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Passive Owners

A Discussion of Index Funds Weak Response to Advantaged Ownership Positions

Abstract:

Index funds seem similar to mutual funds in their structure and size, yet they vote on the direction corporations take in strikingly different ways. This study sought to see if index fund power over the firm being voted could be the reason behind the differences in observed voting behaviour. Index funds are unusually passive owners of firms, despite a growing narrative formed by case studies and media speculation that would predict the contrary. This finding is reached by analysing index fund proxy voting power as the power to coerce firms to comply with their agenda. Incentives to act and the power to act are two sides of the same coin, and this study aims to examine the often-overlooked questions of power. This study analyses 985,000 proxy votes from Mutual and Index funds to find substantial differences in voting behaviour when a fund is in possession of greater power. Mutual funds are fundamentally more responsive to this fact, while Index funds remain essentially unchanged in their voting behaviour regardless of their chances to win a vote. Index funds are passive investors but also passive owners.

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Acknowledgements:

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1   INTRODUCTION

This thesis is the culmination of two separate but highly related inquiries into the nature of shareholder power. On the one hand it is a discussion of index funds and how they are transforming the fundamentals of shareholder power, and on the other hand it is about the field of corporate governance becoming dominated by economic theories.

In this study I will address the first by examining the currently scarce literature on the nature of index funds proxy voting behaviour. I will discuss their growing power and what if anything is currently known about how they use it. As the study advances I will present a fundamental contribution to this emerging literature by showing that index funds might in fact be more passive in their pursuit of governance than many are currently assuming. Secondly, I present here a conception of proxy voting that, rather than looking through the common lens of economic incentives to vote, chooses to focus on the power a shareholder has to force compliance with their agenda based on proxy voting. I discuss what gives shareholders this power and whether the power to win a vote will fundamentally affect how they will vote. The questions of this thesis are then how we can improve the measurement of shareholder power and how index funds relate to non-index funds in their use of that power.

Using a model that accounts for a shareholders fundamental ability to force compliance to her wishes this study demonstrates that index funds and active funds show different patterns of behaviour in regards to their use of force when they have the same opportunity to use it. I will then discuss patterns that differ between index funds and others, the extent that being in possession of effective force matters when perusing control of a firm, and I will discuss the advantages and limitations of a model that only accounts for the power of investors without accounting for their incentives.

2   BACKGROUND

2.1   INDEX FUNDS

Index funds are, simply put, funds that track an index. Index funds have met a desire for investors to gain predictable returns through low cost. Growing out of increasing contempt for the failures of large hedge funds and mutual funds to beat the market benchmark, index funds try to buy a representative sample of firms in an industry or a key market index (like the FTSE 500) so as to capture the net gains of that index/market over a given time. Index funds where first proposed by the economist Paul Samuelson in the 1960s but weren't widely adopted until the early 1990s with the invention of the Exchange Traded Fund (ETF) (Braun 2015).

Index funds rarely held more than 1% equity in any company listed on a stock exchange prior to 2001 but now they frequently have this level or higher. BlackRock, the largest index fund provider, owned more than 5% of 1,800 listed companies in the USA in 2013, making it the largest single shareholder in USA history. Its nearest rival was Fidelity with more

than 5% holdings in 677 firms, followed by Vanguard at 5% holdings in 524 firms (G. F. Davis 2013). This growth is substantial, culminating in the return to a level of ownership concentration not seen in the USA since WWI. This growth is driven mainly by money flowing out of active funds, especially active mutual funds (see Figure.1).

