

CEO TENURE AND ABNORMAL RETURNS

by

Liu, Hongjie

Bachelor of Business Administration, Tianjin University of Technology, China 2017

and

Zhang, Yu

Bachelor of Science in Finance, Arizona State University, United States, 2015

PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN FINANCE

In the Master of Science in Finance Program
of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY

Term Fall 2018

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Approval

Name: **Hongjie Liu, Yu Zhang**
Degree: **Master of Science in Finance**
Title of Project: **CEO Tenure and Abnormal Returns**

Supervisory Committee:

Amir Rubin
Senior Supervisor
Professor

Alexander Vedrashko
Second Reader
Associate Professor

Date Approved: _____

Abstract

Given that CEO tenure is considered an impetus to firm performance, we analyze the abnormal returns for different tenure groups using the Fama-French (1993) and Carhart (1997) four-factor model. The empirical result shows that firm performance is positively related to CEO tenure. However, the relation is not linear. CEOs with tenure group of 7 to 10 years have the highest alpha and the abnormal return of tenure above 10 years is slightly smaller. Furthermore, portfolios constructed by tenure group suggest that it is practical to generate abnormal returns by taking a long position at firms with long-tenured CEOs and a short position at firms with short-tenured CEOs. The long-short strategy also implies that tenure has a greater effect on firm performance in small firms compared to large firms.

Keywords: CEO Tenure; Abnormal return (alpha); Long-short strategy

Executive Summary

Whether CEO tenure is conducive to firm performance has been discussed in the last three decades; however, opinions varied. Therefore, it raised our interest to conduct an empirical study on this topic. This study intends to examine the relationship between the CEO tenure and the firm's stock returns. Apart from that, we noticed that there is no research on the feasibility of generating abnormal returns through a long-short strategy based on tenure. Hence, this study has the potential of making a contribution to this field.

The data sources from Wharton Research Data Services (WRDS) and covers CEO tenure and the stock return, ranging from 1992 to 2018. The first approach is to generate the risk-adjusted return using the Fama-French (1993) and Carhart (1997) Four-Factor Model. Later regressions were carried out to test the relationship between CEO tenure and abnormal return. The results indicate that tenure does have a positive impact on abnormal return. The second approach is to adopt an equity long-short strategy. The portfolio constructed by taking a long position at firms with long-tenured CEOs and a short position at firms with short-tenured CEO reinforces the initial finding and proves the feasibility of earning abnormal returns in such a way.

Acknowledgements

We would like to express our sincerest gratitude to Professor Amir Rubin for his selfless support and instruction throughout this research. The completion of this thesis would be much more difficult were it without Professor Amir Rubin's sound guidance and pertinent suggestions. Further, we owe deep appreciation to our parents who have been providing not only financial support but also endless love. Lastly, we would like to thank Associate Professor Alexander Vedrashko for his time and commitment to review our thesis.

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1: Introduction

A CEO, the decision-maker of most crucial corporate actions, plays a vital role in firm performance. The common occurrence of performance-related dismissal indicates that shareholders are not afraid to fire a CEO if he/she is unable to create value for shareholders (Dikolli *et al.*, 2014). The relatively high turnover of CEO can create a heavy blow on daily operation and implementation of the corporate strategy laid down by former CEO regardless of the appropriateness. Although Dikolli *et al* found an inverse relationship between the likelihood of CEO turnover and firm performance, the literature has not focused on the question of whether the tenure of the CEO plays an important role in the firm's performance. On the one hand, with a longer tenure, CEOs become experienced which can be of great value for optimal decision making. On the other hand, long-tenured CEOs may become risk-averse over time because the marginal benefit of additional gains is outweighed by the risk of losing prior gains (Simsek, 2007). As a result, it is interesting to carry out a study on the relationship between CEO tenure and firm performance.

The purpose of this research is to study how the performances of firms managed by short-tenured and long-tenured CEOs vary, and whether this difference between the two groups can be a driver of abnormal return. To our best knowledge, by far, no research on the feasibility of generating abnormal return investing in firms with a certain tenure has been conducted, so this research has the potential of making a contribution to the field.

