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Employee Satisfaction as a Driver of Stock Market Success

A Study of U.S. Firms Using Glassdoor Ratings

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ABSTRACT

This study examines how employee satisfaction, as measured by Glassdoor rankings, affects stock market returns in the United States from 2009 to 2023. Previous papers, like Edmans (2011), show that there is a strong relationship between high employee satisfaction and positive abnormal stock returns. This paper aims to continue the study of this topic.

The results show that firms with high employee satisfaction show positive abnormal returns. However, the COVID-19 pandemic did not significantly change this relationship. The Fama-French model could not fully explain these returns, suggesting that employee satisfaction, being an intangible asset, could be a factor in explaining stock returns. Therefore, the findings suggest that investing in employee well-being can increase firm value.

Keywords: Employee satisfaction, Stock returns, Glassdoor, Fama-French model, COVID-19

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CHAPTER 1 Introduction

Understanding the drivers of stock market performance is a crucial topic in financial economics. This thesis examines how employee satisfaction, proxied by Glassdoor ranking, affects stock market returns in the United States from 2009 to 2023. The unit of analysis for employee satisfaction is based on Glassdoor's rankings, while stock performance will be measured through total stock returns in U.S. dollars. This study aims to contribute to the discussion on the financial significance of employee sentiment, proposing that investing in employee wellbeing could lead not only to attracting talent but also to enhancing investors' appeal by answering the following research question:

"*How does employee satisfaction measured by Glassdoor ratings affect future stock returns in the United States between 2009 and 2023*?".

Employee satisfaction can be defined as whether employees are happy and fulfilling their desires and includes factors such as work-life balance, compensation, management support and career development opportunities (Sageer, Rafat & Agarwal, 2012).

In this study, employee satisfaction is quantified using Glassdoor ratings. Glassdoor is a website in which current or former employees review companies and their work-life balance anonymously. Since 2008 Glassdoor has become one of the largest and most trusted job review online platforms. Employees assess companies differently, such as salaries, career opportunities, and work-life balance. Glassdoor publishes annually in its "Best Places to Work" ranking, which is based on the ratings of firms in different categories. This rating considers the feedback provided by staff last year and reflects a shared employee opinion on their employer's position. Different from traditional surveys or datasets, Glassdoor's constant flow of employee feedback across a wide range of sectors and regions presents a more dynamic interpretation of worker satisfaction.

Employee satisfaction is increasingly recognised as a critical intangible asset. Satisfied employees are more productive, engaged and committed to their jobs, exhibiting higher levels of motivation and efficiency, therefore reducing turnover ratios (Deshpande, Arekar, & Sharma, 2012). Edmans (2011) demonstrated that firms listed in the "100 Best Companies to Work For in America" experienced abnormal stock returns. Similarly, Kessler et al. (2020) examined the link between job satisfaction and firm performance, finding that job satisfaction predicts positive changes in financial indices, such as return on assets. These studies indicate that higher levels of employee satisfaction can improve financial performance.

Stock returns represent the financial gains or losses experienced by investors in the stock market. They are quantified as the percentage change in stock prices over a specific period. Moreover, capital gains can be defined as the absolute increase in the stock price value plus dividends, which are the earnings distributed to shareholders. The combination of these two factors leads to the total stock return after having accounted for stock splits. Total stock return is a crucial indicator of a company's financial health and performance. It reflects investors' confidence and is driven by economic performance, market conditions, and future expectations. However, there are different issues that could influence a stock return. For instance, Goncharov et al. (2006) find that firms with solid corporate compliance experience better stock performances. This paper will allow other researchers to have a deeper understanding of whether the field of employee satisfaction is a potential driver of stock returns.

To assess the research questions, three different portfolios are constructed based on the Glassdoor annual rankings, and regression analysis is tested to guarantee that market factors cannot explain the returns of these portfolios.

I expect to find similar results to the one from Edmans (2011), which shows a robust relationship between employee satisfaction and significant abnormal stock market returns. My study differs from Edmans' article as my sample data set is from Glassdoor website while he uses the "100 Best Companies to Work For in America" and his sample goes from 1984 to 2009 while mine goes from 2009 until 2023. Analysing the results will allow other researchers to understand whether the previously tested link between employee satisfaction and stock market returns also applies to a more dynamic dataset database. Furthermore, by analysing different portfolios, this thesis will offer valuable insights into how investment strategies can be refined to gain abnormal returns when investing in companies which value employee well-being. Moreover, it will also be possible to depict if this relationship changes during periods of uncertainty as this sample includes the COVID-19 pandemic, which is different from previous literature. My results show that companies with high levels of employee satisfaction show positive abnormal returns. The Fama-French model could not fully explain these abnormal returns, suggesting that employee satisfaction, being an intangible asset, could be a factor in explaining stock returns.

While this paper will not provide a final answer to this debate, the findings will likely stimulate further investigation. They could be applied to other regions and datasets that contain more real-time data on employee satisfaction measurement. I start my paper by outlining the literature on this topic and then explaining the sample and methodology used. Afterwards, I present the results and discuss them in the last two chapters.

