressors are the returns to zero-investment portfolios designed to capture market, value, size, and momentum effects. The alpha is the excess risk-adjusted return. The sample period is February 1998-December 2005.

| | I | II | III | IV |
|---|---|---|---|---|
| $\alpha$ over risk-free rate | 0.52 | 0.43 | 0.40 | 0.22 |
| | (2.97***) | (2.33**) | (2.67***) | (0.90) |
| $\alpha$ over industry | 0.34 | 0.26 | 0.25 | 0.10 |
| | (2.49**) | (2.05**) | (2.32**) | (0.49) |
| $\alpha$ over characteristics | 0.46 | 0.34 | 0.32 | 0.18 |
| | (3.25***) | (2.43**) | (2.72***) | (0.86) |
| Number of observations | 95 | 95 | 95 | 83 |

*: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level

**Table 7: Risk-Adjusted Returns from 1984**

This table documents the results of monthly regressions of portfolio returns on the four Carhart (1997) factors, $MKT_t$, $HML_t$, $SMB_t$, $MOM_t$. The regression is specified in equation (1). The dependent variable is the winsorized portfolio return less either the risk-free rate, the industry-matched portfolio return, or the characteristics-matched portfolio return. The regressors are the returns to zero-investment portfolios designed to capture market, value, size, and momentum effects. The alpha is the excess risk-adjusted return. The sample period is April 1984-December 2005.

| | I | II | III | IV |
|---|---|---|---|---|
| $\alpha$ over risk-free rate | 0.34 | 0.18 | 0.29 | 0.37 |
| | (3.45***) | (1.61) | (3.29***) | (2.75***) |
| $\alpha$ over industry | 0.22 | 0.13 | 0.20 | 0.27 |
| | (2.97***) | (1.33) | (3.06***) | (2.03**) |
| $\alpha$ over characteristics | 0.25 | 0.11 | 0.20 | 0.28 |
| | (2.93***) | (1.08) | (2.56***) | (2.21**) |
| Number of observations | 95 | 95 | 95 | 83 |

*: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level

**Table 8: Characteristics Regressions**

This table documents the results of monthly regressions of individual stock returns on a *Fortune* list inclusion dummy and the characteristics used in Brennan, Chordia and Subrahmanyam (1998). *SIZE* is the natural logarithm of the firm's market capitalization (in billions) in month $t-2$. *BM* is the natural logarithm of the firm's book-to-market ratio as of the calendar year-end before the most recent June. *YIELD* is the firm's dividend yield as of the calendar year-end before the most recent June. *RET2-3*, *RET4-6* and *RET7-12* are the natural logarithm of the compounded returns in, respectively, month $t-3$ to month $t-2$, month $t-6$ to month $t-4$, and month $t-12$ to month $t-7$. *DVOL* is the dollar trading volume (in millions) in month $t-2$. *PRC* is the price at the end of month $t-2$. The sample period is February 1998-December 2005.

| | Raw | Industry-Adjusted |
|---|---|---|
| Best Company | 0.60 | 0.57 |
| | (2.51**) | (2.71***) |
| *SIZE* | -0.00 | -0.03 |
| | (0.01) | (0.21) |
| *BM* | 0.11 | 0.10 |
| | (1.00) | (1.18) |
| *YIELD* | -0.02 | -0.01 |
| | (1.52) | (1.27) |
| *RET2-3* | 0.01 | 0.06 |
| | (1.67) | (0.02) |
| *RET4-6* | 0.01 | 0.05 |
| | (2.67***) | (0.03) |
| *RET7-12* | 0.01 | 0.03 |
| | (2.53***) | (0.02) |
| *DVOL* | 1.65 | 1.40 |
| | (0.10) | (0.03) |
| *PRC* | -0.56 | -0.45 |
| | (2.19**) | (1.81*) |

*: Significant at the 10% level; **: Significant at the 5% level; ***: Significant at the 1% level

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