To examine the relationship between CEO tenure and firm performance, two different methodologies are employed in this research. The first one is to run regressions on risk-adjusted returns for different tenure groups following the Fama-French (1993) and Carhart (1997) Four-Factors model. The intention is to analyze the relation of different tenured

groups of CEOs and the risk-adjusted returns. The second method adopts equity long-short strategy to construct portfolios based on the tenure of CEOs. In the following sections, we elaborate on both approaches, the data collection, modeling, and empirical findings.

2: Literature Review

Common sense suggests that the longer a CEO stays at a company, the better he/she is. Otherwise, the intuition is that he/she would have been fired. This may suggest that investments in firms with high tenure CEOs should outperform firms of CEOs with low tenure, as survival for longer periods may suggest good performance. However, there are alternative conjectures.

According to Schmidt and Posner (1983), firm performance is positively associated with tenure since long tenure leads to a high commitment to the values of a firm. Besides, Simsek (2007) asserted that long-tenured CEOs have positive impacts on firm performance by explaining the mechanism of tenure influencing firm performance. That is tenure influences firm performance through CEO's ability to deal with risk-taking activities. In other words, an extra return usually comes with risk and long-tenured CEOs can make a better trade-off that maximizes returns within risk capacity than short-tenured CEOs do. Furthermore, the greater experience the CEO has in managing companies, the less likely that firm performance will surprise the board of directors (BOD). In other words, from the view of the BODs, the outcome is more predictable along with the CEO tenure. Put simply, not only do long-tenured CEOs attain in-depth knowledge of the firm's environment and acquire firm- and job-specific skills, but also they are enrooted in the networks of key stakeholders to support the implementation of corporate strategy.

Contrary to the preceding, Miller (1991) finds that firms with long-tenured CEOs were inclined to have inappropriate strategies and capital structures, and have a higher conflict of interest between managers and shareholders over financing decisions. According to Harris and Raviv (1988), managers, especially those long-tenured, tend to finance beyond

the “optimal capital structure” to consolidate the voting power of their equity stakes, and to avoid a takeover and the resulting possible loss of job-tenure. Moreover, when an organization is stewarded by a long-tenured CEOs (Michel & Hambrick, 1992), the CEO tends to be more entrenched, leading to an inability to replace the CEOs even if he/she did not perform as well as previously expected or promised, or as long as they did not make any detrimental impact on the wellbeing of companies. Also, long-tenured CEOs tend to shun reasonable risk-taking activities so as to keep their employment (Miller and Shamsie, 2001), compromising the performance that the companies would have had.

Apart from these two main stances, there exists another noteworthy view that the relationship between tenure and performance is non-linear, but rather an inverted U-shape (Shen and Cannella, 2002). However, Sturman (2003) found that the relationship between tenure and performance varies across the industry. In fact, within industries with high complexity, tenure should lead to a larger familiarity and improved performance. Thus, experience yields a positive effect when the complexity of the operations that the CEO needs to deal with is high. Over time, the experience turns to be more predictive of performance in high-complexity industries. This also implies that the BOD will be less surprised and can estimate the outcome of CEO’s stewardship more closely over time.

In short, the above literature does not provide a uniform conclusion. It is, therefore, worthwhile to engage in an empirical study that analyzes the relation between CEO tenure and performance. Given that the benefits of having a long-tenured CEO seem to outweigh the costs, our first hypothesis is

Hypothesis 1: Firm managed by long-tenured CEOs significantly outperform those led by short-tenured CEOs in terms of abnormal return.

In addition, we consider whether the result of Hypothesis 1 can be incorporated into a long-short portfolio strategy.

Hypothesis 2: The portfolio constructed by taking a long position at firms with long-tenured CEOs and a short position at firms with short-tenured CEOs can yield a positive alpha.

3: Data and Methodology

We employed several statistic tools, for example, two-sample t-test and multivariate regression in our research to examine the relationship between the performance of longer tenured CEO and shorter tenured CEO.

3.1 Data Collection

All the data used in our study were extracted from Wharton Research Data Services (WRDS). The time horizon we studied ranges from 1992 to 2018, which is the range of years available on the execucomp data set.

