INSTITUTIONAL OWNERSHIP LEVEL AND RISK-ADJUSTED RETURN

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Abstract

This paper examines the relationship between the level of institutional ownership and risk-adjusted return on stocks. We find a significant positive relationship between the level of institutional ownership on a stock and its risk-adjusted return. This result holds both in the long run and in shorter time periods. Our findings suggest that all things being equal, it is possible to obtain risk-adjusted return by going short on the stocks with low institutional ownership and going long on those with a high level of institutional ownership.

Keywords: Institutional Ownership; Risk-Adjusted Return; Alpha

Disciplines: CAPM; Fama-French Model

Acknowledgement

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Executive Summary

This report examines the relationship between institutional ownership level and risk-adjusted return. Based on the conflicting results of the prior studies, we attempt to distill the essence of these studies and conduct tests to see which hypothesis prevails.

We analyze a sample data of institutional ownership percentage and return on common stocks, over the course of 36 years. First off, we categorize the stocks in five groups based on the level of institutional ownership. Afterwards, we adopt three approaches in our analysis. The first two focus on determining the risk-adjusted return using Capital Asset Pricing Model (CAPM), and Fama-French (1993), and Carhart (1997) Four-Factor Model. We merge the level of institutional ownership with the lead risk-adjusted return as determined by the models for each firm. Based on observations, we conclude that portfolios with a higher institutional ownership tend to outperform those with lower institutional ownership.

The third approach involves the replication of a portfolio which holds a long position in stocks with higher institutional ownership level and a short position in those with relatively lower institutional ownership level. The result of this approach is consistent with the observation obtained from the initial approaches.

In a nutshell, our findings show that the level of institutional ownership is positively correlated with stock performance, in particular, risk-adjusted return.

1: Introduction

Institutional investors incur massive expenses on stock selection. According to Kent et al. (1997), total costs in the mutual fund industry exceed $10 billion per year, and more than half of these expenses are incurred in the stock selection efforts. Hence, the principal objective of institutional investors is to achieve a positive risk-adjusted stock return. Our paper explores and documents empirical evidence on the relationship between the level of institutional stock ownership and risk-adjusted return. Previous literature has presented two opposing hypothesis on how institutional ownership percentage affects stock performance.

First, some studies posit the existence of a positive relationship between institutional ownership percentage and stock performance. It is believed that institutional investors, in an attempt to optimize the return on investment funds, perform better research on stocks relative to individual investors. Therefore, as institutional investors possess superior stock-picking abilities, one can expect a significant positive stock performance of firms whose stocks are largely held by these investors. Additionally, institutional investors own large stakes in public corporations, which provides a high economic incentive for these institutional investors to monitor decision makers. (Duggal and Millar, 1993). Under their watchful eyes, it is theorized that there will be a marked improvement in corporate governance and managerial efficiency, which would, in turn, translate into a better firm performance.

However, some other studies in this area hold an opposing view that a negative relationship exists between the level of institutional ownership and stock performance. The major rationale behind this argument is that most institutional investors have a short-sightedness regarding their investments and make investment decisions that are driven by the short-term goal of simply outperforming a certain benchmark within the quarter. Gasper, Massa, and Matos

(2005) observe that institutions with short horizon might induce a costly focus on short-term performance without providing an offsetting increase in the monitoring of management practices. Therefore, rather than attempting to improve and monitor their holdings in a poorly performing firm, they are more likely to take exit strategies such as selling their holdings.

We have no ex-ante prediction on which of the two hypotheses above is true given the mutual exclusivity of the statements. We, therefore, test to see which of the hypotheses dominates regarding the effects on stocks risk-adjusted return. We employ three different approaches in carrying out our analysis. We further conduct subsample analysis to verify the robustness of our results.

The content of the paper is organized as follows: Section 2 delivers the relevant studies on the relationship between the level of institutional ownership and stock performance. Section 3 describes the data and methodology utilized in conducting our analysis. Section 4 conveys substantial observations and results. Section 5 concludes our paper.

2: Literature Review

Many studies have been conducted on how the level of institutional ownership affects a firm's performance, and in turn, stock return. Findings documented in previous literature shows that there is no agreed relationship. The opposing views and findings documented by researchers deliver a strong debate on this topic.

