

## **Passive Ownership and Earnings Manipulation**

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### **Abstract**

We examine the relation between passive ownership and financial reporting quality measured by Beneish's (1999) earnings' manipulation score (M-score). We find that passive ownership is negatively related to M-score and to the likelihood of being designated as a "manipulator" firm. However, these relations are muted when one of the four largest auditing firms audits the firm in the previous year. The evidence is consistent with the notion that passive owners act as monitors, but relinquish their monitoring role to the Big 4 auditing firms. We also find that higher passive ownership for the lowest M-score quintile yields higher risk-adjusted returns.

JEL Codes: G11, G20, G23, G30, G34, G39, M4, M41, M42

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*“The relationship we build [with corporate management] is very important. As a long-term investor, the stick you wield is powerful, especially if you own a lot of the company. And the carrot – your engagement – is as appealing as your stick is long. When an active manager is upset, they leave. When we get upset, we vote.”*

Rakhi Kumar

Head of ESG Investments & Asset Stewardship, State Street Global Advisors<sup>1</sup>

## I. Introduction

Index mutual fund assets under management increased by an astounding 2589% in the 20-year period from 1996 to 2016, with the ratio of total net assets of index funds to that of active mutual funds growing 513% from 0.039 to 0.239.<sup>2</sup> These numbers are likely understated, as many so-called “active” institutional investors are actually “closet” index funds (e.g. Bushee 1998, 2001; Bushee and Noe 2000; Cremers and Petajisto 2009). The growth of passive ownership in the financial markets has fueled debates among academics as well as practitioners about the implications for market efficiency, liquidity, excess comovement, etc. (e.g. Kamara, Lou, and Sadka 2010; Wurgler 2010; Sullivan and Xiong 2012; Blitz 2014; Broggard, Ringgenberg, and Sovich 2017; DeLisle, French, and Schutte 2017). In addition to market-related consequences, there are also deliberations pertaining to the effect of the growth in index fund ownership on firm corporate governance. The debate is rooted in the fact that passive ownership is tied to an index and, thus, passive owners cannot engage in trades that reward (nor punish) one group of stocks

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<sup>1</sup> Reshma, K. (2017, July 8). Passive Investors Are the New Shareholder Activists. Barron's. Retrieved October 4, 2017, from <https://www.barrons.com>

<sup>2</sup> In their 2017 report, the Investment Company Institute reports total net assets of index (active) funds was \$97.8 billion (\$2,526 billion) in 1996 and \$2,629 billion (\$10,986 billion) in 2016. In addition, they report the number of index funds increased from 105 funds to 421 funds over the same period.

over another. Unlike an active fund, a pure passive fund tracks its associated index as closely as possible and, thus, can neither pull back from poorly governed firms nor favor well governed firms.

This study contributes to the debate on the effects of passive ownership on corporate governance by examining the relation between passive ownership and firms' financial reporting quality. An enormous growth in passive assets under management raises important questions regarding their monitoring role in different aspects of corporate governance including manipulation of financial statements. Having accurate information in firms' financial reports is essential to investors, creditors, analysts, money managers, regulators, and other stakeholders and an important aspect of corporate governance (Anderson 1981; Hope, Thomas, and Vyas 2013, 2017; Drake, Roulstone, and Thornock 2016). We use the M-score metric developed in Beneish (1999) and Beneish, Lee, and Nichols (2013) as a measure of financial statement manipulation. The authors developed the M-score to identify firms that are inclined to release fraudulent financial statements and show that the M-score is effective at predicting earnings manipulation, which can take a variety of forms on the financial statements. They also demonstrate its efficacy even among supposedly high-earnings-quality firms with low discretionary accruals. We use M-score because of its advantage over other "accounting anomaly" variables in terms of its ability to capture the propensity of the firm to commit fraud rather than the aggressiveness of the firm's accounting method (which is not necessarily fraudulent).

If one considers the financial market as a great voting machine (as the father of value investing Ben Graham describes it), passive owners are the disenfranchised because they cannot "vote with their feet" by buying or selling a stock. However, passive owners are able to be actively engaged in corporate governance via the votes they control during elections and evaluations of proposals brought forth by management and investors. For example, passive owners have the

opportunity to vote on propositions to increase the number of independent directors or remove poison pill clauses, both of which are widely considered as attempts to improve corporate governance. Whether passive institutional investors are monitoring firms and/or are involved in corporate governance of the stocks they hold is an ongoing debate and an empirical question we address this study.

Critics contend that passive owners have little incentive or resources available for monitoring due to their low fee structure. Henderson and Lund (2017) make the argument that it is rational for index funds to withhold resources for monitoring due to a freeriding problem: any effort and money spent on monitoring or improving corporate governance also benefits their competitor index funds that hold the same stocks. Additionally, many index funds are in competition with each other to manage firms' retirement accounts (such as 401k plans) which discourages fund managers from actively engaging in corporate activism. Henderson and Lund (2017) report that three of the largest passive owners, Vanguard, Blackrock, and State Street, devote only a small number of employees to monitor the firms whose stock they hold; at the time their article was published, there was one employee designated to a corporate governance team per 870, 700, and 900 firms, respectively. Establishing independent directors and monitoring managerial compensation are generally deemed as good corporate governance measures (e.g. Gompers, Ishii, and Metrick 2003). Yet, Morgenson (2016) finds that BlackRock (Vanguard) voted against having the board be led by an independent chairman 95% (100%) of the time and maintained status quo in compensation of S&P 500 firms by voting in favor of executive pay packages 98.3% (98.1%) of the time. Such anecdotal evidence indicating lack of effort to influence governance and reign in agency costs prompts Henderson and Lund (2017) to call for the suspension of index fund voting rights. Consistent with the reporting of Henderson and Lund

(2017) and Morgenson (2016), an empirical study by Schmidt and Fahlenbrach (2017) finds that more passive ownership leads to less independent directorships, increased CEO power, and higher agency costs in general.

Despite arguments condemning passive investing as damaging to firm governance, both active and passive institutional investors have a fiduciary duty to their investors. Rakhi Kumar's quote above clearly recognizes this. Passive funds like Vanguard regularly profess that they exert effort to monitor the firms they hold in their index funds and vote according to their fiduciary duty to their fund holders.<sup>3</sup> Additionally, in a speech to board members at the Harvard Law School Forum on Corporate Governance and Financial Regulation, Vanguard CEO F. William McNabb III stated the following:<sup>4</sup> "I'll begin my remarks with a premise. It's a simple belief that I have. And that is: Corporate governance should not be a mystery. For corporate boards, the way large investors vote their shares should not be a mystery. And for investors, the way corporate boards govern their companies should not be a mystery. I believe we're moving in a direction where there is less mystery on both sides, but each side still has some work to do in how it tells its respective stories...

...when it comes to our indexed offerings, we are permanent shareholders. To borrow a phrase from Warren Buffet: Our favorite holding period is forever. We're going to hold your stock when you hit your quarterly earnings target. And we'll hold it when you don't. We're going to hold your stock if we like you. And if we don't. We're going to hold your stock when everyone else is piling in. And when everyone else is running for the exits. In other words, we're big, we don't make a

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<sup>3</sup> For example, Vanguard maintains a website dedicated to expressing their view on stewardship (<https://about.vanguard.com/investment-stewardship/>) and often publish articles on their website espousing their fiduciary duty to monitor the firms they hold (e.g. <https://vanguardblog.com/2017/07/06/the-ultimate-long-term-investors/>).

<sup>4</sup> <https://corpgov.law.harvard.edu/2015/06/24/getting-to-know-you-the-case-for-significant-shareholder-engagement/>. Retrieved on January 8<sup>th</sup>, 2018.

lot of noise, and we're focused on the long term. That is *precisely* why we care so much about good governance. Vanguard funds hold companies in perpetuity. We want to see our investments grow over the long-term. We're not interested in managing the companies that we invest in. But we do want to provide oversight and input... ..At Vanguard, we've been on a journey toward increased engagement over the past decade or so. Our peers in the mutual fund industry have as well."

Passive institutional investors are in a unique position to leverage their relatively large ownership through direct engagement in corporate governance and monitoring since those are the only mechanisms available to them to execute their fiduciary duty to their constituents. Consequently, passive institutional investors do not necessarily equate passive investing with passive ownership and acknowledge their fiduciary responsibilities to their clients. In addition to fiduciary duty, the managers may monitor for their own gain (Del Guercio and Hawkins, 1999). Managers compensated with a percentage of assets under management (AUM) are incentivized to monitor firms because better governed firms earn higher returns (e.g. Gompers, Ishii, and Metrick, 2003) and, as a result, increase the AUM more than if the firms were left unmonitored. Thus, there are several reasons why passive institutional owners would want to monitor the firms whose stock they possess.