Among various data, we exported CEO tenure and industry from Annual Compensation of Execucomp based on the entire North America Market. We extracted the following data variables: BECAMECEO is the date the individual became chief executive officer; LEFTOFC is the date the named executive officer left the position of CEO; AGE is the age of the executive as reported in the annual proxy statement and most importantly; CEOANN indicates that this person was the CEO for all or most of the indicated fiscal year. The total observations for the data were 286,016.

With respect to stock return, we downloaded the monthly return from the Center for Research in Security Prices (CRSP) including RETX that represents the holding period return with dividends; Share Code stands for the type of security traded; SHROUT indicates the number of shares outstanding, and SICCD, which is the standard industrial classification code, all the data were also sourced from the entire North America database. To clarify, the CRSP U.S Stock database contains prices on primary listings for the NYSE, NYSE MKT,

NASDAQ, and Arca exchanges, along with basic market indices. The total observation for stock return was 644,434, the time period is from June 1992 to June 2018.

3.2 Data Merging

To begin with, we used Stata to merge the CEOs' tenure with stock specific information. Since the CEO tenure changes over years and the stock return is on a monthly basis, we analyzed firms at the year-firm level and made sure that we have 12 monthly return observations for a given firm-year. In case of overlapping CEOs in the same year, the longer-tenured CEO in that year was considered to be the only CEO.

3.3 Research Design and Strategy

Our research focuses on understanding the relationship between CEO tenure and the company's performance, as well as possibly controlling for other variables that may affect the firm's performance. The first step is to conduct t-tests for analyzing returns across tenure groups. We divided all tenures into four tenure groups, which is defined in Figure1 and Table1 by considering both the distribution and frequency of the tenure data.

Table 1: The Cumulative Frequency of Tenure Groups

1,2,3 and 4 correspond to the four tenure groups we divided based on the length of tenure. Group 1 are CEOs with tenure of 0-2 years; group 2 are CEOs with tenure of 3-6 year, group 3 are CEOs with tenure 7-10 year; group 4 are CEO with tenure of more than 10 years. *Number of CEOs-year obs* is the number of occurrences of each group. *Percent of obs* represents the percentage of the sample of each group relative to population. *Cumulative percent* calculates the cumulative percentage from group 1 to group 4.

Tenure group	Number of CEOs-year obs.	Percentage of obs.	Cumulative Percent
1 (tenure of 0-2)	132,870	28.32	28.32
2 (tenure of 3-6)	142,517	30.38	58.70
3 (tenure of 7-10)	66,578	14.19	72.89
4 (tenure of 10+)	127,179	27.11	100.00
Total	469,144	100.00	100.00

Table 1 presents the number of all the CEO tenure observations, the percentage of each tenure group and the cumulative percentage of each tenure group, implying that the four tenure groups have the similar amount of observations, only slightly different between tenure group 2 and group 3.

3.4 Confidence Level and Two-sample T-test

All statistical analyses were done with the confidence level being 95 percent, indicating that the significant level is 5 percent. We used t-test and p-value as decisive factors to test the significance of the results.

To verify that tenure has an impact on the stock performance, we conducted our initial two-sample t-test to compare the return on tenure group 1 and the return on tenure group 2, as well as the return on tenure group 2 and tenure group 3, tenure group 3 and tenure group 4, and tenure group 1 and tenure group 4. The purpose of our two-sample t-test is to evaluate whether the means of two tenure groups significantly different. The initial t-test results served as more affirmation to determine whether the long-tenured CEOs can outstand from the universe.