2.1 Positive Correlation Hypothesis

Cornett, Marcus, Saunders, and Tehranian (2007) report that there is a positive relationship between institutional ownership and a firm's operating performance. Several studies have reported results in line with this finding. A major argument in support of this hypothesis is that institutional investors play a crucial role in corporate governance. Institutional investors have a greater ability to monitor and influence managers. Shleifer and Vishny (1986) report that large shareholders, usually institutional investors, have a higher incentive to monitor managers than members of the board of directors, who may have little or no wealth invested in the firm. Findings by Del Guercio and Hawkins (1999) show that monitoring by institutional investors enhances management's focus on firm's performance. A recent study conducted by Lin and Fu (2017) conclude that the level of institutional ownership is positively related to firm's performance due to the active monitoring role of these institutions. In a similar vein, Gillian and Starks (2000) report that corporate governance proposals sponsored by institutional investors receive more favorable votes relative to those sponsored by independent investors. Aggarwal et al. (2010) report that firms with higher institutional investors are more likely to terminate poorly performing CEOs. Hartzell and Starks (2003) show that institutional ownership is negatively

associated with the level of executive compensation and positively associated with pay-for-performance sensitivity.

Another argument supporting this hypothesis is that institutional investors tend to have a relatively higher return on investment. This case is because institutional investors are more cautious in recognizing efficient companies for investment and more cautious about good firm performance management (Masry, 2016). Puckett and Yan (2011) observe that institutional investors earn significant abnormal returns on their trades within the trading quarter. In line with this finding, Pan and Ban (2015) state that a reason why institutional investors perform better relative to individual investors might be as a result of better stock selection skills possessed by institutional investors.

2.2 Negative Correlation Hypothesis

Maug, 1998, however, conclude that the institutional investor's goal of maintaining liquidity of their holding as well as the desire to obtain short-term profit outweighs the benefits of monitoring managers in the hope of securing higher long-term profitability. Similarly, Findings of Gaspar, Massa, and Matos (2005) suggest that institutional investors with short horizons may induce a potentially costly focus on short-term performance without providing an offsetting increase in the monitoring of management practices. Therefore, investors may choose to engage in costly monitoring only to the extent that it improves their trading profits, without regard to the impact on the firm's practice (Coffee, 1991). Similarly, Drueker (1986) state that institutional investors are passive investors because they will sell their holdings if the firm experiences inferior performance, rather than monitoring the company or providing more resources to enhance performance.

While these opposing views dominate the debate on the impact of institutional ownership on firm's performance, works of some other researchers have shown that no significant relationship exists between the level of institutional ownership and firm's performance. For example, Agrawal and Knoeber (1996), Karpoff et al. (1996), Duggal and Millar 1999) and Faccio and Lasfer (2000) find no such significant relation. In conclusion, findings of prior studies tend to be skewed towards the positive relationship hypothesis. We, however, conduct our tests without any bias.

3: Data and Methodology

3.1 Data Source

We obtain data for this study mainly from the Wharton Research Data Services (WRDS). The level of institutional ownership data for the period 1980 to 2015 was derived from the Stock Ownership summary of Thomson Reuters database. The level of institutional ownership is defined as the proportion of a company's stocks that are owned by institutions such as banks, insurance companies, mutual funds, and so on (reported on 13F statements on Thompson One). We merge the data on institutional ownership level with data from CRSP monthly stock return database. We also obtain monthly data on asset pricing model factors from the Fama-French and Liquidity Factors database.

3.2 Summary Statistics

Table 1 presents descriptive statistics of the sample. The sample consists of annual observations on common stocks of an average of 4,719 firms per year (varying from 2,617 to 6,464), over 36 years (1980 to 2015). This data is merged with the one-year lead monthly return of each firm (1981 to 2016). In matching with each firm's returns, we lag the level of institutional ownership by one year. This lag allows for the effect of the level of institutional ownership on stock performance to show up. The basic idea behind this is that if the level of institutional ownership affects the stock performance, it presumably will do so before the period of observed performance. Furthermore, to mitigate the concern of small firm bias, we exclude firms with a market value less than $10 million. However, companies that began or ceased operations within

the sample period, but whose value exceeded $10 million, are included in the sample. Eliminating these companies would introduce a sample selection (survivorship) bias.

Table 1. Descriptive Statistics of Major Variables

Monthly returns are measured at the end of each month. All other variables are measured at the end of the calendar year. Institutional ownership is the percentage of institutional ownership as provided by 13F statements. Market value is the number of shares times the price of a share.