Statements made by Vanguard CEO and other passive managers find support in some of more recent empirical studies that demonstrate that passive investors are engaged participants in corporate governance. In stark contrast to Schmidt and Fahlenbrach (2017) findings, Boone and White (2015) demonstrate that higher passive ownership results in less information asymmetry in the forms of more disclosure by management, greater liquidity, and increased analyst following. Similarly, Appel, Gormley, and Keim (2016) show that, through their voting blocs, passive owners

improve corporate governance by removing takeover defenses and increasing the number of independent directors. Given the conflicting evidence, it remains unclear how corporate governance will evolve as passive ownership continues to rise.

This study contributes to the literature by demonstrating that passive ownership affects firms in a positive way by reducing their susceptibility to committing financial statement fraud. We find evidence from both univariate sorts and multivariate regressions that total passive ownership of a firm's stock (i.e. the percentage of total outstanding stock owned by passive investors) is negatively correlated with the firm's M-score. However, the relation between passive ownership and M-score is dependent on the magnitude of the M-score. The negative relation between passive ownership and M-score is substantial in firms with high M-scores and falls to statistically insignificant levels in the firms with the lowest M-scores. These results are consistent with passive owners focusing their monitoring efforts on firms that have the highest probability of issuing fraudulent reports, perhaps due to their limited resources. Further evidence suggests that passive ownership reduces the probability that a firm will be designated as a "manipulator" based on the M-score. Furthermore, we find weak evidence of the negative effect of the proportion of passive ownership relative to total mutual fund ownership on the M-score. This measure of passive ownership is more important in firms with low M-scores and irrelevant in firms with high M-scores.

We also reveal that when firms are audited by one of the Big 4 auditing firms and have high passive ownership relative to total mutual fund ownership, the negative relation between passive ownership and M-Score becomes more positive. It seems very unlikely that Big 4 auditors would decrease their scrutiny of financial statements as passive ownership increases. These results are more consistent with passive owners relinquishing monitoring duties to the Big 4 auditors and

redirecting their monitoring resources elsewhere. The lessened effort on the part of a large portion of the shareholders would in turn increase the opportunities for firms to manipulate earnings, even in the presence of Big 4 auditors.

We examine the effect of M-score and passive ownership on stock returns and find mixed results. We compute stock return alphas from two risk models, the Fama and French (1993) and Carhart (1997) 4-factor model and the Fama and French (2015) 5-factor model, and sort the stocks based on M-Score and passive ownership. Focusing on total passive ownership, we find higher passive ownership in similar M-score groups actually hurts future risk-adjusted returns. Conversely, higher ratio of passive ownership relative to total mutual fund ownership corresponds to higher the risk-adjusted returns especially for the low M-Score firms. Our findings suggest that passive ownership is associated with more reliable financial reporting, which is of great importance to many types of stakeholders, but it does not necessarily translate to higher risk-adjusted returns.

## **II. Data and Variable Construction**

### *Data Sources*

Our sample consists of all firms traded on the NYSE, AMEX, and NASDAQ from January 1983 to December 2016 for which ownership information could be obtained. We use four main datasets: the COMPUSTAT, the CRSP Survivor-Bias-Free US Mutual Fund Database (the CRSP fund dataset), the Thompson Reuters Mutual Fund Common Stock Holdings Database (the fund holdings dataset), and the CRSP stock database. Below we describe sample selection and construction of earnings manipulation and passive ownership measures.



### *Earnings Manipulation Score (“M-Score”)*

We first use the COMPUSTAT to compute the Beneish (1999) manipulation score (M-Score) for each firm in each fiscal year following the Beneish, Lee, and Nichols (2013) model:

$$\begin{aligned} M\_Score = & -4.84 + 0.920 \times DSR + 0.528 \times GMI + 0.404 \times AQI + \\ & + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI + \\ & + 4.679 \times Accruals - 0.327 \times LEVI, \end{aligned} \quad (1)$$

where *DSR* is the ratio of current and previous years’ days’ sales in receivables; *GMI* is the ratio of previous and current years’ gross margins; *AQI* is the ratio of the current and previous years’ Asset Quality measures. Asset quality is the ratio of non-current assets other than plan, property and equipment over total assets; *SGI* is the ratio of sales during the current and previous years; *DEPI* is the ratio of the rate of depreciation during previous and current years, where the rate of depreciation is equal to the ratio of depreciation over sum of depreciation, net property, plant and equipment; *SGAI* is the ratio of Sales, General, and Administrative Expenses to during the current and previous years; *Accruals* is the ratio of total accruals and total assets where total accruals is equal to the change in working capital other than cash less depreciation; *LVGI* is the ratio of leverage in current and previous years, where leverage is the ratio of total debt to total assets..

Using the definition provided in Beneish, Lee, and Nichols (2013) for the potential earnings manipulator firms we create an indicator variable that takes the value of one if the M-score exceeds -1.78, and zero otherwise. Based on Beneish (1999) estimates, a score greater than -1.78 indicates a threshold that signifies a firm is manipulating its earnings.

### *Passive Ownership Measures*

We use two alternative measures of passive ownership. The first is the passive mutual fund ownership in a stock as a percentage of total shares outstanding. The other is calculated as a percentage of passive and active ownership combined. In order to differentiate between active and passive ownership we select open-end US equity mutual funds that are either passively or actively managed. We use the CRSP fund database, the holdings database, and the CRSP stock database to calculate passive ownership measures. The CRSP fund database contains monthly and annual characteristics for each share class such as monthly total net assets (TNA), fund net returns, annual turnover and expense ratios, investment objectives, share class names, etc. The holdings database contains detailed information on mutual funds' holdings, including CUSIPs, company names, and stock shares. Unlike the CRSP fund database all the information in holdings database is at the fund level. Holdings information is provided at either semiannual or quarterly frequency. Prior to 2004 funds were required to report their holdings only every six months, though some funds voluntarily disclosed their holdings more frequently. We addressed this inconsistency by assuming buy and hold strategy and replicating fund holdings to fill the gaps between reporting dates (see, e.g., Kacperczyk, Sialm, and Zheng, 2008). In the end we produce quarterly holdings data starting from 1983.

We identify index mutual funds in the CRSP fund database using identifier variable (*index\_fund\_flag*) that flags index mutual funds starting from 2003. For index mutual funds prior to 2003 we perform name search using word algorithm. We screen each fund's name for index related keywords to identify additional index mutual funds what are not captured by *index\_fund\_flag*. We also remove funds containing ETF, ETN or variations in their names. Mutual funds not flagged as index funds are labeled as active mutual funds<sup>5</sup>. We merge share class names

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<sup>5</sup> In mutual fund literature actively managed mutual funds are referred to cap-based and style funds only (see, e.g., Kacperczyk, Nieuwerburgh, and Veldkamp 2014). For example, Doshi, Elkamhi, and Simutin (2015) use *crsp\_obj\_cd*

and flags for index or actively managed funds obtained from the CRSP fund dataset with the holdings dataset using the MFLINK developed by Russ Wermers and provided through the Wharton Research Data Services (WRDS). Since the CRSP fund database contains information at share level while the holdings data is at the fund level we retain the qualitative attributes, such as share class name, objectives, year of origination, objective styles, etc., of the oldest share class in the fund before merging with the holdings dataset. We merge quarterly holdings data with the CRSP monthly stock data to get monthly prices and total number of shares outstanding for each stock in each month in our sample. We assume that the number of shares owned by mutual funds does not change during the quarter. Finally, we compute passive mutual fund ownership for each PERMNO stock in each month as the number of shares owned by passive mutual funds divided by the total number of shares outstanding. In the alternative specification we divide shares owned by passive mutual funds by the sum of number of shares owned by passive and active funds.

#### *Other Control Variables*

Using the stock level data (daily prices, returns, trading volume, etc.) from CRSP, we create a battery of control variables. LNSIZE is the natural log of the firms' market capitalization (share price times and number of shares outstanding). MOMENTUM is the cumulative return during previous twelve months, omitting the most recent month's return as per Jegadeesh and Titman (1993). BM is the book equity to market equity ratio and calculated following Fama and French (1992). ILLIQ is the Amihud (2002) illiquidity measure which is computed as the yearly average of each stock daily illiquidity, which is ratio of absolute stock return to its dollar volume. TURNOVER is the yearly average of the daily turnover of the stock and is calculated as the

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to identify actively managed mutual funds that excludes balanced, bond, money market, international, and sector funds. In this paper we use term actively managed funds with respect to index mutual funds. That is, for simplicity, every fund that is not flagged as index fund we flag as active mutual fund.

number of shares traded during the day divided by the number of shares outstanding. VOLATILITY is the standard deviation of the returns over the year. Data on the auditing characteristics is obtained from the Audit Analytics database. BIG4 is an indicator variable that takes on a value of one for a firm that has obtained auditing services during that year from one of the four largest professional service networks in the world, namely Deloitte, PricewaterhouseCoopers, Ernst & Young and KPMG.