3.5 Multivariate Regression based on the Fama-French (1993) and Carhart (1997)

Model

In this part, multivariate regressions were implemented to re-analyze the relationship between the CEOs' tenure and stock performance. We ran the Fama-French three-factor model (Fama and French, 1993) to control for the risk factors: the market, size and value factor, with the extension of Carhart that includes a momentum factor (Carhart, 1997). Alpha is the intercept of the annual monthly return regression on the four factors. The dependent variable is the monthly return of the asset in excess of the t-bill rate, while the independent variables include monthly excess market return, monthly premium of the book-to-market factor (HML) and the size factor (SMB), and the monthly premium of the winners minus losers (UMD). Overall, the model can be explained by the following equation:

$$R(t) - RF(t) = \alpha + \beta_m[E(R_m) - R_f]t + \beta_S E(SMB)t + \beta_H E(HML)t + \beta_U E(UMD)t + \varepsilon_t$$

Where:

$R(t)$ is the expected rate of return of the company

$RF(t)$ is the risk-free rate

α is the intercept

R_m represents the return of the market

SMB represents the monthly premium of size factor

HML represents the monthly premium of book-to-market factor

UMD represents the monthly premium of winner minus loser factor

ε is the error term

In our study, we regressed for each firm-year the excess returns on the Fama-French (1993) and Carhart (1997) Four-Factors, and then partitioned these alphas to the four groups based on the tenure of the CEOs. The four-factor data is downloaded from the WRSD's Fama-French Portfolios and Factors database, the data we obtained was the monthly

frequency and the time period was from 1992 to 2018. We are hypothesizing a positive relationship between the risk-adjusted return and the length of the CEO tenure.

3.6 Portfolio Approach and Long-Short Strategy

Further to our study, on the grounds of the portfolio approach, the firms were allocated at the end of each calendar year to a portfolio based on the tenure group of their CEO tenure. An equity long-short strategy is a widely used investment strategy that primarily held by hedge funds. It normally takes long positions at securities with expected positive or above-benchmark performances and short positions at the securities with expected negative or below-average performances. In our case, we implemented the long-short strategy by taking long positions at a long-tenured group and short position at a short-tenured group.

4: Empirical Results

4.1 Summary Statistics

At first, we ran the regressions on each firm by year according to the Fama-French (1993) and Carhart (1997) Four-Factor models. The alpha generated from each of these regressions were then partitioned based on the tenure group of the CEO. The tenure group is already defined in Table 1. Table 2 provides the summary statistics of all our tenure groups and corresponding alphas. Because we need to have 12 monthly observations in a given year to generate alpha, we lost 10 firm-year observations and ended with 35,514 alphas. The fact that the tenure in this group is in the range of 10 to 61 years accounts for the extreme standard deviation of the tenure of group 4.

Figure 2 indicates the mean of tenure by year. In 1992, the average of CEOs' tenure was close to 7 years and then fluctuated from 7 years to 7.7 years from the period of 1992-1999. Afterward, there was a significant decline from 2000, the large-scale corporation restructuring due to tech bubble might be the cause of this tenure declining. Another interesting increasing in the average tenure throughout 2008 to 2011 was probably because of the financial crisis. A numerous amount of companies filed bankruptcy back that time. Namely, there were no CEOs any more for bankrupt companies. Moreover, large firms had relatively more capital to withstand such a catastrophe while it was not that lucky for small firms. Large firms tend to have small CEO turnover, vice versa. These two factors could partly explain the upward CEO tenure afterward.

As an interesting finding, Figure 3 presents the mean of tenure by each industry. We took the SIC code from WRDS and divided all of the firms from our sample. The result indicates that the industry with the highest mean of tenure of 11.90 years was Agricultural,

Forestry and Fishing, while the lowest mean of tenure being the Public Administration with only 6.67 years. All other industries' mean of tenure were ranged from 7 years to 9 years.

4.2 Alpha and Tenure

Table 3 provides the results where the dependent variable is the year-firm alpha of each regression on alpha. The control variables are size and year and firm fixed effects. The first month's market size represents its market size throughout the year.

The first dependent variable was the tenure group. The t-test result of 1.63 indicates a relatively low significance between the relationship of each tenure group and alpha. The second variable was the high tenure group, a dummy variable that sorted tenure group 1 and 2 as 0, and tenure group 3 and 4 as 1. The empirical result of t-test above 2 indicates a significant relationship between the high tenure group and the abnormal return. Also, we found that alpha moves in the same direction with tenure. This makes sense since long-tenured CEOs are generally more sagacious in decision-making. The last dependent variable in this regression is tenure. The result was not significant enough to prove that tenure by itself can have a positive impact on alpha. Therefore, our finding is in line with Simsek (2007) that there is a positive correlation between the CEO tenure and firm performance.