	Mean	Standard Deviation	Percentile				
			5th	25th	50th	75th	95th
Institutional Holdings (%)	33.59	27.39	0.71	9.15	27.39	54.59	84.74
No. of Institutional Investors	76.88	130.97	2	10	29	90	301
Market Value (in Million $)	4,362.68	81,206.79	16	56.1	194.36	869.41	10,430.69
Price	21.91	49.89	2.06	7.5	15	27.48	60.13
Monthly Returns (%)	15.06	0.94	-20	-5.6	0.4	6.4	22.64

Table 1

We then group the firms into five categories based on the level of institutional ownership. The cut-off for inclusion in a particular quintile group is based on the empirical distribution of the level of institutional ownership across the firms in a given calendar year. The stocks in Quintile 1 have the lowest level of institutional ownership, and those in Quintile 5 have the highest level of Institutional Ownership. It should be noted that the compositions of each quintile group are rebalanced annually based on the level of institutional ownership at the end of each year. Table 2 presents the summary statistics of the firms in each quintile group. It provides the

average lead return based on the classification of firms to five different quintile groups. We calculate the average and median raw return on stocks in each quintile group. From the table, one can observe that the higher the level of institutional ownership, the higher the median market value. Hence, this suggests that the level of institutional ownership of a firm is positively correlated with its market value. This observation is consistent with the findings of Del Guercia (1996) that many institutional investors have a preference for higher quality stocks, which are stocks of greater market value.

Additionally, we observe a higher mean and median return at a higher level of institutional ownership. This is in line with observations from past literature that a higher level of institutional ownership results in better firm performance through improved corporate governance (Chung et al., 2002; Gillan and Starks, 2000), better corporate monitoring (McConnell and Servaes, 1990; Nesbitt, 1994; Smith,1996; Del Guercio and Hawkins, 1999) and superior stock-picking abilities of institutional investors (Pan and Ban, 2015). Another interesting observation from Table 2 is that the average annualized volatility of the returns happens to be lowest on the stock with the highest level of institutional ownership. Hence, the results presented in the table suggests that, on the average, firms with a high level of institutional ownership obtain a relatively higher return at lower risk.

Table 2. Descriptive Statistics of Major Variables

Return and volatility presented are both annualized. The annualized volatility of returns presented is computed by multiplying the standard deviation on monthly returns by the square root of 12. Institutional Ownership is measured at the end of the calendar year.

	Quintiles				
	1 (Low)	2	3	4	5 (High)
Institutional Ownership: Mean (%)	1.15	7.30	22.09	44.27	70.83
Institutional Ownership: Median (%)	0.85	6.94	20.91	42.84	72.66
Median Market Value ($m)	57.75	65.25	109.50	292.22	940.38
Mean Raw Return (%)	7.20	11.28	11.52	12.00	12.48
Median Raw Return (%)	0.00	0.00	2.64	6.72	10.56
Annualized Volatility of Returns (%)	0.55	0.57	0.56	0.50	0.45

Table 2

Observations from the Figure 1 below shows the increase in mean risk-unadjusted return and reduction in the mean annualized volatility as the level of institutional ownership increases. This is in line with the significant positive correlation hypothesis on the relationship between institutional ownership percentage and stock performance.

Figure 1. Risk and Return Characteristics of Quintile Groups
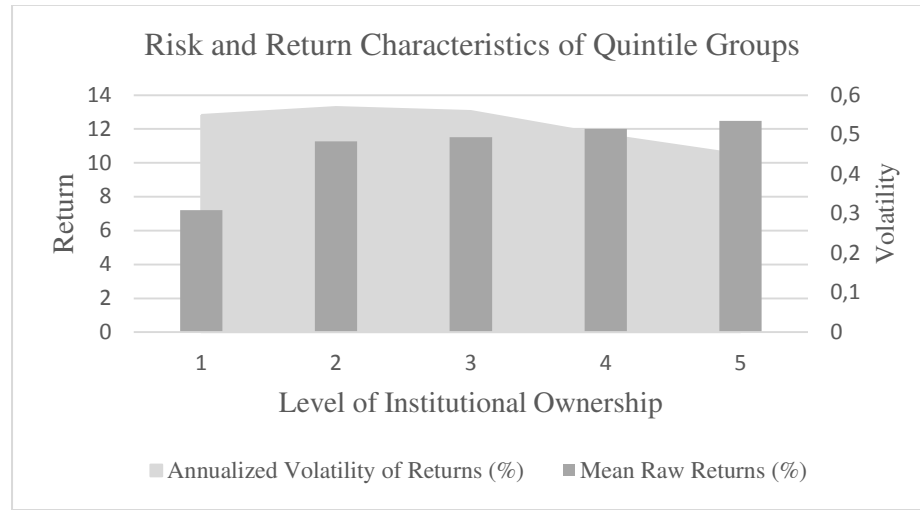
Figure 1

Our study focuses on how the level of institutional ownership affects risk-adjusted stock return. Hence we do not base our analysis or conclusion on the observations from raw returns and volatility. Instead, we compute the risk-adjusted return on stocks, which controls for certain risk factors.