We also use Compustat to calculate the abnormal discretionary accruals as measure of earnings management. The methodology was originally proposed by Jones (1991) which was later modified by Dechow, Sloan, and Sweeney (1995). Discretionary accruals represent the difference between total accruals and the non-discretionary portion of the accruals. The total accruals are computed as the change of total current assets, minus the change of total current liabilities, minus the change in cash, minus the change in debt included in current liabilities, minus the depreciation and amortization expense, and scaled by last period total assets. Non-discretionary accruals is the sum the change of revenue minus the change of receivables plus gross property, plant and equipment values scaled by last period total assets. Non-discretionary accruals is broken down into three components: inverse of the last year's total assets, change in revenue across consecutive years minus the change in net receivables across consecutive years scaled by the preceding year's total assets; and gross property, plant and equipment scaled by preceding year's total assets. The method to extract the discretionary portion of accruals makes use of an OLS regression with no intercept where the total accruals are regressed against the three components of non-discretionary accruals. The absolute value of residuals from this regression are the discretionary portion of accruals.

### *Descriptive Statistics and Correlations*

Table 1 reports the descriptive statistics and Table 2 reports correlation coefficients for our main variables. All accounting variables are winsorized at the 1st and 99th percentiles. Table 1 reports the time-series mean, standard deviation, min, 25<sup>th</sup> percentile, median, the 75<sup>th</sup> percentile, and max for all firms in our final sample. M-score significantly varies in our sample: on average it equals to -2.40 but it can be as large as 12.97 and as little as -18.19 indicating that there are firms on both spectrum of manipulation. Meanwhile passive ownership ranges from 0% when stock is not owned by any index mutual fund to the case where 33% of all shares outstanding can be owned by index mutual funds. Table 2 presents the Pearson correlation coefficients between the key variables used in our analyses. M\_SCORE and two alternative measures of passive ownership, PASS\_OWN and PASS/TOTMUTUAL\_OWN, are negatively correlated and equal to -1.2% and -2.1%. There is a positive correlation between M\_SCORE and few firm characteristics such as firm size, momentum, illiquidity, turnover, and discretionary accruals. M-score is negatively correlated with volatility and the book-to-market ratio. This is consistent with Beneish's finding the growth (high BM) firms tend to have higher M-Scores.

### **III. Empirical Analyses**

#### *Single Sorts*

We start the analysis of the relation between passive ownership and M-Score by sorting firms into quintiles based on their level of passive ownership. Table 3 presents the mean M-Scores of the firms in each quintile bin. Panel A displays the sort by passive ownership relative to shares outstanding and Panel B shows the sort by the ratio of passive ownership to total mutual fund ownership. Both Panels demonstrate that average M-Score decreases monotonically as passive ownership increases. Additionally, the differences in M-Scores between the highest and lowest

passive ownership groups are statistically significant. This suggests a negative relation between passive ownership and M-Score.

<TABLE 3 ABOUT HERE>

### *Regression Analysis*

Given the single sort results, we use regression techniques to control for other firm characteristics that could be confounding the relation between passive investing and M-Score. We regress next period's M-Score on this period's passive ownership and other control variables using ordinary least squares (OLS) to estimate the model:

$$\begin{aligned}
 M\_Score_{i,t+1} = & \beta_0 + \beta_1 Passive\ Ownership_{i,t} + \beta_2 LNSIZE_{i,t} + \beta_3 MOMENTUM_{i,t} + \\
 & \beta_4 BM_{i,t} + \beta_5 ILLIQ_{i,t} + \beta_6 TURNOVER_{i,t} + \beta_7 VOLATILITY_{i,t} + \\
 & \beta_8 MJ\_DISCACCRUALS_{i,t} + \beta_9 M\_Score_{i,t} + \beta_{10} BIG4_{i,t} + \\
 & \beta_{11} BIG4_{i,t} \times Passive\ Ownership_{i,t} + \varepsilon_{i,t}
 \end{aligned} \tag{2}$$

The estimation uses year and firm fixed effects and clusters the standard errors by firm according to Petersen (2009). Table 4 displays the results from the OLS estimation. Panel A presents the results using total passive ownership (PASS\_OWN) while Panel B presents results are based on the ratio of passive ownership to total mutual fund ownership (PASS/TOTMUTUAL\_OWN). Note that only ten to twenty percent of this year's M-Score is related to next year's M-Score. Across all model specifications PASS\_OWN is negatively and highly statistically related to M-Score. PASS/TOTMUTUAL\_OWN is also negatively related to M-Score but is only statistically significant at the 5% level in the specifications without year and firm fixed effects.

<TABLE 4 ABOUT HERE>

Interestingly, when a firm obtained auditing services during that year from one of the four largest auditing companies in the world (namely Deloitte, PricewaterhouseCoopers, Ernst & Young and KPMG), the negative effect of passive ownership on M\_Score is muted as indicated by the parameter estimate of 0.934 (p-value<0.10) in Model (6) of Panel A. A potential explanation is that passive investors exert less effort to monitor a firm's quality of financial reporting when they aware that the firm sought "high quality" auditing services the year before. In other words, passive owners tend to shirk the responsibility to monitor for fraudulent reporting to the Big 4 auditors. The inference is similar when examine the results from Model (6) in Panel B.

The OLS results are consistent with the sorting results in that they suggest higher passive ownership is beneficial to the quality of firms' financial reporting. Thus, they imply passive owners have a monitoring effect on the firm and support the findings of Boone and White (2015) and Appel et al. (2016). However, it does appear that passive investors will reduce monitoring efforts if there other monitoring entities are apparent.

#### *Double Sorts*

If passive owners' resources are limited due to very low expense ratios, they may choose to expend the limited resources on the most poorly governed firms and free-ride on well-governed firms. To explore this conjecture, we double sort the firms into quintiles by M-Score (to put them in into similar governance bins) and by passive ownership, resulting in twenty-five bins.

<TABLE 5 ABOUT HERE>

Table 5, Panel A shows the mean M-Score in each bin using PASS\_OWN as the passive ownership measure. The difference between the high and low passive ownership categories show a dramatic and monotonic decrease from low M-Scores to high M-Scores. In fact, the differences

are positive and statistically significant in the first through third quintiles of M-Score and is negative and significant only in the fifth (highest) quintile of M-Score. This suggests that, at low M-Scores, passive ownership is detrimental to the reporting quality of firms or, in other words, there is a lack of monitoring by passive owners that is associated with an increase in firms' M-Scores.

The mean M-Scores in each bin using PASS/TOTMUTUAL\_OWN as the passive ownership measure are shown in Table 5, Panel B. In contrast to sorts by PASS\_OWN, in both low and high M-Scores there is a negative relation between passive ownership and M-Score (although at intermediate M-Scores there does not appear to be a significant relation). Thus, it appears that, as passive ownership increases relative total mutual fund ownership, engage in more monitoring of firms with the highest and lowest M-scores (i.e. the firms that are most and least likely to commit reporting fraud). Perhaps passive owners recognize that, as they become dominant owners they must take up the mantle of being the primary monitor to fill the void of monitoring.

#### *Quantile Regression Analysis*

Since the double sorts show a varying relation between passive ownership and M-Score depending on the level of M-Score, we adopt the quantile regression technique described by Koenker (2005). The model specification is the same as the OLS specification in equation (1). However, the quantile regression framework allows us to examine the relation in question conditional on the distribution of M-Scores while controlling for other firm characteristics. Table 6 presents the results from these estimations. Since there is debate in the literature regarding the



suitability of using firm fixed effects in a quantile regression framework (e.g. Koenker 2004), we report estimation results both with and without firm fixed effects.<sup>6</sup>

<TABLE 6 ABOUT HERE>

Panel A show the quantile regression estimations using PASS\_OWN as the passive ownership variable, which are consistent with the inferences from the double sorting procedure. PASS\_OWN has no significant effect on M-Score when M-Score is low (e.g. firms have very authentic financial reports). However, as M-score increases, PASS\_OWN has a monotonically increasingly negative and statistically significant impact on M-Score. This holds true both with and without firm fixed effects. One explanation for this evidence is that passive owners focus monitoring efforts on firms whose financial reports are of poor quality and neglect firms with high quality reports.