Figure. 1 – Net Cash Flows From Active Mutual Funds To Passive Mutual Funds And ETFs. *Cumulative flows to and net share issuance of domestic equity mutual funds and index ETFs, billions of dollars; monthly, January 2007–December 2015. Source: Investment Company Factbook 2016, Mutual Funds Chapter. Available at: http://www.icifactbook.org/ch2/16_fb_ch2*
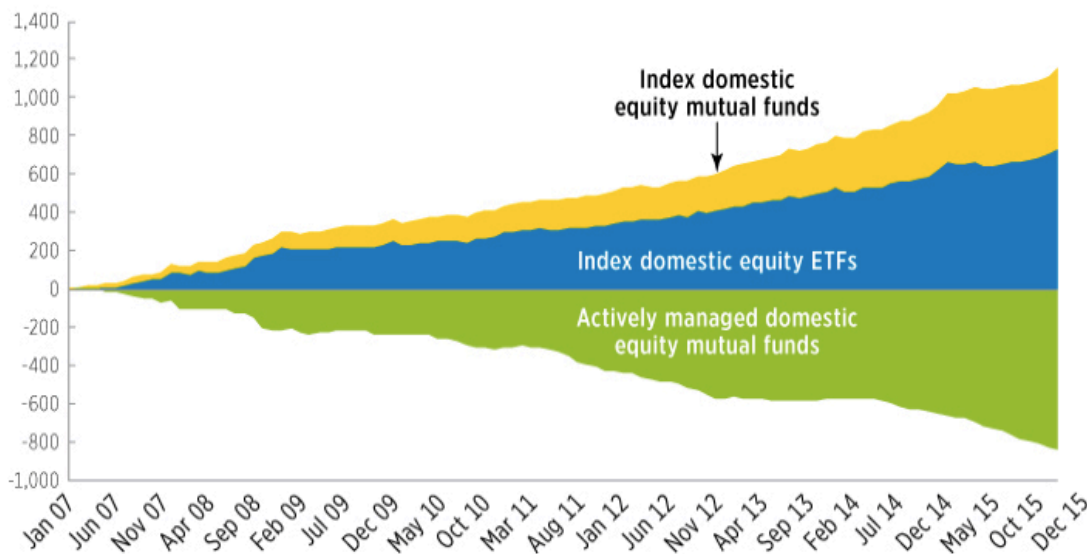
A common narrative is developing around index fund activism that assumes they have a long-term orientation and will govern firms in that manner. Many in the media predict that index funds will naturally pursue long-term improvements to firm performance via governance (The Economist 2016). In fact index funds are frequently talked about as a solution to assumed issues of rent seeking by powerful hedge funds interested in short term profit. Hilary Clinton has even affirmed her fear of this problem in interviews this year, calling it, 'quarterly capitalism' (Udland 2016). She expresses a common fear that shareholders with incentives to demand immediate returns on their investment are governing firms poorly. The largest mutual funds push a narrative that says they are the best solution to this problem. Consider these two unequivocal quotes on the subject:

> *"At BlackRock, we have engaged extensively with companies, clients, regulators and others on the importance of taking a long-term approach to creating value. We have done so in response to the acute pressure, growing with every quarter, for companies to meet short-term financial goals at the expense of building long-term value" - Larry Fink, the CEO of BlackRock (Fink 2015)*

> *"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. That is precisely why we care so much about good governance." - F. William McNabb III, Chairman and CEO of the Vanguard fund" (Appel, Gormley and Keim 2016, 1)

As this narrative becomes more common there is however a growing concern that index funds pose other threats, and might not even pursue long-term improvements to firm performance (Gilson and Gordon 2015). Economic threats include speculation that index funds are large buyers of private debt, consolidating risks around themselves, and thus their collapse could pose a systemic risk to national economies (Financial Stability Board 2012). The large asset managers that control index funds have also proven adept at resisting regulatory changes, recently fending off an attempt by the SEC to declare them Systematically Important Financial Institutions (Lynch 2015). Yet, while economic threats have begun to be explored fewer authors have noted the political threats posed by index funds. Their concentration of financial wealth and firm ownership has unflatteringly compared to that of J.P. Morgan at the start of the 20th century (Wells 2015). While today there are multiple regulators in multiple jurisdictions to prevent the outright monopolising of industries this should still pose a concern.