3.3 Methodology

Our study intends to explore the relationship between the level of institutional ownership and risk-adjusted return. Risk-adjusted return is the difference between the actual return on a stock and its expected return. In determining the expected return on the stocks selected, we use two different models to control for other factors that determine expected return as documented in previous expected return literature. First, we control for the market risk premium; we regress the monthly returns using the CAPM Model (Jack Treynor, 1961; William F. Sharpe, 1964; John Lintner, 1965a, b and Jan Mossin, 1966, independently).

$$R(t) - RF(t) = a + b\{RM(t) - RF(t)\} + e(t) \tag{1}$$

where :

R: the rate of return on the stock

RM-RF: the excess of the market return over the risk-free return

a: alpha or risk-adjusted return - the excess of actual return over expected return

      Secondly, we control the size and value premium factor using the Fama - French Model (Fama and French, 1993), with the inclusion of the Carhart (1997) momentum factor. It is necessary to control for the size factor as we observe a positive correlation between the level of institutional ownership and market value of firms in the sample. Using the size-adjusted return controls for this problem. Similarly, Demiralp et al. (2011) noted the importance of controlling for momentum while computing risk-adjusted return when testing the effect of the level of institutional ownership. We could find a positive relationship between risk-adjusted return and the level of institutional ownership if institutional investors are attracted to buy past winners or sell past losers.

$$R(t) - RF(t) = a + b\{RM(t) - RF(t)\} + sSMB(t) + hHML(t) + uUMD(t) + e(t) \tag{2}$$

where:

R: the expected rate of return of the stock

RM-RF: the excess of the market return over the risk-free return

SMB: the premium of the size factor

HML: the premium on the book-to-market factor

UMD: the premium on winners minus losers

a: alpha or risk-adjusted return - the excess of actual return over expected return

To explore the relationship between institutional ownership and risk-adjusted return, we calculate the average risk-adjusted return for each level of institutional ownership quintile group. Afterwards, we conduct a t-test analysis to determine the significance of the difference between the mean risk-adjusted return on stocks in the highest and lowest quintile groups.

To verify the robustness of our findings, we classify the sample period of 36 years into four subsample periods as shown in Table 3. Our classification is based on major economic events within the sample period. Information on the significant economic events is obtained from the National Bureau of Economic Research. The unique nature of 2008, due to the severe recession experience in that year makes it inappropriate to be included either as a part of the Moderate Expansion period or the period following the Great Recession. Therefore, we exclude this year in analyzing the effect of institutional ownership level on risk-adjusted return over the four major economic periods in our sample.

Table 3. Classification of Time Period

Period	Rationale
1981 - 1990	Economic Recovery after the 1973 -1975 recession
1991 - 2001	Economic Expansion fueled by the Dot Com bubble
2002 - 2007	Moderate Expansion Period
2009 - 2016	Period Following the Great Recession of 2008

Table 3

Source: National Bureau of Economic Research

Finally, we form a self-financing portfolio in which for each year, we take a short position on stocks in the quintile group that underperforms and long position on stocks in the quintile group that outperforms. The core idea behind this approach is that where a significant relationship exists between the lag level of institutional ownership and stock return, then it should be possible to take advantage of this relationship in creating a portfolio of stocks that would produce a positive significant risk-adjusted return.

4: Results

4.1 Capital Asset Pricing Model

Table 5. Mean Risk-Adjusted Return Based on Capital Asset Pricing Model

Risk-adjusted returns are annualized. The superscript ***, **, and * represent significance at the .01, .05 and .1 levels respectively

| Quintile	Overall Period	Economic Periods			
		1981 - 1990	1991 - 2001	2002 - 2007	2009 - 2016
1	-0.020	-0.093	-0.001	0.045	0.044
2	0.000	-0.058	0.012	0.049	0.005
3	0.000	-0.040	0.005	0.044	-0.001
4	0.001	-0.033	0.008	0.011	0.005
5	0.003	-0.015	-0.003	0.005	0.003
Mean (5)-Mean (1)	0.023***	0.079***	-0.003	-0.039***	-0.040***

Table 4

In Table 4, we present the average risk-adjusted return on stocks in each quintile group. For the entire sample period, we observe a positive and higher risk-adjusted return at a higher level of institutional ownership. This suggests that stocks with a higher level of institutional ownership outperform those at a relatively lower level of institutional ownership. However, there is a less clear ordering over the subsample time periods analyzed. In some economic periods, the average risk-adjusted return under the CAPM model tends to increase with the level of institutional ownership quintile, but not always: after 2001, mean risk-adjusted return on stocks

with low institutional ownership appears to be relatively higher than those with a higher level of institutional ownership. We conduct t-test analysis to better understand the significance of the difference between the average risk-adjusted return of the highest and lowest quintile groups.