Having a Big 4 auditor this year is negatively related to next year's M-Score in the upper half of the M-Score distribution, although firm fixed effects subsume this relation. As seen in Models (4) and (8), the interaction between the Big 4 dummy variable and PASS\_OWN is positive and statistically significant at the 10% level in the upper quartile of M-Scores. Thus, the M-score increases as passive ownership increases when the firm has a Big 4 auditor. These results augment the inferences from the OLS regressions in that it appears that passive investors will reduce monitoring effort conditional on the use of Big 4 auditors when the firms' M-Scores are the highest.

Panel B display estimation results when using PASS/TOTMUTAL\_OWN as the passive ownership variable. These results have somewhat different implications than the associated double

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<sup>6</sup> We suppress the constant in the regressions when using firm fixed effects in the quantile regression estimations.

sorts. Here, there is a negative and statistically significant between PASS/TOTMUTUAL\_OWNS and M-Score at low levels of M-Score and becomes less negative as M-Score increases. These results seem to indicate that when passive owners have a high percentage of ownership relative to the total ownership of mutual funds they expend effort to monitor funds with low M-Scores, perhaps because the passive fund managers believe there is not enough active ownership to effectively monitor firms' reporting quality. They do not appear, however, to act in the same manner when M-Scores are high. Taking all the quantile regression results into consideration, it appears that total passive ownership is more important at high M-Scores and passive ownership relative to active ownership is more important at low M-Scores.

The interaction of BIG4 and PASS/TOTMUTUAL\_OWNS are only significant (p-value<0.10) in Model (8). Still this is consistent with passive owners turning the reigns of financial statement monitoring to the Big 4 auditors in high M-Score firms.

### *Logistic Regression Analysis*

Beneish (1999) and Beneish et al. (2013) delineate an M-Score of -1.78 as the threshold to identify if firms are actively manipulating their financial statements in a way that will result in a charge of fraud against the firm. In our next analysis, we use logistic regressions to determine if passive ownership has an impact on a firm being designated as a manipulator. We estimate the model:

$$\begin{aligned}
 P(MANIPULATOR_{i,t+1} = 1) = \Phi & \left( \gamma_0 + \gamma_1 \text{Passive Ownership}_{i,t} + \gamma_2 \text{LNSIZE}_{i,t} + \right. \\
 & \gamma_3 \text{MOMENTUM}_{i,t} + \gamma_4 \text{BM}_{i,t} + \gamma_5 \text{ILLIQ}_{i,t} + \gamma_6 \text{TURNOVER}_{i,t} + \gamma_7 \text{VOLATILITY}_{i,t} + \\
 & \gamma_8 \text{MJDACCRAUALS}_{i,t} + \gamma_9 \text{M-Score}_{i,t} + \gamma_{10} \text{BIG4}_{i,t} + \gamma_{11} \text{BIG4}_{i,t} \times \\
 & \left. \text{Passive Ownership}_{i,t} + \varepsilon_{i,t} \right) \tag{3}
 \end{aligned}$$

Where  $\Phi$  indicates the logistic probability function and a firm with an M-Score of -1.78 or higher in year t+1 is given a MANIPULATOR variable of 1, and zero otherwise. The results from these estimations are displayed in Table 7. Column (1) shows the results when using PASS\_OWN as the passive ownership variable and Column (2) uses the PASS/TOTMUTUAL\_OWN. PASS\_OWN has a negative and statistically significant (p-value<0.01) impact on the probability of a firm being labelled as a manipulator. PASS/TOTMUTUAL\_OWN, however, has no significant relation. Thus, the higher the total passive ownership a firm has, the less likely it's M-score will cross the threshold and be deemed a manipulator. The evidence from the M-Score and passive ownership analyses are consistent with the notion that passive investors do play a monitoring role, and the concerns of those such as Henderson, Lund, and Morgenson, while well-thought out, are unfounded.

<TABLE 7 ABOUT HERE>

Having a Big 4 auditor reduces the probability of being a manipulator, as seen in Models (4), (6), (7), and (8). The interaction between BIG4 and PASS\_OWN in Model (4) indicates that the likelihood of being a manipulator increases as passive ownership increases and the firm has a Big 4 auditor. This is consistent with the prior results indicating a reduction in monitoring effort if passive investors believe Big 4 auditors are performing a sufficient amount of monitoring.

### *Stock Return Analysis*

In our last set of analyses, we explore whether passive investors can impact stock returns via a monitoring channel. We independently sort firms into quintiles by M-Score and passive ownership. We form portfolios of the firms in the twenty-five bins and rebalance them annually. We compute the value-weighted returns of each portfolio on a monthly basis and regress the

returns on two different risk models. The first model is the Fama-French (1993) and Carhart (1997) 4-factor model:

$$(R_p - R_f)_t = \alpha_p + \beta_{p,1}MKTRF_t + \beta_{p,2}SMB_t + \beta_{p,3}HML_t + \beta_{p,4}UMD_t + \varepsilon_{p,t} \quad (4)$$

The second model is the Fama and French (2015) 5-factor model:

$$(R_p - R_f)_t = \alpha_p + \beta_{p,1}MKTRF_t + \beta_{p,2}SMB_t + \beta_{p,3}HML_t + \beta_{p,4}RMW_t + \beta_{p,5}CMA_t + \varepsilon_{p,t} \quad (5)$$

Where  $(R_p - R_f)$  is the portfolio excess monthly return above the risk free rate, MKTRF is the market risk premium, SMB is a size factor, HML is a book-to-market equity (value) factor, UMD is a momentum factor, RMW is a profitability factor, and CMA is an investment factor.

<TABLE 8 ABOUT HERE>

Table 8 presents the abnormal returns (alphas) from these models as well as the alpha t-statistics. Panels A1 and A2 show the portfolio 4-factor and 5-factor alphas, respectively, when sorting by M-Score and PASS\_OWN. The column labelled High-Low shows the alphas from a portfolio that longs the portfolio with the highest passive ownership and shorts the portfolio with the lowest passive ownership. Our expectation is that the High-Low portfolio alphas would be positive in the high M-Score groups where the previous results showed more of a monitoring effect by passive owners (e.g. more monitoring would result in higher returns than less monitoring). Surprisingly, there is no evidence in Panels A1 and A2 to support this prior. In fact, both risk models show negative and statistically significant alphas, -0.56% and -0.98% per month (p-value<0.10 for the 4-factor model and p-value<0.01 for the 5-factor model), respectively, in the highest M-Score quintiles.

Our prior is similar for the PASS/TOTMUTAL\_OWN and M-Score sorted portfolio returns; the M-Score group that is most negatively affected by passive ownership should have positive High-Low alphas. With this passive ownership variable, earlier results show the low M-Score quintile is the most influenced. Consistent with expectations, the High-Low alphas in both risk models are positive, 0.89% and 0.96% per month, respectively, and significant ( $p < 0.05$  for the 4-factor model and  $p < 0.01$  in the 5-factor model) in the lowest M-Score quintiles. Thus, while Beneish et al. (2013) show that low M-Score firms have stock returns that perform those of high M-Score firms, these results show that an investor can enhance their returns on low M-Score firms by also selecting firms with high passive ownership relative to total mutual fund ownership.

#### **IV. Conclusion**

Passive ownership in stocks is growing at a much faster pace than active ownership. Recently, passive owners have been under criticism for not using their voting power to improve corporate governance and accused of not monitoring the firms whose stock they own. In this study, we explore the relation between passive ownership and M-Score, a measure of a firm's proneness to manipulate earnings and submit fraudulent financial statements. Our empirical evidence supports several conclusions. First, passive ownership is generally negatively related to M-Score, which implies that more passive ownership is inversely associated with the tendency to manipulate information in financial statements. This suggests that passive owners either a) exert some effort to monitor firms' financial reporting practices, or b) tend to include low M-score firms in their portfolios. The first reasoning is consistent with passive owners improving the governance environment, as found by Boone and White (2015) and Appel et al. (2016). The second can be true

if low M-score firms tend to be included in indices, as passive owners are bound to purchase only stocks in their benchmark index.

Second, we observe that the negative relation between M\_Score and the passive ownership is not universal and depends on whether a firm sought “high quality” auditing services from the largest auditing firms the year before. The negative effect of passive ownership on M-Score decreases in absolute value for firms which were audited in the previous year relative to the firms which were not audited. The results suggest that passive investors are less likely to adopt a monitoring role for fraudulent reporting as they shift this responsibility to the auditing firms or believe that role is fulfilled by auditing firms already.