CHAPTER 2 Literature Review and Hypotheses

In financial economics, employee satisfaction significantly influences organisational performance. This literature review explores the complex relationship between employee satisfaction and stock market returns by analysing relevant theories, empirical studies, and literature.

2.1 Employee Satisfaction and Financial Performance

This section covers the impacts of employee satisfaction on different financial performance metrics beyond stock performance. It includes studies on how employee satisfaction affects financial indicators like return on assets (ROA), return on equity (ROE), profitability, and other metrics.

Kessler et al. (2020) examined the "happy productive worker hypothesis", which suggests job satisfaction can improve firm performance. However, these effects are indirect and not immediate. Using latent growth modelling, their study found that job satisfaction predicts a positive linear change in return on assets (ROA) and return on equity (ROE) over four years when controlling for firm size. This delayed effect indicated that the relationship between job satisfaction and firm performance may take time to manifest rather than showing immediate results.

Gursoy and Chi (2009) examined the impact of employee satisfaction on financial performance, specifically in the hospitality industry. Their finding is that while employee satisfaction does not have a direct effect on economic performance, there is a positive impact on customer satisfaction, hence, affecting economic performance. This finding aligns with the service-profit chain framework from Heskett et al. (1994), which states that satisfied employees lead to customer satisfaction and, consequently, to better financial results.

Moreover, Lin et al. (2022) extended the literature by emphasising the long-term benefits of employee satisfaction on firm value. They reinforced the importance of considering employee well-being as a strategic asset since companies with higher satisfaction levels are more likely to achieve long-term profitability.

Furthermore, Gonzalez et al. (2015) continued to explore the relationship between employee satisfaction and firm financial performance. Their findings show that overall satisfaction, together with satisfaction with senior leadership, compensation, and work-life balance, significantly impacts firm performance. The study highlights the complexity of job satisfaction and its different components, which have different impacts on organisational results. Their results indicate that in explaining the firm's performance, distinct aspects of employee satisfaction do not play an equal role in assessing employee attitudes.

In addition, Lindsey (2023) contributes to this topic by researching the role of ESG investing through the lens of employee satisfaction and its financial implications. Lindsey uses a broad dataset that includes different ESG metrics, analysing how employee satisfaction interacts with other ESG factors. This study shows that companies with higher ESG ratings, including employee satisfaction metrics, show more robust financial performance. Like the findings of Edmans (2011) and Boustanifar et al. (2022), Lindsey shows a positive correlation between employee satisfaction and stock returns. Moreover, Lindsey's work is distinct from Kessler et al. (2020), as her paper states that the result of a firm with a high level of employee satisfaction might be more immediate.

Finally, Hung et al. (2015) investigated the role of corporate culture in family firms and its implications for financial metrics, using Glassdoor ratings to measure employee satisfaction. It was found that the employee satisfaction rating in Glassdoor can predict subsequent firm performance measured by Tobin's q and return on assets (ROA). When comparing the findings with those of Kessler et al. (2020), Hung et al. found a more immediate relationship between employee satisfaction and ROA rather than a delayed one.

2.2 Employee Satisfaction and Stock Performance

This section examines the relationship between employee satisfaction and stock market performance, providing empirical evidence and theoretical insights.

Edmans (2011) studied the link between employee satisfaction and stock market performance. In contrast with Lindsey (2023), Edman's dataset is restricted only to the "100 Best Companies to Work For" list. He created a value-weighted portfolio from this list to assess stock returns from 1984 to 2009. His study showed a robust relationship between employee satisfaction and long-term stock, evidenced by an annual abnormal stock return of 3.5%. Furthermore, Edmans showed that the Fama-French three-factor model could not explain the returns. This significant finding suggests that employee satisfaction is an intangible asset that can drive superior stock market returns. Thus, firms that invest in employee well-being may benefit through improved market performance.

Expanding on Edmans' article, Boustanifar and Kang (2022) extended Edman's research by including more recent data. Their study covered the period from 1984 to 2020 and added factor models, such as the Fama-French six-factor model, to control for factors like profitability. Their result shows that 22% of the "100 Best Companies" portfolio's alpha could be attributed to exposures to these factors. Nevertheless, it was found that the equal-weighted portfolio's monthly alpha ranged between 17 and 23 basis points, with the alphas being statistically significant for all factor models. In short, Edmans (2011)

and Boustanifar et al. (2022) emphasise that traditional asset pricing models, such as Fama-French, cannot fully explain the benefits of employee satisfaction.

Additionally, González and Gidumal (2015) provide new evidence on the relationship between employee satisfaction and firm economic performance, measured through stock returns and other financial metrics. Different from Edmans (2011) and Boustanifar et al. (2022), they used a large sample of 475 firms, collecting data from Glassdoor, therefore, being able to focus on different dimensions of job satisfaction, such as compensation, work-life balance, satisfaction with senior leadership and overall satisfaction. Their study covers a period from 2008 to 2014, providing a comprehensive view of the impact of employee satisfaction over time. Like Edmans (2011) and Boustanifar et al. (2022), this study argues that higher levels of employee satisfaction can improve stock performance. Specifically, they found that a one-unit increase in the overall satisfaction rating on Glassdoor is associated with a 1.7% increase in annual stock returns. Additionally, satisfaction with senior leadership and compensation can be considered as the strongest predictors of stock performance.