As presented in Figure 2, the average risk-adjusted return over the entire sample period increases at the higher level of institutional ownership. This observation indicates that stocks with the lowest level of institutional ownership underperform relative to other stocks in the long run.

Figure 2. Mean Annual Risk-Adjusted Return by Applying CAPM Model (1981 – 2016)
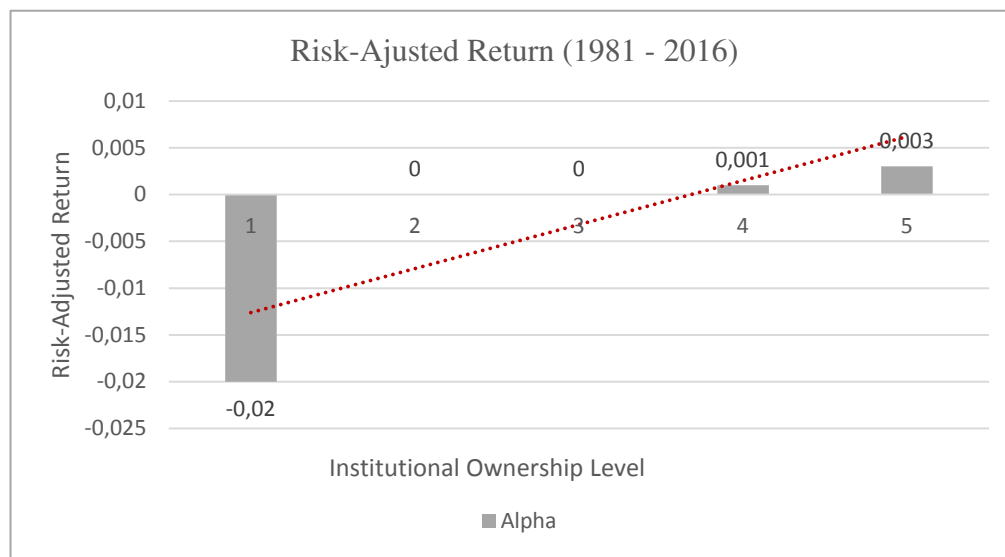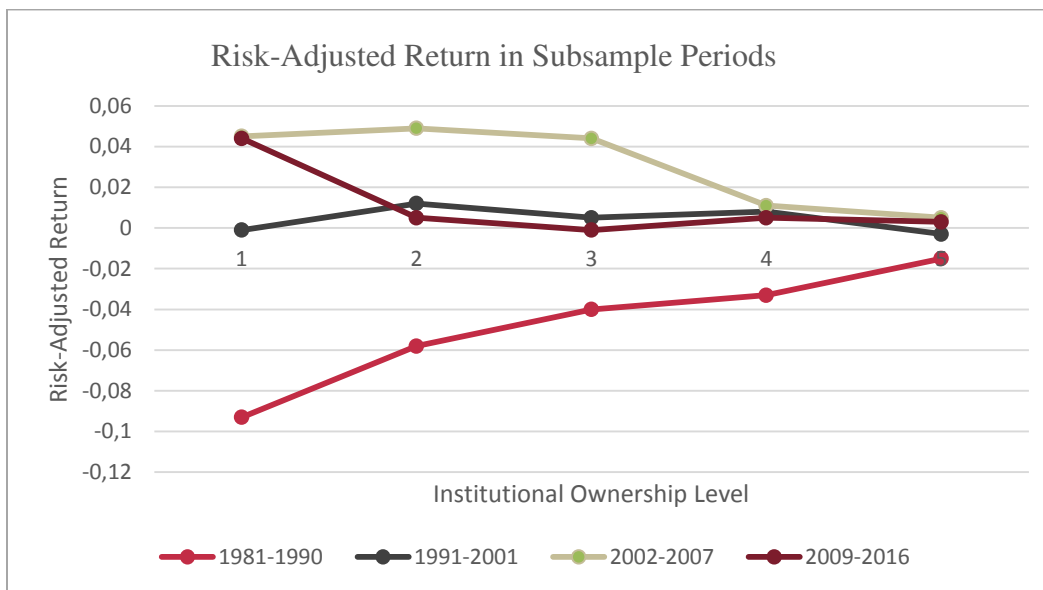

Figure 2

For robustness check, Figure 3 shows the mean risk-adjusted return at the different level of institutional ownership over the subsample periods. Interestingly, we observe inconsistencies in the relationship between institutional ownership level and risk-adjusted return over the shorter economic period analyzed. Before 2001, stocks with a higher level of institutional ownership

significantly outperformed those at a relatively lower level of institutional ownership. However, after 2001, we observe the opposite: stocks in the lower quintile group significantly outperformed those in the higher quintile group.