4.3 Alpha and Long-short Portfolio

We next conducted calendar approach trading strategies to see if one can generate an alpha from trading rules based on the tenure of the CEO. We constructed four portfolios based on tenure groups and rebalanced portfolios at the beginning of each year in two ways. One is equal-weighted that constitutes each stock equally regardless of its market. The other is value-weighted, a more typical and frequently used portfolio rebalancing method that

weights each stock based on its market size at the beginning of the calendar year. The advantage of this strategy is that it only requires rebalancing at the beginning of year based on the changes in CEOs who move from one tenure group to the next; but it does not require monthly rebalancing because returns are value-weighted based on the market cap of the firm at the end of the year. This is the essence of a buy-and-hold strategy, like investing in the S&P 500, for example. As Table 8 displays, the equal-weighted monthly alphas of these four portfolios were respectively 0.2821%, 0.2841%, 0.3759%, and 0.3613%, of which tenure group 3 and 4 generated the highest alpha. Moreover, it is obvious that tenure group 1 and 2 produced similar alphas while tenure group 3 and 4 have materially higher alphas. The ordering of the four groups was similar for value-weighted portfolio, though the alphas for group 3 and 4 were smaller compared with the equal-weighted portfolio, at approximately 0.11%. Thus, the relationship between tenure and firm performance is not linear, but it is clear that group 3 and 4 are better performing than group 1 and 2. Tenure group 4 that CEOs have more than 10-year tenure slightly underperformed tenure group 3 (but that is not significant). A reasonable explanation is that performance-related dismissal of CEOs is less likely to happen due to inertia and potential quake if CEOs are replaced when CEOs have taken in charge of companies for a long term (Dikolli, 2014). Also interesting is that the alphas of tenure group 1 and 2 rebalanced with value-weighted method were negative. By definition, firms with a large market capitalization (big caps) take a large portion in a value-weighted portfolio. Thus, it can be fairly reasoned that short-tenured CEOs failed to lead big caps in a positive way on account of a longer period required to grasp the specific environment in which the companies operate. Along with tenure, CEOs will master the recipe of managing companies by acquiring specific skills and by getting adept in maneuvering resources to achieve corporate strategies.

From these four portfolios, we selectively created five long-short portfolios to examine the feasibility. Not surprisingly, the portfolio (“Long 3 and short 1”) that take a long position at tenure group 3 and a short position at tenure group 1, ranks the top with regard to alpha return of 0.939%, in line with the biggest alpha difference from tenure group 1 and 3. Nevertheless, its t-test result turned out to be 1.92, close to but still below 1.96, so it is not significant from the statistical view. The better long-short portfolio lies in “Long 3 and short 2” which had a similar outcome of 0.919% yet had a significant t-test result of 2.35. Therefore, we can conclude that it is practical to take advantage of long-short strategy based on tenure for alpha.

Conclusion

In our research, we conducted empirical analyses to examine the relationship between CEO tenure and firm performance. The empirical evidence shows that long-tenured CEOs tend to generate higher abnormal returns for their firms than short-tenured CEOs do. To draw our results, we employed the Fama-French (1993) and Carhart (1997) four-factors model to control for the risk factors and obtain the risk-adjusted return. By examining such a multivariate regression and equity long-short strategy, we find that it is significant and practical to obtain abnormal returns through a portfolio that takes a long position at firms with long-tenured CEOs and a short position at firms with short-tenured CEOs. On top of that, comparing the result obtained for equal-weighted and value-weighted portfolio suggests that tenure length is not important for alphas in large firms.

We notice that our research has some limitations that weaken reliability. The biggest one is that we did not rule out the effect of CEO's age. More specifically, a seasoned manager with previous related experience is not comparable to a novice when starting to reign a new company. Furthermore, we are enlightened from this research and interested in how firm performance trends in relation to last year CEO tenure. If there exists a certain positive relationship, CEO tenure can be an indicator of future stock performance.