2.3 Hypotheses

Based on the Literature Review, we want to test whether firms with high Glassdoor ratings exhibit abnormal positive stock returns. Therefore, my first hypothesis is that:

H1: Firms with high employee satisfaction, as measured by Glassdoor ratings, exhibit abnormal positive stock returns after controlling for market conditions.

This hypothesis is based on Edmans (2011) and Kessler et al. (2020), who find that employee satisfaction can predict positive changes in financial indicators. Thus, this hypothesis states that employee well-being is an intangible asset that can drive superior stock market performance, even after considering market conditions.

The second hypothesis is based on Edmans (2011), who shows that traditional asset pricing models do not fully explain the benefits of employee satisfaction. By extending the CAPM model to include size and value factors, the second hypothesis depicts if the three-factor Fama-French model can explain the observed abnormal return or if employee satisfaction provides additional explanatory power. Hence, my second hypothesis is that:

H2: The three-factor Fama-French model cannot fully explain the positive relationship between employee satisfaction and abnormal stock returns.

My third hypothesis bases on the lack of literature that examines this relationship after and during the COVID-19 pandemic. The pandemic has significantly changed workplace dynamics as many companies had to adopt home-office schemes for at least one year. Until the year 2023, many companies still did not return to a full in-person work system. The hypothesis supports the idea that managers were encouraged to support even more the positive well-being of their workers (Wilson, 2023). Therefore, companies with higher levels of employee satisfaction may have provided their employees with better conditions to work even during uncertain times, leading to stronger stock performance. Thus, my third hypothesis is that:

H3: The positive relationship between employee satisfaction and abnormal stock returns is stronger during and after the COVID-19 pandemic.

Each of the three hypotheses aims to test different aspects of the link between employee satisfaction and stock market performance, providing a comprehensive analysis of this important relationship.

CHAPTER 3 Data & Methodology

3.1 Sample Description

This paper uses two main data sources to study the relationship between employee satisfaction and stock returns. The data source used to measure employee satisfaction is the Glassdoor website, and the Center for Research in Security Prices (CRSP) is the main source used to collect information on the firm's financial performance. This study examines only firms listed on the United States Stock Exchange that are part of Glassdoor's annual ranking. Glassdoor is an online platform where employees can anonymously review their employers in different categories related to work satisfaction. The ranking is published every year around the last quarter of the year.

To collect data, I undertook the following steps: first, I accessed the Glassdoor ranking for each year and visited each firm's website to determine if the firm was publicly traded. I documented all the companies listed in the ranking for each year in an Excel file, along with their public status and respective tickers. Afterwards, I obtained the monthly returns adjusted for dividend distribution and stock splits for each company from CRSP and added this information to the same Excel file. I then matched the firms from both databases using their tickers. The data on Fama-French factors was obtained from the Dartmouth database using a monthly timeframe.

The number of observations varies yearly, reflecting changes in the annual rankings and the firms' public trading status. Table 1 summarises the number of firms each year with stock returns available on CRSP for the entire fiscal year. The number of public companies varies yearly, going from the lowest value of 20 in 2015 to the highest value of 57 in 2022, yielding a yearly average of 34.5 companies per year. The strong increase in public firms in Glassdoor's ranking from 2018 is because Glassdoor increased the number of firms in the ranking from 50 to 100. Therefore, 2018 shows that only four firms were dropped from the ranking, and thirty were added.

3.2 Portfolio Construction

I construct three different portfolios to analyse the impact of employee satisfaction on stock returns. Each portfolio differs in its weight assignment. Each portfolio rebalances annually on the first trading day of the year. Since data on stock returns was collected monthly, the time horizon for the test of the three portfolios is also monthly.

The first is an equal-weighted (EW) portfolio, giving each firm from the ranking the same investment weight (1), where N is the number of public firms in Glassdoor ranking:

$$w_i = \frac{1}{N} \quad (1)$$

The second is a value-weighted portfolio. This portfolio assigns weights proportionally to the Market Cap of each firm that is in the ranking (2), where is the Market Cap for each firm:

$$w_i = \frac{Mkt\ Cap_i}{\sum_{i=1}^{N} Mkt\ Cap_i} \quad (2)$$

The third portfolio allocates weights according to ranking, with top-ranked firms receiving higher weights than the low-ranked firms (3), where R_i represents the rank of firm *i*, with 1 being the highest rank:

$$w_i = \frac{\frac{1}{R_i}}{\sum_{j=1}^{N} \frac{1}{R_j}} \quad (3)$$

3.2 Variables

3.2.1 Dependent Variables

For this research, the dependent variable is the excess return of each portfolio outlined in section 3.1. This variable represents the performance of each portfolio constructed based on the firm's Glassdoor ratings. Portfolio excess returns are calculated as the weighted monthly average returns of the stocks within each portfolio minus the risk-free rate. The data for these returns is obtained from the CRSP database.