Figure 3. Mean Annual Risk-Adjusted Return by Applying CAPM Model

(Subsample Periods)

Figure 3

This is somewhat surprising, and we do not have a clear intuition as to the reason behind this result. In general, we would expect a similar result over all the economic periods. Consequently, while the pre-2001 observation appears to be consistent with the first hypothesis that states that a higher level of institutional ownership enhances risk-adjusted return due to optimal use of institutional investment funds and a greater incentive to monitor decision makers of firms, the post-2001 observation tends to be in line with the hypothesis that states that a negative relationship exists between institutional ownership and risk-adjusted return due to the

short-sightedness and passivity of institutional investors. Perhaps, this suggests that after 2001, there has been an increase in the passivity and a decrease in the active engagement institutional investors in companies. Nevertheless, this consistency over the economic periods may also be as a result of failure to account for certain risk factors that could significantly affect risk-adjusted return.

4.2 Fama-French Model

Table 5. Mean Risk-Adjusted Return Based on Fama-French and Carhart Factor Model
Risk-adjusted return are annualized. The superscript ***, **, and * represent significance at the .01, .05 and .1 levels respectively

| Quintile	Overall Period	Economic Periods			
		1981-1990	1991-2001	2002-2007	2009-2016
1	-0.044	-0.099	-0.027	-0.004	-0.051
2	-0.014	-0.045	-0.001	0.020	-0.018
3	-0.012	-0.031	0.002	0.015	-0.016
4	0.000	-0.013	0.011	0.009	0.000
5	0.006	0.009	0.000	0.016	0.000
mean(5) - mean(1)	0.051***	0.108***	0.027***	0.020**	0.051***

Table 5

Following Fama and French (1993) and Carhart (1997), we compute the average risk-adjusted return on the stock in the different quintile groups. In controlling other risk factors that can affect the expected return on a stock, this model addresses one of the concerns raised by the

inconsistency in the observations over short-term periods under the CAPM Model. Table 5 presents the results of the average risk-adjusted return under this model. Our observation for the entire sample period is consistent with what we obtain using the CAPM Model. The average risk-adjusted return increase with the level of institutional ownership. However, unlike our observation using the CAPM Model, the results appear to be consistent over the shorter economic periods.

We further examine the average risk-adjusted return among the various quintile groups by testing the significance of the difference between the mean risk-adjusted return. We report the results in carrying out a t-test analysis on the mean risk-adjusted return on the stocks in the different quintile groups in Table 5. As observed in Figure 4, over the entire sample period, stocks with a higher level of institutional ownership significantly outperformed those with a relatively lower level of institutional ownership. Additionally, for the shorter periods analyzed, the observation remains consistent as it is illustrated in Figure 5. In most cases, stocks with higher institutional ownership had a relatively significantly higher risk-adjusted return.

Figure 4. Mean Annual Risk-Adjusted Return by Applying Fama-French & Carhart Model (1981 - 2016)
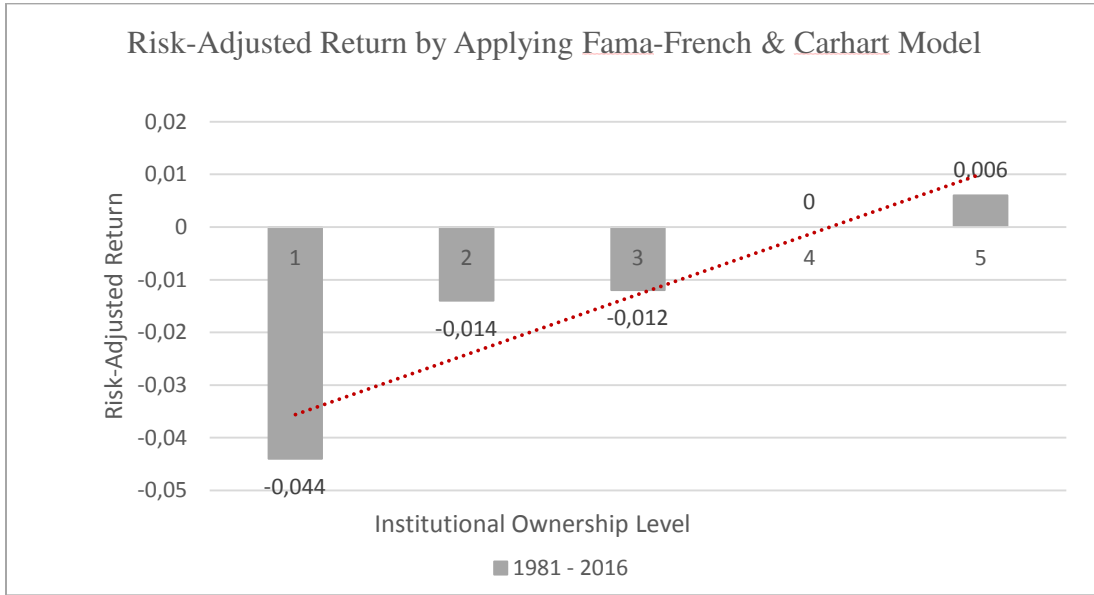
Figure 4