The results also show that the definition of passive ownership has implications for association with the distribution of M-Scores. When passive ownership is defined as the total number of shares owned by passive owners divided by the total number of shares outstanding, passive ownership has a larger negative correlation with M-Score when M-Scores are higher. So, as M-Scores increase, passive ownership has a stronger pull on M-Scores. In addition, firms with higher passive ownership of this form are less likely to be designated as “manipulators” by the M-Score. A possible explanation for these findings is that as passive funds own an increasing stake in the firm, they devote resources to monitor only firms who are poorly governed and have a high likelihood of manipulating earnings. However, we find no evidence that this type of passive ownership in combination with M-Scores has a positive impact on future stock returns.

If passive ownership is measured as the ratio of total number of shares owned by passive investors to total number of shares owned by all mutual funds (both passive and active), then passive ownership has a larger negative correlation with M-Score when M-Scores are lower. The implication under this form of passive ownership is that, as passive funds increase their ownership

relative to active funds, it is the well governed firms with already low M-Scores that benefit with even lower M-Scores as passive ownership increases. While this type of passive ownership has no relation with the likelihood of being labelled a manipulator, it does have an impact on stock returns. Beneish et al. (2013) show that low M-Score stocks outperform high M-Score stocks. We demonstrate that risk-adjusted returns among the low M-Score stocks can be improved substantially by investing in low M-Score stocks that have a high ratio of shares owned by passive investors relative to the total number of shares owned by all mutual funds.

In sum, our findings provide an evidence that passive ownership indeed improves corporate governance by means of improving financial reporting quality, but it does not necessarily lead to higher risk-adjusted returns. These findings are important to a variety of stakeholders who depend on accurately reported financial statements.

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**Table 1. Summary Statistics**

This table provides the summary statistics such as: the number of observations, mean, standard deviation, minimum, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> percentiles and maximum for the variables used in our analysis. M\_SCORE is the Beneish (1999) manipulation score. MANIPULATOR is an indicator variable that takes a value of 1 if M\_SCORE > -1.78 and zero otherwise, as per the definition of Beneish, Lee, and Nichols (2013). PASS\_OWN is the passive ownership measure and computed as the number of shares owned by passive mutual funds divided by the total number of shares outstanding. TOTMUTUAL\_OWN is the total mutual fund ownership of the stock and computed as the total number of shares owned by passive and active mutual funds combined. PASS/TOTMUTUAL is the ratio of passive ownership to total mutual fund ownership of the stock. LNSIZE is the natural log of multiplication of the share price times and number of shares outstanding. MOMENTUM is the cumulative return during previous twelve months. BM is the book to market ratio and calculated following Fama and French (1992). ILLIQ is the Amihud (2002) illiquidity measure. TURNOVER is the average of the daily turnover of the stock and is calculated as the number of shares traded during the day divided by the number of shares outstanding. VOLATILITY is the standard deviation of the returns over the year. MJ\_DISCACCRUALS is the discretionary portion of the total accruals calculated following Dechow, Sloan, and Sweeney (1995). BIG4 is an indicator variable that takes on a value of one for a firm that has obtained auditing services during that year from one of the four largest professional service networks in the world, namely Deloitte, PricewaterhouseCoopers, Ernst & Young and KPMG. N is the total number of firm-year observations in the sample. Ownership variables are derived using the CRSP Survivor-Bias-Free US Mutual Fund Database, the Thompson Reuters Mutual Fund Common Stock Holdings Database, and the CRSP stock database. The remaining variables are derived using the COMPUSTAT and the CRSP stock databases. For more details of data and variable construction, please refer to section II. The sample period is from January 1983 till December 2016.

Variable	N	MEAN	STD DEV	MIN	25th PERCENTILE	MEDIAN	75th PERCENTILE	MAX
M_SCORE	72485	-2.4	1.49	-18.19	-2.82	-2.38	-1.93	12.97
MANIPULATOR	72485	0.2	0.4	0	0	0	0	1
PASS_OWN	72485	0.03	0.04	0	0	0.01	0.04	0.33
TOTMUTUAL_OWN	72485	0.15	0.14	0	0.04	0.11	0.24	0.98
PASS/TOTMUTUAL_OWN	72485	0.26	0.3	0	0.03	0.15	0.35	1
LNSIZE	72485	12.27	2.05	4.75	10.76	12.14	13.63	20.28
MOMENTUM	72485	0.14	0.77	-0.99	-0.25	0.03	0.34	32.44
BM	72485	0	0	-0.91	0	0	0	0.11
ILLIQ	72485	3.33	26.91	0	0.01	0.06	0.73	3041.09
TURNOVER	72485	0.01	0.01	0	0	0	0.01	0.42
VOLATILITY	72485	0.04	0.02	0	0.02	0.03	0.04	1.21
MJ_DISCACCRUALS	72485	0.09	0.1	0	0.03	0.07	0.12	1.06
BIG4	70448	0.67	0.47	0	0	1	1	1

**Table 2. Correlations**

The table reports the Pearson correlation coefficients between the variables used throughout the analysis. M\_SCORE represent the Beneish (1999) manipulation score. MANIPULATOR is an indicator variable that takes on a value of 1 if M\_SCORE > -1.78 as per the definition of Beneish, Lee, and Nichols (2013). PASS\_OWN represents the passive ownership percentage of that stock. TOTMUTUAL\_OWN represents the total mutual fund ownership of that stock. PASS/TOTMUTUAL represents the ratio of passive ownership to total mutual fund ownership of the stock. LNSIZE represents the natural log of market capitalization. MOMENTUM represents the cumulative returns from t-1 through t-12. BM represents the book to market ratio. ILLIQ represents the yearly Amihud (2002) illiquidity measure. TURNOVER represent the yearly average of the daily turnover of the stock. VOLATILITY represents the standard deviation of the returns over the year. MJ\_DISCACCRUALS represents the discretionary portion of the total accruals calculated via the modified Jones methodology. BIG4 is an indicator variable that takes on a value of one for a firm that has obtained auditing services during that year from one of the four largest professional service networks in the world, namely Deloitte, PricewaterhouseCoopers, Ernst & Young and KPMG. The sample period is from January 1983 till December 2016.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) M_SCORE	1											
(2) MANIPULATOR	0.584	1										
(3) PASS_OWN	-0.012	-0.082	1									
(4) TOTMUTUAL_OWN	0.007	-0.068	0.654	1								
(5) PASS/TOTMUTUAL_OWN	-0.021	0.034	0.172	-0.296	1							
(6) LNSIZE	0.027	-0.097	0.363	0.564	-0.358	1						
(7) MOMENTUM	0.092	0.075	0.013	0.025	-0.037	0.172	1					
(8) BM	-0.028	-0.027	0.009	-0.007	0.007	-0.03	-0.027	1				
(9) ILLIQ	0.007	0.027	-0.057	-0.106	0.146	-0.196	-0.017	-0.016	1			
(10) TURNOVER	0.005	0.055	0.24	0.368	-0.081	0.244	0.098	-0.017	-0.07	1		
(11) VOLATILITY	-0.011	0.139	-0.169	-0.248	0.294	-0.485	-0.025	-0.022	0.334	0.179	1	
(12) MJ_DISCACCRUALS	0.043	0.117	-0.138	-0.11	0.017	-0.11	0.054	-0.023	0.021	0.093	0.185	1
(13) BIG4	0.001	-0.034	0.24	0.296	-0.088	0.291	0.016	-0.015	-0.061	0.122	-0.091	-0.062

### Table 3. M-Score Single Sorts

The tables present the quantile sorts of M-score (Beneish manipulation score) with respect to the passive ownership measures. In Panel A, M\_score is sorted into quintile based on PASS\_OWN (percentage of passive ownership). In Panel B M\_score is sorted into quintile based on the PASS\_TOMUTUAL\_OWN (ratio of passive ownership to total mutual fund ownership).