3.2.2 Factors and Independent Variables

This research used three factors: *MKT* (Market Risk Premium), *SMB* (Size Factor), *HML* (Value Factor), and one dummy independent variable: *COVID*.

The three factors come from the Fama-French Three Factor Model. Market Risk Premium represents the excess return of the market portfolio minus the risk-free rate, which indicates what is the overall market risk. Size Factor measures the excess return of small-cap stocks over large-cap stocks, capturing the size effect where smaller companies usually outperform the larger ones. Value Factor represents the excess return of value stocks (high book-to-market ratio) compared to growth stocks (low book-to-market ratio), capturing the fact that value stocks tend to outperform growth stocks. The monthly data for these three variables come from the Dartmouth database. Kenneth French keeps this database, a trusted source for Fama-French factors, as it is maintained by one of the model's creators.

The independent dummy variable COVID will depict whether the relationship between employee satisfaction and stock returns changed during and after the COVID-19 Pandemic. This variable will take the value 1 if the period was during or after the COVID-19 pandemic (from April 2020 onwards).

3.3 Portfolio Returns

As described in section 3.1, I construct three different portfolios before analysing the impact of employee satisfaction on stock returns. Table 2 outlines the descriptive statistics on the monthly return of each portfolio between 2009 and 2023. The Ranking-Weighted portfolio shows the highest average monthly return (1.9%), Value-Weighted (1.7%) has the second highest, and the one with the lowest average return is the Equal-Weighted (1.6%). However, the Equal-Weighted portfolio has the highest median monthly return (2%), although having the lowest average return. This can be explained by Figure 1, which shows that most returns are clustered around a positive value, but there are a few months with large negative returns.

Furthermore, the ranking-weighted portfolio has the highest standard deviation of 6.5%, which indicates that this portfolio brings more risk with it. This portfolio has the lowest minimum monthly return of -19.3% and the highest monthly return of 25% among all portfolios, indicating a wider range of returns and higher risk, as shown in Figure 2. Nevertheless, the Value-Weighted portfolio has the lowest standard deviation of 5.2%, indicating that it is the least volatile portfolio with more stable returns, as shown in the histogram in Figure 3.

In short, over the sample period, the Ranking-weighted portfolio shows the highest risk with the most extreme returns, the Value-weighted portfolio offers the least volatility and more stable returns, and the Equal-weighted portfolio presents moderate risk with occasional significant deviations.

3.4 Regression Analysis

Different regression analyses are conducted to test the three hypotheses mentioned above and determine whether they should be rejected. The results of the three regressions will be extensively discussed in the results section.

3.4.1 Employee Satisfaction and Positive Stock Returns

The first hypothesis states that firms with high employee satisfaction, as measured by Glassdoor ratings, exhibit abnormal positive stock returns after controlling for market conditions. Therefore, I use the CAPM model to calculate the abnormal returns for each portfolio. The CAPM model is:

$$R_{it} - R_{ft} = \alpha_i + \beta_i MKT_i + \varepsilon_{it} \quad (4)$$

where R_{it} is the return on portfolio I at time t, R_{ft} is the risk-free rate at time t, and R_{mt} is the return on the market portfolio at time t. Furthermore, the term MKT_i represents the market risk premium, i.e., the excess market return. The regression above is run for each portfolio, and a significant positive alpha indicates an abnormal positive return. Thus, the null hypothesis is that $\alpha_i = 0$.

3.4.2 Employee Satisfaction and the Limits of the Fama-French Model

The second hypothesis states that the three-factor Fama-French model cannot fully explain the positive relationship between employee satisfaction and abnormal stock returns. Therefore, the regression below extends to the CAPM by adding two additional factors, namely *SMB* (Size Factor) and *HML* (Value Factor):

$$R_{it} = \alpha_i + \beta_{MKT} MKT_t + \beta_{HML} HML_t + \beta_{SMB} SMB_t + \varepsilon_{it} \quad (5)$$

I run the regression above for each portfolio to estimate the new α_i. The null hypothesis remains the same as in *H1:* $\alpha_i = 0$. The alphas from the CAPM model will be compared with those from the Fama-French model. If the alphas remain significantly positive after including the Fama-French factors, this supports the second hypothesis, indicating that the three-factor model cannot fully explain the positive relationship.

3.4.3 Employee Satisfaction's Impact on Stock Returns During COVID-19

Lastly, the third hypothesis states that the positive relationship between employee satisfaction and abnormal stock returns is stronger during and after the COVID-19 pandemic. Therefore, the regression is the same as from equation 5, but an extra independent dummy variable will be added:

$$R_{it} = \alpha_i + \alpha_i Covid_t + \beta_{MKT} MKT_t + \beta_{HML} HML_t + \beta_{SMB} SMB_t + \varepsilon_{it} \quad (6)$$

This relation will be tested so that if the coefficient of the dummy variable is positive and significant, it can be assumed that the relationship between employee satisfaction and abnormal stock return is stronger during and after the COVID-19 pandemic.

3.5 Robustness Checks

It is crucial to ensure the results are valid and effective for all the hypotheses before drawing concrete conclusions about the relationship between employee satisfaction and abnormal stock returns.