Figure 4. Mean Annual Risk-Adjusted Return by Applying Fama-French & Carhart Model (Subsample Period)
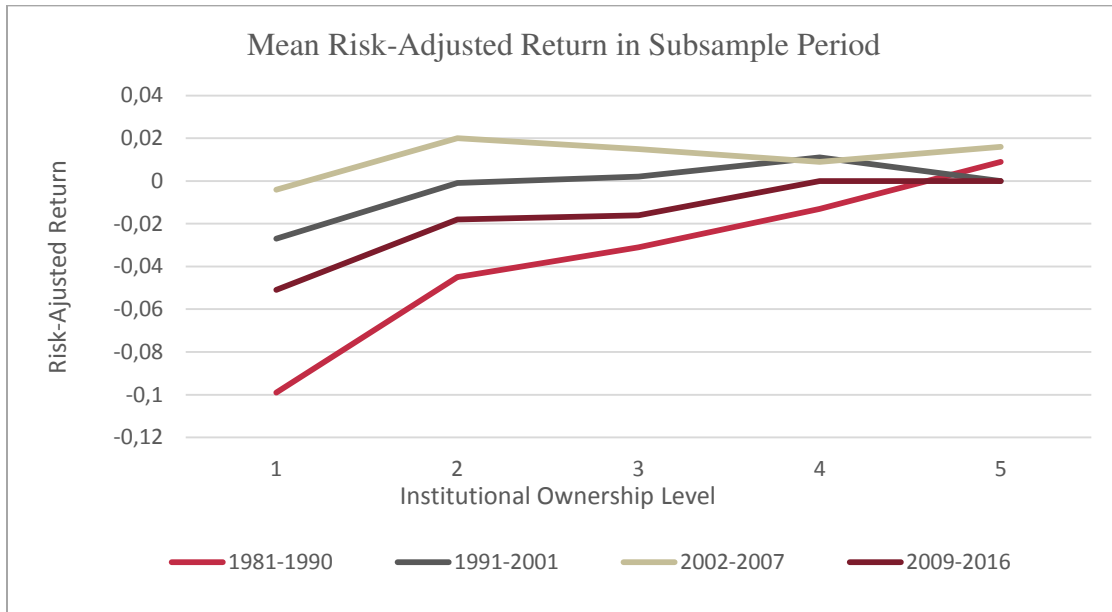
Figure 5

Furthermore, we address the concern of inconsistency in the results obtained from using the CAPM model over the short economic period analyzed. The Fama and French (1993) small firm effect theory holds that smaller firms, or companies with smaller market capitalization, on the average, outperform the relatively larger firms. In the summary statistics provided on our sample, there appears to be a positive correlation between the level of institutional ownership and market value of firms. That said, one could expect that stocks in the lower quintile group should ordinarily have a higher risk-adjusted return where this factor is left uncontrolled, due to the value premium. Therefore, this could imply that the post-2001 observation under the CAPM model could have resulted from the effect of the size premium on stocks' risk-adjusted return exceeding the effect of the level of institutional ownership. Consequently, controlling for the size factor and other return predictability factors identified by Fama and French (1993) and Carhart (1997), we obtain more consistent observations over the economic periods considered. In general, our results show that there is a significant positive relationship between the level of institutional ownership and risk-adjusted return.

4.3 Portfolio Approach

We strengthen the conclusions derived from the CAPM and Fama French model by forming a self-financing portfolio whereby we take a short position on stocks in quintile 1 group and simultaneously take a long position on stocks in quintile 5 at the same month. Consistent with the approach applied by Ban and Pan (2015), taking simultaneous long and short positions would have the effect of canceling out any bias from using an inappropriate asset pricing model or estimates of factor loadings.