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Appendices

Figure 1: Distribution of CEO tenure

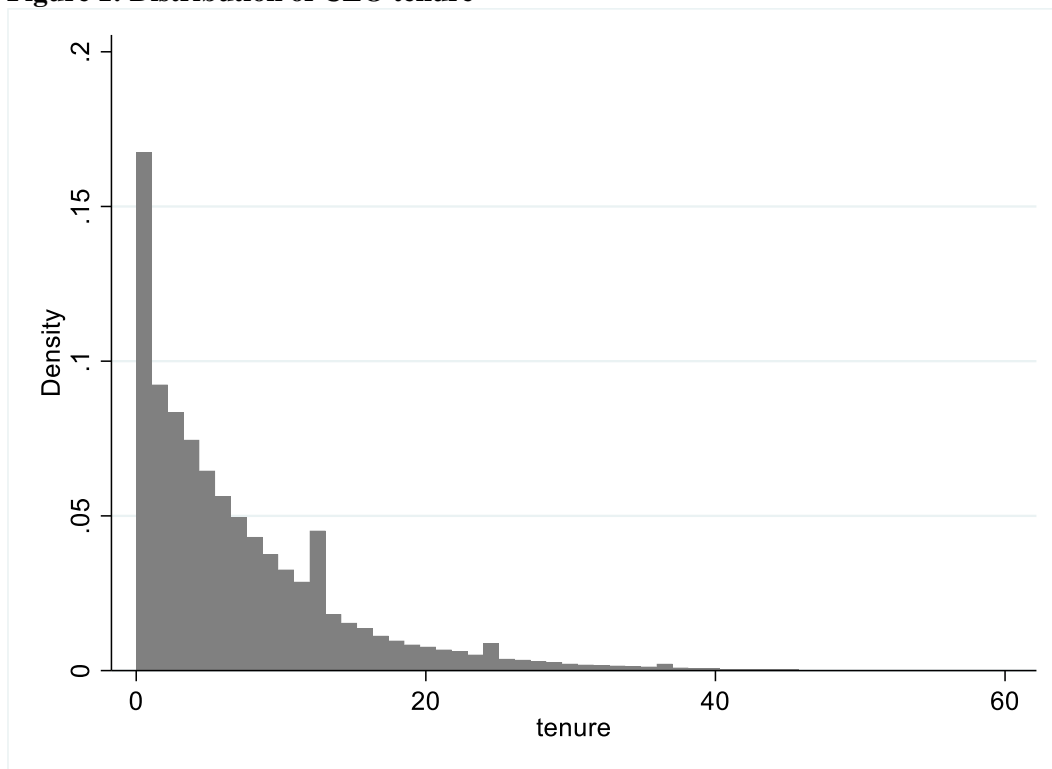


Figure 2: Mean of tenure by year

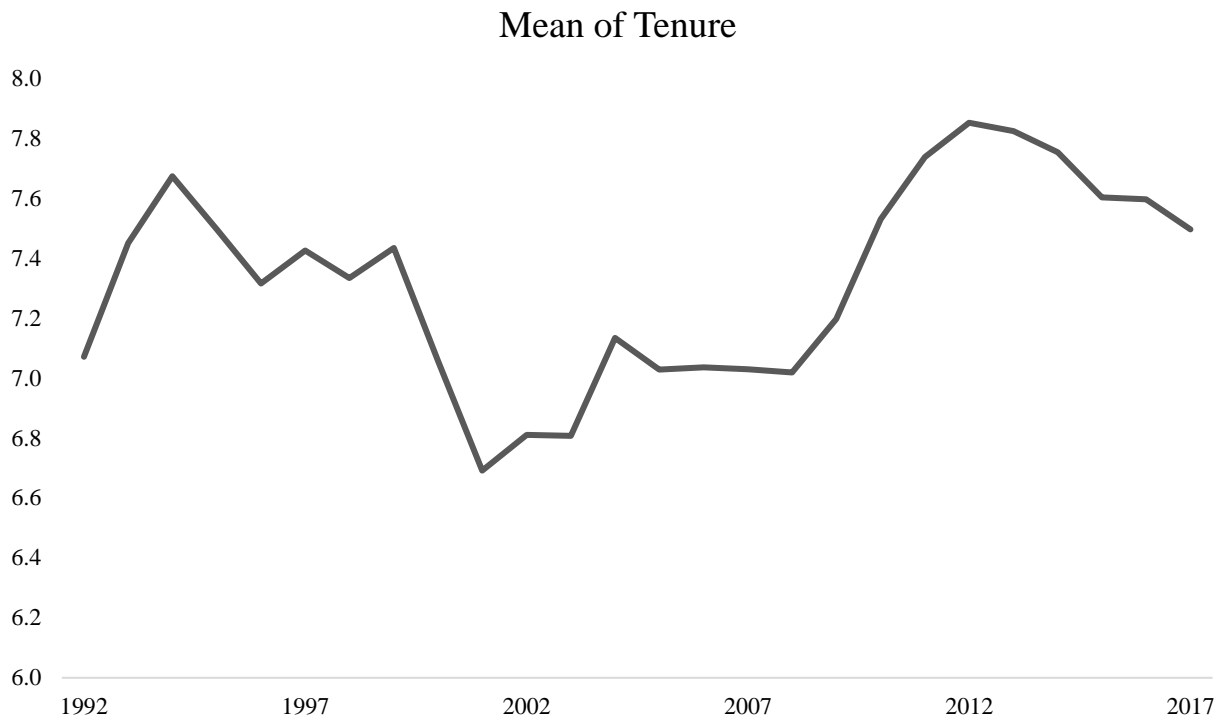


Figure 3: Mean of tenure by industry

This figure provides the mean of tenure by different industries.