Like Edmans (2011), I winsorise the portfolio returns to test whether the extreme values (outliers) influence the results. This is an important step as it will be clear whether the outliers drive the abnormal returns. I will winsorise at the 5th and 95th percentile and then rerun the regressions to see whether the alphas changed drastically from unwinsorised to winsorised. If the results do not change drastically, it can be concluded that the observed abnormal returns are consistent and reliable.

For the third hypothesis, I will test if the fact that the start of the COVID-19 pandemic being in April 2020 changes the result. Hence, I will test the third hypothesis with different starting dates for the COVID period, namely January 2020 (when the first cases were reported globally), February (when the virus started to spread internationally), and March (when the World Health Organization (WHO) declared COVID-19 a pandemic). Thus, if the results remain consistent across different start dates, the observed relationship is not sensitive to the specific timing of the start of the COVID-19 pandemic.

CHAPTER 4: Results

This section analyses and discusses the results for each hypothesis and the robustness of each result.

4.1 Employee Satisfaction and Positive Stock Returns

As discussed in section 3.4, the Capital Asset Pricing Model (CAPM) answers the first hypothesis, which states that firms with high employee satisfaction exhibit abnormal positive stock returns after controlling for market conditions. Table 3 shows the regression results for the three constructed portfolios. The key statistics are the constant term (α), the market beta (βMKT), and the R-squared (R^2).

As seen in Table 3, the three portfolios present an abnormally significant (in the 1% significance level) positive return after controlling for market returns. The Ranking-weighted portfolio has the highest abnormal return of 0.68% per month, indicating it outperforms the market, followed by the Value-Weighted Portfolio with an abnormal return of 0.64%. After controlling for market return, the Equal-Weighted has the lowest return of 0.39% per month. Moreover, both Equal-weighted and Value-weighted portfolios show a high R-squared, indicating that the model explains 86% and 82% of the variability in portfolio returns, respectively. The Ranking-Weighted portfolio has lower R-squares than the other two, indicating that the model explains 65% of the variability in portfolio returns. Furthermore, the market beta coefficient (*MKT)* is higher than 1 for the three portfolios. This indicates that while firms with high employee satisfaction offer higher returns, these returns also have higher risk compared to the market.

The average monthly abnormal return for the Ranking-Weighted portfolio is 0.68%, annualising this figure, we obtain an approximate abnormal return of 8.5% per year. This high return illustrated the economic benefit of investing in firms with high employee satisfaction. For investors, this shows as a considerable increase in portfolio returns, which indicates the importance of employee satisfaction as a driver of stock performance.

In short, the regression results support the first hypothesis that firms with high employee satisfaction exhibit abnormal positive stock returns after controlling for market conditions. The significant positive alphas in the three portfolios show the positive impact of investing in companies with high levels of employee satisfaction. This aligns with Edmans (2011) and Kessler et al. (2020), who identified a direct positive relationship between employee satisfaction and abnormal stock returns.

4.2 Employee Satisfaction and the Limits of the Fama-French Model

As mentioned in section 3.4, the second hypothesis will be tested by adding Size Factor (SMB) and Value Factor (HML) to the CAPM model. Table 4 depicts the critical statistics for the regression results

for this hypothesis. As seen in Table 4, the constant terms α remain positive and statistically significant at the 5% significance level for the three portfolios. This suggests that the abnormal positive returns observed in the first hypothesis continue even after considering size and value factors. The R-squared values remain higher than 65% for the three portfolios, indicating that the model still explains a considerable portion of the return variability.

Moreover, with the two additional factors, it is possible to gain further insights related to the behaviour of each portfolio. The Value-Factor (HML), which is the excess return of value stocks versus growth stocks, is negative and significant at the 5% significance level for the three portfolios. This suggests that the three portfolios invest more in growth than value stocks. Therefore, the portfolios affect the risk characteristic as growth stocks are usually more volatile with higher potential for future positive earnings growth when compared to value stocks. Furthermore, the Small Minus Big factor (SMB), which is the excess of small-cap companies over big-cap companies, is positive and significant at the 5% significance level for the Ranking-Weighted and Equal-Weighted portfolio returns. This suggests that these two portfolios tend to prefer small-cap over big-cap firms, which can contribute to the portfolio's abnormal positive return. Nevertheless, the SMB factor is negative and significant at the 1% level for the Value-weighted portfolio, suggesting that larger firms contribute more to this portfolio's returns. This is a consequence of the fact that this portfolio allocates the weight for each company based on its Market Capitalization.

The economic significance of this finding is shown by the persistent abnormal returns even after accounting for the Fama-French factors. For instance, the Value-Weighted portfolio shows an alpha of 0.57% per month, which represents around 6.8% per year. This reinforces that traditional asset pricing models do not consider employee satisfaction as a factor for stock returns. Therefore, this provides insights to investors who are willing to optimise their investment returns.

In short, the Fama-French three-factor model cannot fully explain the positive relationship between employee satisfaction and abnormal stock returns, supporting the second hypothesis. This aligns with Edmans (2011), who also found favourable constant terms (α) across all his portfolios, indicating that employee satisfaction is a significant determinant of stock returns, supporting the idea that it is an intangible asset.