As we observe in our results that stocks with a higher level of institutional ownership outperformed those with a lower level of institutional ownership, we expected to obtain a significant positive risk-adjusted return in the portfolio formed by going short on stocks with low institutional ownership and long on stocks with high institutional ownership. Table 6 presents the results of the average risk-adjusted return on this portfolio.

Table 6. Risk-Adjusted Return from Taking a Short Position on Stocks in Quintile 1 and a Long Position on Stocks in Quintile 5

Model	Weight	Overall Period	Economic Periods			
			1981-1990	1991-2001	2002-2007	2009-2016
CAPM	Equal Weighted	0.0345***	0.050***	0.038***	0.020***	0.013**
	Value Weighted	0.014***	-0.002	-0.005	0.064***	0.019***
Fama - French	Equal Weighted	0.025***	0.060***	0.029***	0.007*	0.006*
	Value Weighted	0.016***	0.011**	-0.008*	0.054***	0.011**

Table 6

* Significantly different from zero at 10% level;

** Significantly different from zero at 5% level;

***Significantly different from zero at 1% level.

5: Conclusion

This study examines the effects of the level of institutional ownership on stock performance. In particular, we focus on risk-adjusted return. We analyze the monthly returns on stocks with distinct levels of institutional ownership over the course of 36 years. We proceed to determine the monthly risk-adjusted return by controlling for various risk factors that could predict expected return. We find that stocks with a higher level of institutional ownership, in most cases, significantly outperformed those with a relatively lower level of institutional ownership.

The results presented in this study confirm a relationship between the level of institutional ownership in a firm and stock performance. Specifically, we find a significant positive relationship between the level of institutional ownership and risk-adjusted return, both in the long run and within shorter economic periods. We also find that all things being equal, it is possible to obtain significant positive return by going short on stocks with a low level of institutional ownership and simultaneously going long on stocks with a high level of institutional ownership.

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Appendix A

	Difference in Mean Risk-Adjusted Return using CAPM Model				
Quintile		Economic Periods			
	Overall Period	1981-1990	1991-2001	2002-2007	2009-2016
mean(2) - mean(1)	0.020***	0.035***	0.012*	0.005	-0.038***
mean(3) - mean(1)	0.020***	0.053***	0.052	0.000	-0.045***
mean(4) - mean(1)	0.020***	0.060***	0.008	-0.034***	-0.038***
mean(5) - mean(1)	0.023***	0.079***	-0.003	-0.039***	-0.040***
mean(3) - mean(2)	0.000	0.018**	-0.007	-0.005	-0.007
mean(4) - mean(2)	0.001	0.025***	-0.004	-0.039***	0.000
mean(5) - mean(2)	0.004	0.043***	-0.015**	-0.044***	-0.002
mean(4) - mean(3)	0.001	0.007	0.003	-0.034***	0.007
mean(5) - mean(3)	0.004	0.025***	-0.008	-0.039***	0.005
mean(5) - mean(4)	0.003	0.018***	-0.011*	-0.005	-0.002

Table 7

* Significantly different from zero at 10% level;

** Significantly different from zero at 5% level;

***Significantly different from zero at 1% level.

Appendix B

Quintile	Difference in Mean Risk-Adjusted Return using Fama-French Model				
		Economic Periods			
	Overall Period	1981-1990	1991-2001	2002-2007	2009-2016
mean(2) - mean(1)	0.031***	0.054***	0.026***	0.024**	0.031***
mean(3) - mean(1)	0.033***	0.068***	0.029***	0.019*	0.033***
mean(4) - mean(1)	0.045***	0.086***	0.038***	0.013	0.045***
mean(5) - mean(1)	0.051***	0.108***	0.027***	0.020**	0.051***
mean(3) - mean(2)	0.002	0.014	0.003	-0.005	0.002
mean(4) - mean(2)	0.014***	0.032***	0.012	-0.011	0.014***
mean(5) - mean(2)	0.020***	0.054***	0.001	-0.004	0.020***
mean(4) - mean(3)	0.012***	0.018**	0.009	-0.007	0.017***
mean(5) - mean(3)	0.018***	0.040***	0.002	0.000	0.018***
mean(5) - mean(4)	0.006*	0.022***	0.009	0.007	0.006*

Table 8

* Significantly different from zero at 10% level;

** Significantly different from zero at 5% level;

***Significantly different from zero at 1% level.