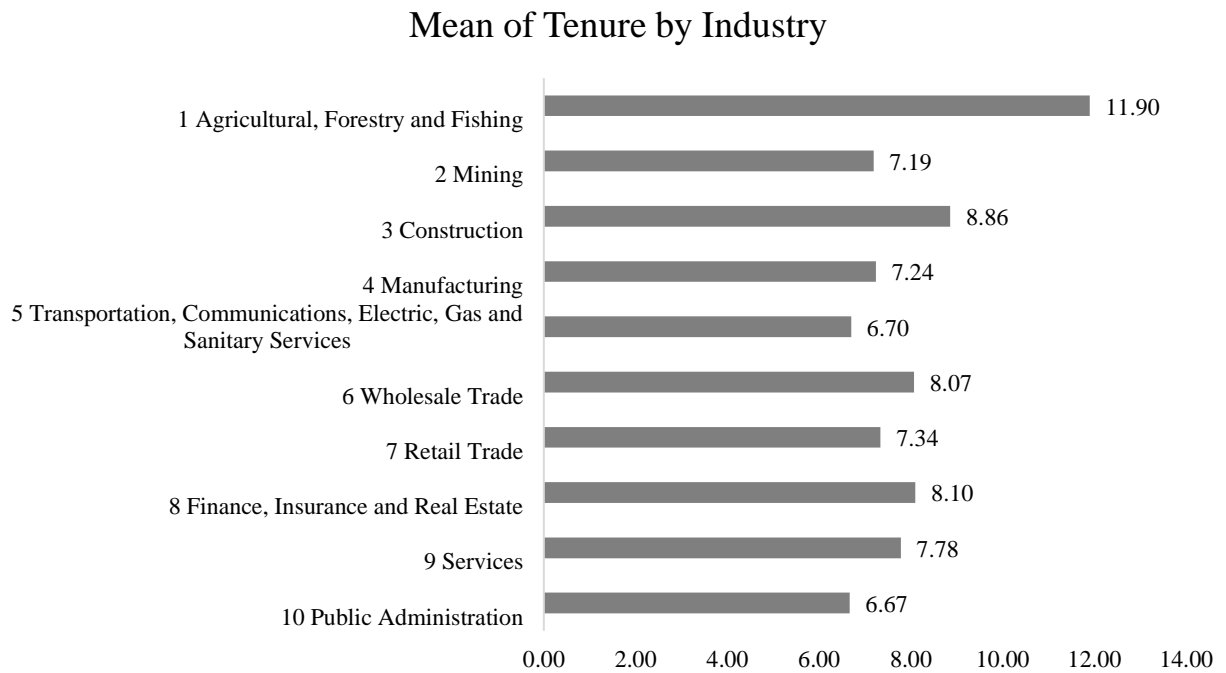


Table 2: Summary statistics of tenure groups and corresponding alphas

This table provides all the summary statistics of *four tenure groups*, as well as all the corresponding *alphas* with the number of observations, mean, standard deviations, the 25th percentile, the 75th percentile.