#### Panel A. Sort by Total Passive Ownership

PASS_OWN	M-Score	
	1 (Low)	-2.38
	2	-2.40
	3	-2.41
	4	-2.43
	5 (High)	-2.43
	High-Low	-0.05
t-stat	(-2.60)	

#### Panel B. Sort by Passive Ownership to Total Mutual Fund Ownership

PASS/TOTMUTUAL_OWN	M-Score	
	1 (Low)	-2.36
	2	-2.38
	3	-2.41
	4	-2.44
	5 (High)	-2.45
	High-Low	-0.10
t-stat	(-5.43)	

## Table 4. OLS Regressions

This table presents the estimates from the following OLS regression specification:

$$M\_Score_{i,t+1} = \beta_0 + \beta_1 \text{Passive Ownership}_{i,t} + \beta_2 \text{LNSIZE}_{i,t} + \beta_3 \text{MOMENTUM}_{i,t} + \beta_4 \text{BM}_{i,t} + \beta_5 \text{ILLIQ}_{i,t} \\ + \beta_6 \text{TURNOVER}_{i,t} + \beta_7 \text{VOLATILITY}_{i,t} + \beta_8 \text{MJ\_DISCACCRUALS}_{i,t} + \beta_9 \text{M\_Score}_{i,t} \\ + \beta_{10} \text{BIG4}_{i,t} + \beta_{11} \text{BIG4}_{i,t} \times \text{Passive Ownership}_{i,t} + \varepsilon_{i,t}$$

Panel A presents the results using total passive ownership (PASS\_OWN) as the Passive Ownership variable while Panel B results use the ratio of passive ownership to total mutual fund ownership (PASS/TOTMUTUAL\_OWN). For variables' definitions, please refer to Table 1. Year and firm fixed effects are included in both Panels for regression specifications in columns (2), (4) and (6). The standard errors are clustered by firm. Robust T-statistics are reported in the parenthesis below the parameter estimates. \*, \*\*, \*\*\* represent the significance level of 10%, 5%, and 1% respectively.

### Panel A. Passive Ownership Relative to Total Shares Outstanding (PASS\_OWN)

	(1)	(2)	(3)	(4)	(5)	(6)
PASS_OWN	-0.861*** (-3.97)	-1.241*** (-3.51)	-0.796*** (-3.63)	-1.163*** (-3.28)	-0.660* (-1.66)	-1.964*** (-3.33)
LNSIZE	0.019*** (5.51)	0.021* (1.84)	0.020*** (5.52)	0.021* (1.91)	0.020*** (5.52)	0.021* (1.91)
MOMENTUM	0.181*** (14.46)	0.163*** (11.84)	0.180*** (14.06)	0.161*** (11.51)	0.180*** (14.05)	0.161*** (11.50)
BM	-7.974** (-2.30)	-8.356** (-2.09)	-7.568** (-2.35)	-7.919** (-2.15)	-7.557** (-2.35)	-7.906** (-2.15)
ILLIQ	0.001** (2.45)	0.001** (2.18)	0.001** (2.46)	0.001** (2.12)	0.001** (2.46)	0.001** (2.11)
TURNOVER	0.293 (0.31)	-2.477* (-1.85)	0.175 (0.18)	-2.755** (-2.02)	0.192 (0.20)	-2.804** (-2.05)
VOLATILITY	-0.819* (-1.76)	2.762*** (4.15)	-0.699 (-1.49)	2.703*** (4.07)	-0.694 (-1.48)	2.693*** (4.05)
MJ_DISCACCRUALS	0.646*** (8.17)	0.736*** (7.50)	0.654*** (8.12)	0.754*** (7.58)	0.657*** (8.15)	0.754*** (7.57)
M_SCORE	-0.102*** (-16.08)	-0.196*** (-28.71)	-0.096*** (-15.14)	-0.189*** (-27.78)	-0.096*** (-15.13)	-0.189*** (-27.78)
BIG4			-0.014 (-1.09)	-0.017 (-0.73)	-0.011 (-0.73)	-0.037 (-1.38)
BIG4*PASS_OWN					-0.162 (-0.42)	0.934* (1.73)
Constant	-2.902*** (-53.55)	-2.920*** (-21.44)	-2.890*** (-52.94)	-2.938*** (-21.57)	-2.892*** (-52.16)	-2.927*** (-21.44)
Observations	72485	72485	70447	70447	70446	70446
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	NO	YES	NO	YES

**Panel B. Passive Ownership Relative to Total Mutual Fund Ownership  
(PASS/TOTMUTUAL\_OW)**

	(1)	(2)	(3)	(4)	(5)	(6)
PASS/TOTMUTUAL_OW	-0.057** (-2.19)	0.006 (0.16)	-0.052** (-2.00)	0.005 (0.13)	-0.077** (-2.16)	-0.060 (-1.14)
LNSIZE	0.014*** (3.93)	0.020* (1.71)	0.016*** (4.19)	0.021* (1.80)	0.016*** (4.19)	0.021* (1.84)
MOMENTUM	0.183*** (14.54)	0.164*** (11.86)	0.181*** (14.13)	0.162*** (11.51)	0.181*** (14.11)	0.162*** (11.48)
BM	-8.033** (-2.28)	-8.433** (-2.08)	-7.628** (-2.33)	-7.996** (-2.15)	-7.612** (-2.33)	-7.980** (-2.15)
ILLIQ	0.001** (2.52)	0.001** (2.30)	0.001** (2.51)	0.001** (2.22)	0.001** (2.53)	0.001** (2.24)
TURNOVER	-0.195 (-0.20)	-2.626* (-1.94)	-0.262 (-0.27)	-2.885** (-2.10)	-0.222 (-0.23)	-2.852** (-2.07)
VOLATILITY	-0.595 (-1.28)	2.689*** (4.05)	-0.490 (-1.04)	2.646*** (3.99)	-0.495 (-1.05)	2.639*** (3.98)
MJ_DISCACCRUALS	0.658*** (8.33)	0.743*** (7.57)	0.664*** (8.27)	0.760*** (7.63)	0.668*** (8.31)	0.762*** (7.65)
M_SCORE	-0.101*** (-16.01)	-0.196*** (-28.65)	-0.096*** (-15.09)	-0.189*** (-27.74)	-0.096*** (-15.08)	-0.189*** (-27.73)
BIG4			-0.022* (-1.70)	-0.027 (-1.16)	-0.035** (-2.17)	-0.062** (-2.30)
BIG4*PASS/TOTMUTUAL_OW					0.047 (1.07)	0.119* (1.93)
Constant	-2.859*** (-49.23)	-2.901*** (-20.72)	-2.851*** (-48.70)	-2.920*** (-20.78)	-2.844*** (-48.46)	-2.905*** (-20.69)
Observations	72485	72485	70447	70447	70446	70446
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	NO	YES	NO	YES	NO	YES

**Table 5. M-Score Double Sorts**

The table present the two way quintile sorts of average manipulation score against the passive ownership measures. Panel A uses the total passive ownership while panel B respects the ratio of passive ownership to total mutual ownership. \*, \*\*, \*\*\* represent the significance level of 10%, 5%, and 1% respectively.

**Panel A. Sort by Total Passive Ownership and M-Score**

	Q I (Low M-Score)	Q II	Q III	Q IV	Q V (High M-Score)
QI (Low Passive Ownership)	-4.559	-2.764	-2.354	-1.909	0.106
Q II	-4.301	-2.714	-2.309	-1.842	-0.063
Q III	-4.117	-2.695	-2.333	-1.919	-0.422
Q IV	-4.172	-2.718	-2.329	-1.899	-0.372
QV (High Passive Ownership)	-4.171	-2.719	-2.334	-1.906	-0.431
High-Low	0.388*** (8.45)	0.045*** (8.10)	0.02*** (5.07)	0.004 (0.57)	-0.537*** (-11.57)

**Panel B. Sort by Passive Ownership to Total Mutual Fund Ownership and M-Score**

	Q I (Low M-Score)	Q II	Q III	Q IV	Q V (High M-Score)
QI (Low Passive Ownership)	-4.352	-2.733	-2.334	-1.875	-0.009
Q II	-4.133	-2.706	-2.322	-1.869	-0.257
Q III	-3.978	-2.697	-2.326	-1.911	-0.410
Q IV	-4.251	-2.726	-2.326	-1.900	-0.242
QV (High Passive Ownership)	-4.482	-2.729	-2.327	-1.876	-0.101
High-Low	-0.131*** (-3.08)	0.004 (0.75)	0.007* (1.94)	-0.001 (-0.10)	-0.093** (-2.49)

## Table 6. Quantile Regressions

This table presents the estimates from the following Quantile regression specification:

$$M\_Score_{i,t+1} = \beta_0 + \beta_1 \text{Passive Ownership}_{i,t} + \beta_2 \text{LNSIZE}_{i,t} + \beta_3 \text{MOMENTUM}_{i,t} + \beta_4 \text{BM}_{i,t} + \beta_5 \text{ILLIQ}_{i,t} + \beta_6 \text{TURNOVER}_{i,t} \\ + \beta_7 \text{VOLATILITY}_{i,t} + \beta_8 \text{MJ\_DISCACCRUALS}_{i,t} + \beta_9 \text{M\_Score}_{i,t} + \beta_{10} \text{BIG4}_{i,t} + \beta_{11} \text{BIG4}_{i,t} \times \text{Passive Ownership}_{i,t} + \varepsilon_{i,t}$$

Panel A presents the quantile (20th, 40th, 60th and 80<sup>th</sup> percentiles) regression results using total passive ownership (PASS\_OWN) as the Passive Ownership variable while Panel B present the quantile (20th, 40th, 60th and 80<sup>th</sup> percentiles) regression results uses the ratio of passive ownership to total mutual fund ownership (PASS/TOTMUTUAL\_OWN). For variables' definitions, please refer to Table 1. Year and firm fixed effects are included in both Panels for regression specifications in columns (5-8) and the standard errors are clustered by firm. Robust T-statistics are reported in the parenthesis below the parameter estimates. \*, \*\*, \*\*\* represent the significance level of 10%, 5%, and 1% respectively.