4.4 Winsorized Portfolio

As discussed in section 3.5, it is crucial to winsorise the portfolio to remove the possible effects of outliers. As seen in Table 5, after winsorising the returns at a 5% level, the alpha for all portfolios remains positive and significant at a 1% level. The constant term increases significantly for the three portfolios. The Equal-Weighted constant term increases by 0.69% while the Value-Weighted and Ranking weighted by 0.08% and 0.17%, respectively.

Furthermore, for the Equal-Weighted portfolio, the SMB and HML factors are not significant at the 10% significance level, while the MKT factor increases by 0.8. The MKT factor decreases for the Value-Weighted and Ranking-Weighted portfolios by 0.1 and 0.2, respectively. This indicates that, after winsorising, these two portfolios are less volatile than the overall market.

In short, these results suggest that the extreme values drive the returns of the portfolios, especially the Equal-Weighted one, which shows a drastic increase in the constant term. This finding aligns with Edmans (2011), who found that the alphas are considerably higher after winsorising the portfolios.

4.4 Employee Satisfaction's Impact on Stock Returns During COVID-19

As discussed in section 3.4, the third hypothesis would be tested by adding a dummy variable to the regression from the Fama-French Factor Model. This variable will take the value one if it is during or after the COVID-19 pandemic (from April 2020 onwards) and zero otherwise. Table 5 shows the regression results for the three portfolios.

As seen in Table 6, the summary variable *COVID* is positive for the Value- and Ranking-weighted portfolios and negative for the Equal-weighted portfolio. However, the *COVID* coefficient is not significant for any of the three portfolios not even at the 10% significance level. Therefore, there is no significant change in abnormal returns during and after the COVID-19 pandemic for firms with high employee satisfaction. Thus, the evidence is not in line with the third hypothesis which states that the relationship between employee satisfaction and abnormal stock return is stronger during and after the COVID-19 pandemic, hence, indicating that the pandemic did not significantly change this association.

As discussed in section 3.5, to ensure the robustness of this finding, additional analyses were conducted by changing the start date of the COVID-19 period to January, February, and March 2020. Table 7 shows that the *COVID* variable remains insignificant for all three portfolios for three different months. Hence, this robustness test confirms that the relationship between employee satisfaction and abnormal stock returns is not sensitive to the specific timing of the start of the COVID-19 pandemic.

CHAPTER 5: Conclusion and Discussion

The central research question for this paper was the following:

"*How does employee satisfaction measured by Glassdoor ratings affect future stock returns in the United States between 2010 and 2023*?".

To answer the above research question, three hypotheses were formulated to support the analysis, namely:

1. *Firms with high employee satisfaction exhibit abnormal positive stock returns after controlling for market conditions.*
2. *The positive relationship between employee satisfaction and abnormal stock returns cannot be fully explained by the three-factor Fama-French model.*
3. *The positive relationship between employee satisfaction and abnormal stock returns is stronger during and after the COVID-19 pandemic.*

5.1 Findings

The results from the CAPM regression discussed in section 4.2 show that constructing a portfolio that invests in firms with high employee satisfaction exhibits positive abnormal returns. The alphas for all three portfolios were significantly positive, which supports the hypothesis that employee satisfaction yields higher stock returns even after controlling for market conditions. This aligns with Edmans' (2011) findings, reaffirming that employee satisfaction is an intangible asset that can drive stock returns. Economically, these positive abnormal returns can be considered a significant advantage for investors. An annualised abnormal return ranging from 6.8% to 8.5% suggests that investors can improve the performance of their investments by incorporating employee satisfaction metrics into their investment decisions.

For the second hypothesis, after adding the Size (SMB) and Value (HML) factors into the regression model of the first hypothesis, I found that the positive relationship between employee satisfaction and abnormal stock returns continues. The alphas remained positive and significant for the three different portfolios. This indicates that the Fama-French three-factor model cannot fully explain the returns. The Value factor was negative for all portfolios, indicating a preference for growth stocks. Moreover, the size factor was positive for the equal-weighted and ranking-weighted portfolios, and negative for the value-weighted portfolio, as expected. These results align with Edmans (2011), thus further supporting the relationship between employee satisfaction and stock return. The winsorised showed that extreme values drive the set relationship. This aligns with Edmans (2011), who observed a considerable increase in alphas after winsorising.

After adding a COVID-19 dummy variable to the regression models, the results show that the pandemic did not significantly change the relationship between employee satisfaction and abnormal stock returns. Therefore, I must reject the third hypothesis that the positive impact of employee satisfaction on stock returns is stronger during and after the COVID-19 pandemic.

5.2 Limitations and Further Research

First, it is important to reinforce that the results depend on the data source selected for the analysis. Employee satisfaction was solely extracted through Glassdoor rankings, which may not fully represent the overall employee sentiment across all firms. Although Glassdoor seems to be a reliable database for measuring employee satisfaction levels, using this source could lead to measurement errors as these ratings may be subject to biases, such as self-selection bias, where more satisfied or dissatisfied employees are more likely to leave reviews. This would impact the reliability of the employee satisfaction measurement used in my study.