Summary statistics: Number of observations, mean, standard deviation, p25 p75					
Variable	Number of observation	mean	Standard deviation	p25	p75
Tenure group 1					
Tenure	9604	1.151	0.761	1	2
Alpha	9599	0.002	0.049	-0.02	0.023
Tenure group 2					
Tenure	10953	4.337	1.105	3	5
Alpha	10950	0.003	0.045	-0.018	0.022
Tenure group 3					
Tenure	5125	7.909	0.813	7	9
Alpha	5124	0.004	0.047	-0.018	0.022
Tenure group 4					
Tenure	9842	16.908	7.339	12	20
Alpha	9841	0.003	0.046	-0.019	0.023

Table 3: Regression results of alphas on tenure group, high tenure group and tenure

The following provides regression results where the dependent variable is the firm-year level alpha, which generated from the Fama-French and Carhart four-factors model. At the end of each year (end of December), firms are allocated to a portfolio based on the tenure of the CEO. The following provides all the regression results, the dependent variables are *size year*, which we use to fixed the size effect for 12 months for one company, *tenure group* which is defined in table 2 and represents for all four tenure groups, *high tenure group*, which is a dummy variable and 0 is defined by tgroup 1&2 and 1 is defined by tgroup 3&4, *tenure* is defined by the length of the tenure year. All regressions include the intercept (alpha). T-statistics are provided in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

Independent Variables	(1)	(2)	(3)	(1)	(2)	(3)
sizeyear	-0.015764*** (-19.479519)	-0.015763*** (-19.500295)	-0.015745*** (-19.452118)	-0.001065*** (-7.045441)	-0.001063*** (-7.033518)	-0.001068*** (-7.063122)
Tenure group	0.000484 (1.634998)			0.000101 (0.472422)		
High tenure group		0.001298** (2.021847)			0.000414 (0.826900)	
Tenure			0.000074 (1.322225)			-0.000005 (-0.162965)
Constant	0.103992*** (18.665749)	0.104621*** (18.818346)	0.104535*** (18.784702)	0.010449*** (8.136805)	0.010506*** (8.866575)	0.010760*** (8.980357)
Firm fixed effects	Yes	Yes	Yes	No	No	No
Year fixed effects	Yes	Yes	Yes	No	No	No
Observations	35,514	35,514	35,514	35,514	35,514	35,514
R-squared	0.157468	0.157503	0.157442	0.001409	0.001422	0.001404

Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 4: Summary statistics of alphas based on tenure groups and long-short strategies

This table provides the alphas for the four tenure groups which are defined in table 1 based on the equal-weighted portfolio and value-weighted portfolio, as well as the long-short strategies. In each long-short strategy, we are long the higher tenure group and short the shorter tenure group. T-statistics are provided in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

Portfolio (Tenure group)	Equal-weighted portfolio	Value-weighted portfolio
1	0.002821*** (4.331902)	-0.000337 (-0.624539)
2	0.002841*** (4.796876)	-0.000108 (-0.342388)
3	0.003759*** (5.739111)	0.001175** (2.391419)
4	0.003613*** (5.361532)	0.001160* (1.773262)
Long 2 and short 1	0.000386 (0.869520)	0.000842 (1.103776)
Long 3 and short 1	0.000939* (1.919134)	0.001512* (1.816557)
Long 4 and short 1	0.000792 (1.501034)	0.001497 (1.581079)
Long 3 and short 2	0.000919** (2.353560)	0.001282* (1.790121)
Long 4 and short 2	0.000772* (1.731103)	0.001267 (1.495372)
Observations	312	312
R-squared	0.951743	0.962936

t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1