**Panel A. Passive Ownership Relative to Total Shares Outstanding (PASS\_OWN)**

	20 <sup>th</sup> Percentile	40 <sup>th</sup> Percentile	60 <sup>th</sup> Percentile	80 <sup>th</sup> Percentile	20 <sup>th</sup> Percentile	40 <sup>th</sup> Percentile	60 <sup>th</sup> Percentile	80 <sup>th</sup> Percentile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PASS_OWN	0.399 (0.79)	-0.113 (-0.59)	-0.738*** (-4.33)	-1.555*** (-5.09)	0.167 (0.26)	-0.362 (-1.10)	-1.228*** (-2.84)	-2.073*** (-3.86)
LNSIZE	0.026*** (8.15)	0.006** (2.15)	-0.011*** (-5.34)	-0.029*** (-8.48)	0.042*** (4.14)	0.009 (1.42)	-0.015** (-2.13)	-0.066*** (-7.36)
MOMENTUM	0.180*** (26.46)	0.155*** (17.70)	0.152*** (22.81)	0.158*** (12.76)	0.151*** (12.93)	0.166*** (15.77)	0.162*** (14.95)	0.190*** (12.54)
BM	-3.632*** (-36.70)	-7.864 (-0.62)	-22.174*** (-14.28)	-58.174*** (-7.73)	-3.354 (-0.16)	-5.870 (-0.35)	-15.092 (-0.56)	-54.911*** (-7.13)
ILLIQ	0.001** (2.26)	0.001*** (17.32)	-0.000 (-0.38)	-0.000 (-1.28)	0.001 (0.78)	0.001** (2.17)	0.000 (0.91)	0.000 (0.45)
TURNOVER	-3.373*** (-3.68)	0.340 (0.58)	4.727*** (7.59)	10.391*** (8.64)	-4.382*** (-3.36)	0.150 (0.18)	4.625*** (5.05)	10.696*** (4.13)
VOLATILITY	-10.063*** (-19.19)	-2.524*** (-8.84)	1.793*** (5.81)	9.918*** (17.38)	-2.765** (-2.20)	-0.443 (-1.36)	1.433** (2.27)	8.534*** (9.07)
MJ_DISCACCRUALS	-0.115 (-1.57)	0.207*** (4.44)	0.619*** (14.02)	1.298*** (15.66)	0.376*** (5.05)	0.500*** (8.48)	0.630*** (9.94)	1.339*** (15.97)
BIG4	0.022 (1.47)	-0.009 (-1.05)	-0.014* (-1.73)	-0.039*** (-2.58)	0.048* (1.88)	0.006 (0.46)	-0.003 (-0.21)	-0.019 (-0.84)
BIG4*PASS_OWN	-0.329 (-0.68)	-0.178 (-0.99)	0.083 (0.51)	0.484* (1.67)	-0.134 (-0.25)	-0.066 (-0.26)	0.252 (1.01)	0.738* (1.74)
M_SCORE	-0.029*** (-5.35)	-0.038*** (-9.73)	-0.053*** (-15.07)	-0.094*** (-17.28)	-0.073*** (-13.92)	-0.073*** (-17.12)	-0.097*** (-20.95)	-0.161*** (-30.67)
Constant	-2.882*** (-47.01)	-2.503*** (-41.37)	-2.244*** (-57.82)	-2.078*** (-36.99)				
Observations	70446	70446	70446	70446	70446	70446	70446	70446
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES

**Panel B. Passive Ownership Relative to Total Mutual Fund Ownership (PASS/TOTMUTUAL\_OW)**

	20 <sup>th</sup> Percentile	40 <sup>th</sup> Percentile	60 <sup>th</sup> Percentile	80 <sup>th</sup> Percentile	20 <sup>th</sup> Percentile	40 <sup>th</sup> Percentile	60 <sup>th</sup> Percentile	80 <sup>th</sup> Percentile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PASS/TOTMUTUAL_OW	-0.132*** (-3.55)	-0.058*** (-3.01)	-0.043** (-2.21)	-0.013 (-0.35)	-0.068 (-1.30)	-0.043 (-1.31)	-0.044 (-1.39)	-0.077 (-1.56)
LNSIZE	0.023*** (6.67)	0.004 (1.44)	-0.013*** (-3.83)	-0.029*** (-8.43)	0.020* (1.73)	0.007 (0.99)	-0.020*** (-3.74)	-0.059*** (-5.71)
MOMENTUM	0.180*** (20.47)	0.156*** (17.42)	0.152*** (18.13)	0.160*** (12.65)	0.117*** (8.48)	0.167*** (14.72)	0.165*** (17.02)	0.188*** (9.43)
BM	-3.607*** (-37.41)	-7.847 (-0.68)	-23.984 (-1.23)	-58.752*** (-8.03)	-1.665 (-0.06)	-5.325 (-0.29)	-20.089*** (-8.75)	-59.136* (-1.68)
ILLIQ	0.001*** (5.34)	0.001*** (16.86)	-0.000 (-0.96)	-0.000 (-0.92)	0.001** (2.24)	0.001*** (2.81)	0.001 (0.61)	0.000 (0.09)
TURNOVER	-3.770*** (-3.83)	-0.200 (-0.25)	4.115*** (5.78)	9.409*** (9.54)	-2.211* (-1.86)	-0.819 (-0.72)	2.625** (1.98)	7.923*** (3.26)
VOLATILITY	-9.815*** (-18.10)	-2.301*** (-7.01)	2.096*** (6.99)	10.221*** (18.23)	-0.952 (-1.07)	0.239 (0.40)	2.157*** (4.23)	9.167*** (10.53)
MJ_DISCACCRUALS	-0.113* (-1.68)	0.214*** (4.86)	0.623*** (13.21)	1.324*** (15.84)	0.453*** (5.29)	0.466*** (7.88)	0.668*** (11.50)	1.398*** (16.62)
BIG4	0.004 (0.30)	-0.019** (-2.17)	-0.021** (-2.47)	-0.043*** (-2.79)	0.015 (0.59)	-0.004 (-0.30)	-0.007 (-0.54)	-0.026 (-1.20)
BIG4*PASS/TOTMUTUAL_OW	0.066 (1.46)	0.018 (0.76)	0.013 (0.54)	0.003 (0.06)	0.059 (1.06)	0.036 (1.06)	0.011 (0.33)	0.096* (1.86)
M_SCORE	-0.028*** (-5.48)	-0.038*** (-10.16)	-0.053*** (-14.99)	-0.094*** (-15.85)	-0.055*** (-9.95)	-0.070*** (-17.09)	-0.094*** (-22.64)	-0.156*** (-28.70)
Constant	-2.826*** (-45.33)	-2.469*** (-45.13)	-2.219*** (-34.33)	-2.084*** (-37.29)				
Observations	70446	70446	70446	70446	70446	70446	70446	70446
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES

## Table 7. Logit Regressions

This table presents the estimates from the following logistic regression specification:

$$\begin{aligned} P(\text{MANIPULATOR}_{i,t+1} = 1) & \\ &= \Phi(\gamma_0 + \gamma_1 \text{Passive Ownership}_{i,t} + \gamma_2 \text{LNSIZE}_{i,t} + \gamma_3 \text{MOMENTUM}_{i,t} + \gamma_4 \text{BM}_{i,t} \\ &+ \gamma_5 \text{ILLIQ}_{i,t} + \gamma_6 \text{TURNOVER}_{i,t} + \gamma_7 \text{VOLATILITY}_{i,t} + \gamma_8 \text{MJDISCACCRUALS}_{i,t} \\ &+ \gamma_9 \text{M\_Score}_{i,t} + \gamma_{10} \text{BIG4}_{i,t} + \gamma_{11} \text{BIG4}_{i,t} \times \text{Passive Ownership}_{i,t} + \varepsilon_{i,t}) \end{aligned}$$