Moreover, the study focuses exclusively on U.S. firms, as Glassdoor only provides a ranking for other regions from 2015 onwards. Therefore, this geographical limitation means that the results may not be applicable to firms in other countries with different labour markets, economic conditions, and cultural contexts. For instance, the relationship between employee satisfaction and stock returns might differ significantly between European and South American markets due to different cultural aspects. This relationship could be studied for the United Kingdom for future research as Glassdoor provides the ranking for this region from 2015 onwards.

Furthermore, this study's sample started in 2009, which is the year that Glassdoor first released its own ranking. Hence, the impact of employee satisfaction on stock returns might differ during different economic cycles, such as the dot-com bubble, the 2008 financial crisis or even during World War II. Thus, these results may not be generalisable to other historical periods. Therefore, a possible further study could combine different datasets to measure this relationship through a more extended sample.

Besides, this study could be impacted because, during this period, many companies ranked well in the Glassdoor rankings were tech firms, such as Meta, Google, and Microsoft, which had very high returns in the last decade. Therefore, this could have impacted the returns of the portfolio significantly. A possible further study could be to add industry factors to remove this effect. This can be done by adding industry-specific dummy variables to the regression model, allowing for a better understanding of the relationship between employee satisfaction and stock returns. In addition, this study needs to explore the industry-specific dynamics that could influence the set relationship. Due to different industry-specific economic factors, some industries may show stronger or weaker relationships. Thus, the results of this study might not be generalizable across all sectors.

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Appendix

Table 1: *Glassdoor Ranking Descriptive statistics*

The column "Public Companies" counts the number of companies in the Glassdoor ranking with returns available on CRSP on the first trading day of the year. The column "Added" counts how many firms are in the ranking that were not in the previous year. The column "Dropped" counts how many firms were in the last year's ranking that are not in the current year.

Year of list	Public Companies	Dropped	Added
2009	33		
2010	29	14	10
2011	26	16	13
2012	28	12	14
2013	26	15	13
2014	27	12	13
2015	20	15	8
2016	22	6	8
2017	20	12	10
2018	46	4	30
2019	39	23	16
2020	41	17	19
2021	53	14	26
2022	57	23	27
2023	51	35	29

Table 2: *Descriptive Statistics on monthly returns of each portfolio*

The Table below outlines the descriptive statistics for the monthly returns of each of the constructed portfolio.

Portfolio	Mean	Median	Std. Dev	Min	Max
Equal-Weighted	0.0155	0.0202	0.0544	-0.1468	0.2003
Value-Weighted	0.0172	0.0202	0.0517	-0.1157	0.1548
Ranking-Weighted	0.0188	0.0148	0.0649	-0.1933	0.2499

Table 3: *Market-adjusted returns*

	Equal-Weighted	*Value-Weighted*	*Ranking-Weighted*
α	0.0039***	0.0064***	0.0068**
	(0.0014)	(0.0017)	(0.0029)
MKT	1.1376***	1.0532***	1.1817***
	(0.0380)	(0.3805)	(0.0691)
R^2	0.8635	0.8197	0.6542
Observations	180	180	180

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are in parentheses.*

Table 4: *Fama-French Adjusted Returns*

	Equal-Weighted	*Value-Weighted*	*Ranking-Weighted*
α	0.0042***	0.0057***	0.0066**
	(0.0014)	(0.0014)	(0.0026)
MKT	1.1398***	1.0573***	1.1879***
	(0.0379)	(0.0300)	(0.0652)
SMB	0.3066***	-0.2518***	0.4073**
	(0.0969)	(0.0898)	(0.1669)
HML	-0.1595**	-0.4332***	-0.5275***
	(0.0682)	(0.0627)	(0.1197)
R^2	0.8777	0.8716	0.7115
Observations	180	180	180

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are in parentheses.*

Table 5: *Fama-French Adjusted Returns of Winsorized Portfolios*

	Equal-Weighted	*Value-Weighted*	*Ranking-Weighted*
α	0.0111***	0.0065***	0.0083***
	(0.0037)	(0.0014)	(0.0021)
MKT	1.9349***	0.9644***	0.9867***
	(0.0909)	(0.0285)	(0.0401)
SMB	0.3240	-0.2894***	0.1289
	(0.2462)	(0.0810)	(0.1415)
HML	-0.0127	-0.3946***	-0.4588***
	(0.1346)	(0.0554)	(0.1004)
R^2	0.7519	0.8577	0.7112
Observations	180	180	180

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are in parentheses.*

Table 6: *Fama-French Adjusted Returns controlled for Covid-19*

	Equal-Weighted	*Value-Weighted*	*Ranking-Weighted*
α	0.0046***	0.0051***	0.0045
	(0.0015)	(0.0016)	(0.0029)
MKT	1.1409***	1.0561***	1.1837***
	(0.0373)	(0.0306)	(0.0664)
SMB	0.3033***	-0.2483***	0.4204**
	(0.0966)	(0.0888)	(0.1705)
HML	-0.1553**	-0.4375***	-0.5440***
	(0.0720)	(0.0648)	(0.1163)
$COVID$	-0.0022	0.0034	0.0085
	(0.0040)	(0.0037)	(0.0065)
R^2	0.8779	0.8719	0.7146
Observations	180	180	180