Where  $\Phi$  indicates the logistic probability function and a firm with an M-Score of -1.78 or higher in year t+1 is given a MANIPULATOR variable of 1, and zero otherwise. Column (1-4) presents the results using total passive ownership (PASS\_OWN) as the Passive Ownership variable while Column (5-8) results uses the ratio of passive ownership to total mutual fund ownership (PASS/TOTMUTUAL\_OWN). For variables' definitions, please refer to Table 1. Year and firm fixed effects are included in regression specifications for columns (4) and (8) and the standard errors are clustered by firm. Robust T-statistics are reported in the parenthesis below the parameter estimates. \*, \*\*, \*\*\* represent the significance level of 10% 5% and 1% respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PASS_OWN	-3.834*** (-7.86)	-3.726*** (-7.50)	-3.325*** (-3.86)	-4.164*** (-3.20)				
PASS/TOTMUTUAL_OWN					-0.053 (-1.37)	-0.043 (-1.11)	-0.035 (-0.67)	-0.004 (-0.05)
LNSIZE	-0.078*** (-9.30)	-0.075*** (-8.71)	-0.075*** (-8.67)	-0.105*** (-5.33)	-0.089*** (-10.36)	-0.083*** (-9.38)	-0.084*** (-9.40)	-0.105*** (-5.17)
MOMENTUM	0.326*** (20.22)	0.325*** (19.86)	0.325*** (19.87)	0.398*** (19.45)	0.333*** (20.56)	0.330*** (20.11)	0.330*** (20.13)	0.400*** (19.42)
BM	-26.560* (-1.75)	-23.194* (-1.65)	-23.061 (-1.64)	-13.847 (-1.11)	-29.447* (-1.83)	-25.800* (-1.71)	-25.665* (-1.70)	-14.495 (-1.10)
ILLIQ	-0.001** (-2.06)	-0.001** (-1.97)	-0.001** (-1.96)	0.000 (0.73)	-0.001** (-2.09)	-0.001** (-2.00)	-0.001** (-2.00)	0.000 (0.85)
TURNOVER	15.533*** (7.34)	15.695*** (7.32)	15.737*** (7.33)	3.297 (1.48)	14.221*** (6.93)	14.492*** (6.92)	14.504*** (6.93)	3.380 (1.52)
VOLATILITY	8.523*** (9.67)	8.561*** (9.48)	8.564*** (9.48)	4.734*** (4.05)	9.097*** (10.21)	9.123*** (9.99)	9.116*** (9.98)	4.654*** (3.99)
MJ_DISCACCRUALS	1.603*** (17.55)	1.603*** (17.25)	1.617*** (17.40)	1.348*** (10.77)	1.653*** (18.12)	1.648*** (17.76)	1.662*** (17.90)	1.361*** (10.88)
M_SCORE	-0.127*** (-17.29)	-0.125*** (-16.59)	-0.125*** (-16.58)	-0.246*** (-27.39)	-0.125*** (-16.93)	-0.123*** (-16.26)	-0.123*** (-16.25)	-0.245*** (-27.29)
BIG4		-0.034 (-1.41)	-0.026 (-0.92)	-0.103** (-2.08)		-0.065*** (-2.74)	-0.060** (-1.97)	-0.091* (-1.77)
BIG4*PASS_OWN			-0.488 (-0.56)	2.482* (1.95)				
BIG4*PASS/TOTMUTUAL_OWN							-0.015 (-0.23)	0.058 (0.61)
Constant	-1.868*** (-8.28)	-1.923*** (-7.75)	-1.926*** (-7.74)	1.992*** (5.29)	-1.736*** (-7.63)	-1.813*** (-7.25)	-1.810*** (-7.23)	2.128*** (5.66)
Observations	72485	70447	70446	60117	72485	70447	70446	60117
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	NO	NO	NO	YES	NO	NO	NO	YES

**Table 8. Abnormal Stock Returns**

The table present the two way quintile sorts of abnormal returns (alphas) sorted by M-Score and the passive ownership measures. Panels A1 an A2 show the portfolio Carhart 4-factor and Fama-French 5-factor alphas, respectively, when sorting by M-Score and total passive ownership. Similarly, panels B1 and B2 present the portfolio Carhart 4-factor and Fama-French 5-factor alphas, when sorting by M-Score and the ratio of passive ownership to total mutual ownership. \*, \*\*, \*\*\* represent the significance level of 10%, 5%, and 1% respectively.

**Panel A. Factor Model Alphas Sorted by Total Passive Ownership and M-Score**

Panel A1. Fama-French-Carhart 4-Factor Alphas						
	Q I (Low Passive Ownership)	Q II	Q III	Q IV	Q V (High Passive Ownership)	High-Low
Q I (Low M-Score)	1.76*** (5.64)	1.57*** (6.71)	1.05*** (5.29)	0.74*** (4.02)	1.24*** (6.02)	-0.52 (-1.40)
Q II	1.40*** (5.07)	1.21*** (7.49)	0.77*** (4.74)	0.71*** (4.74)	1.21*** (6.36)	-0.19 (-0.58)
Q III	1.31*** (4.59)	0.77*** (5.21)	0.90*** (6.21)	0.71*** (4.66)	1.14*** (7.45)	-0.17 (-0.54)
Q IV	1.47*** (5.35)	1.12*** (5.64)	0.85*** (5.29)	0.54*** (3.13)	1.40*** (7.38)	-0.07 (-0.20)
Q V (High M-Score)	1.58*** (5.58)	1.18*** (4.62)	1.31*** (5.76)	0.62*** (2.91)	1.02*** (4.57)	-0.56* (-1.68)
Panel A2. Fama-French 5-Factor Alphas						
Q I (Low M-Score)	2.31*** (7.56)	1.66*** (6.97)	1.02*** (5.01)	0.55*** (2.91)	1.24*** (5.74)	-1.07*** (-2.91)
Q II	1.64*** (5.80)	1.06*** (6.39)	0.79*** (4.71)	0.56*** (3.64)	1.17*** (5.97)	-0.47 (-1.40)
Q III	1.38*** (4.68)	0.76*** (4.96)	0.82*** (5.51)	0.55*** (3.50)	0.96*** (6.23)	-0.42 (-1.30)
Q IV	1.86*** (6.79)	1.32*** (6.49)	0.99*** (5.95)	0.38*** (2.17)	1.31*** (6.68)	-0.56* (-1.76)
Q V (High M-Score)	2.04*** (7.36)	1.63*** (6.49)	1.51*** (6.51)	0.72*** (3.33)	1.06*** (4.57)	-0.98*** (-2.96)

**Panel B. Factor Model Alphas Sorted by Passive Ownership to Total Mutual Fund Ownership and M-Score**

Panel B1. Fama-French-Carhart 4-Factor Alphas						
	Q I (Low Passive Ownership)	Q II	Q III	Q IV	Q V (High Passive Ownership)	High-Low
Q I (Low M-Score)	1.47*** (6.45)	1.09*** (5.99)	0.81*** (4.38)	0.91*** (4.41)	2.36*** (7.65)	0.89** (2.53)
Q II	1.02*** (6.15)	0.89*** (6.44)	0.54*** (4.02)	0.78*** (3.74)	1.53*** (5.54)	0.52* (1.69)
Q III	0.96*** (6.09)	0.81*** (5.97)	0.61*** (4.82)	0.49*** (3.08)	1.50*** (6.52)	0.54* (1.86)
Q IV	1.35*** (6.77)	0.60*** (3.76)	0.66*** (4.25)	0.62*** (3.25)	1.89*** (6.13)	0.55 (1.61)
Q V (High M-Score)	1.19*** (5.56)	1.16*** (5.93)	0.97*** (5.46)	0.79*** (2.63)	1.80*** (5.54)	0.60 (1.60)
Panel B2. Fama-French 5-Factor Alphas						
Q I (Low M-Score)	1.69*** (7.32)	1.10*** (5.95)	0.66*** (3.48)	0.75*** (3.54)	2.65*** (8.40)	0.96*** (2.60)
Q II	1.06*** (6.20)	0.80*** (5.64)	0.42*** (3.02)	0.77*** (3.60)	1.45*** (5.24)	0.40 (1.26)
Q III	0.98*** (5.96)	0.67*** (4.85)	0.54*** (4.23)	0.25 (1.56)	1.34*** (5.61)	0.36 (1.18)
Q IV	1.56*** (7.69)	0.53*** (3.18)	0.67*** (4.12)	0.40** (2.10)	2.03*** (6.36)	0.47 (1.34)
Q V (High M-Score)	1.62*** (7.84)	1.43*** (7.19)	1.03*** (5.51)	0.72** (2.30)	2.24*** (7.13)	0.62 (1.61)