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are in parentheses.*

Table 7: *COVID Coefficient for different start dates*

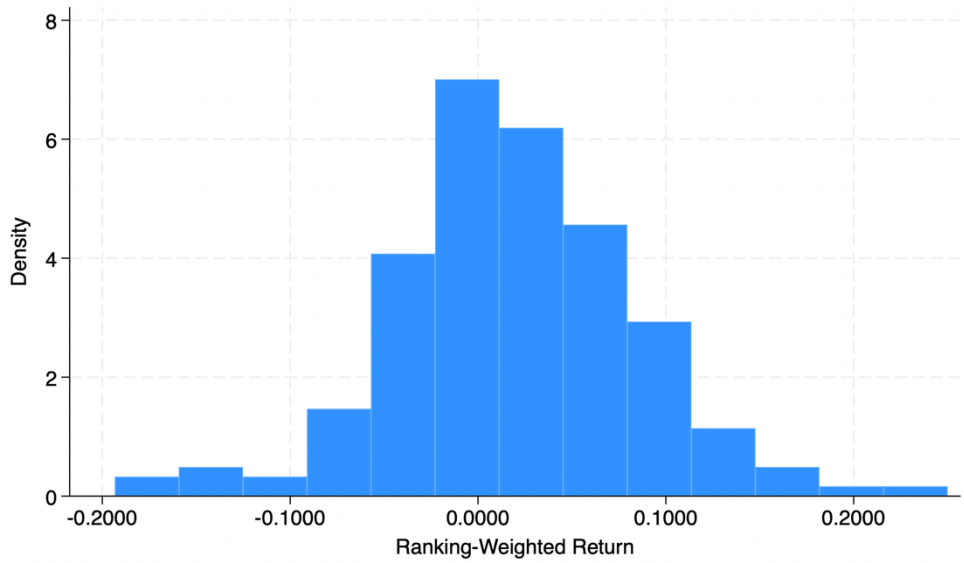
	Equal-Weighted	*Value-Weighted*	*Ranking-Weighted*
January	-0.0014	0.0030	0.0101
	(0.0038)	(0.0031)	(0.0066)
February	-0.0018	0.0026	0.0087
	(0.0038)	(0.0032)	(0.0066)
March	-0.0025	0.0025	0.0067
	(0.0039)	(0.0032)	(0.0066)

*Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Robust standard errors are in parentheses.*

Figure 1: *Distribution of Equal-Weighted Return*

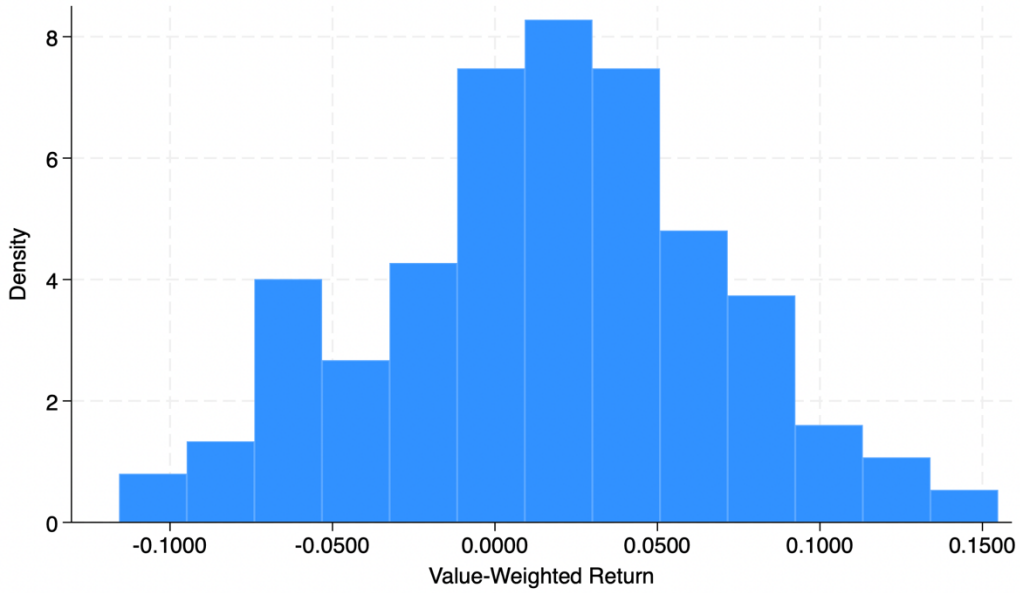
Note: This histogram illustrates the density of the distribution of the Equal-Weighted portfolio monthly returns.

Figure 2: *Distribution of Ranking-Weighted Return*



Note: This histogram illustrates the density of the distribution of the Ranking-Weighted portfolio monthly returns.

Figure 3: *Distribution of Value-Weighted Return*



Note: This histogram illustrates the density of the distribution of the Value-Weighted portfolio monthly returns.