2.2   PROXY VOTES

Proxy voting is way for shareholders to exercise their power and try to change a firm's direction. It is rarely used to oppose management because whilst it is effective but shareholders often describe it as a particularly hostile act (Blackrock 2013, M. Becht, et al. 2009). Every year a listed firm will hold a vote on company business in an Annual General Meeting (AGM) and, in rare situations, in an Extraordinary General Meeting (EGM). At these elections all shareholders receive a vote on company business equal to their share of the company, and these are called proxy votes because most actual investors (i.e. people who buy into a pension fund) will give their vote to their fund manager to vote on their behalf. Votes are cast sequentially or via a ballot where each issue is present to the voters along with the firm's management's recommendation on how to vote on that issue. Issues can range from the mundane, such as re-appointing the firms auditors, to issues that determine the running of the company, such as voting to re-appoint or dismiss the firm's directors. The majority decision is normally binding, though there are a few tools directors can use to circumvent a majority vote. A shareholder campaign against the directors of a firm is normally referred to as a proxy contest (sometimes called a proxy war or proxy fight).

To create a discussion of index fund power it is logical to start by studying how proxy votes are being used before studying any other methods by which they may wield power and influence. This is because proxy votes are easily quantifiable, the most important asset managers make their votes publicly available, and most other forms of shareholder power logically emanate from that shareholders ability to wield a proxy vote. Proxy voting being used as a tool against management is rare. Shareholders normally prefer to influence management in face-to-face meetings and regularly claim this publically (M. Becht, et al.

2009, Blackrock 2013). However, any power to influence management in face to face situations has to be viewed in light of a shareholders more formal proxy voting power.

I can make this claim by referring to the history of shareholder power in liberal market economies, which is where the emphasis of this thesis is placed. Many authors have noted that countries like the USA spent decades with relatively weak shareholders being unable to influence strong managers. The historian Harold Wells explains it thusly:

"[After 1925] the wide dispersion of ownership meant that few shareholders would have the incentive and ability to monitor corporate managers. The struggle within the corporation would slowly change from that between controlling and minority shareholders, each with significant stakes, to one between atomised shareholders and managers who, though they controlled the corporation, owned relatively little of its stock" (Wells 2015, 20)

In the USA, this situation persisted for over 50 years. It ended for multiple reasons but the predominant being: the rise of the market for corporate control, where hostile takeovers became a regular threat to management, and the rise of institutional investors and large pension funds. The latter funds came about through changes in pension law in many liberal market economies in the early 1980s and these new institutional investors took much larger positions in firms than other shareholders had taken for almost half a century. Further, these investors began to use proxy votes to effectively remove firm directors they disliked and to advance their financial positions. Proxy votes are a vote on firm business, normally binding, proportional to a shareholders percent of the ownership in a firm and to be cast may at firm's Annual General Meetings. This gave shareholders two new forms of power. The first was threatening to sell their shares to an actor wishing to take control of the target firm outright. The second was to establish a large ownership position in a firm and then cooperate with other shareholders to vote out directors who opposed measures that the investors disliked.

It is at this point in history when informal types of shareholder engagements, sometimes called, "jawboning", begin to have visible influence. From the 1990's it becomes normal for large shareholders to demand meetings with underperforming boards of directors and demand resignations, and often getting them, because they had the ability to threaten the use of greater force if directors refused to go quietly (Wells 2015, 26). In this way it is firmly clear that the end of managerialism and the rival of shareholder power in liberal economies came as a result of growing shareholder size and, fundamentally, the power of the proxy vote.

2.3   INDEX FUND USE OF PROXY VOTES

Given the possibilities and threats posed by growing index funds it is surprising how little we know about their behaviour. There are few studies that can lead us to develop robust theories about how they will behave in their pursuit of governance. As such, much of the current literature focuses not on the unique qualities of index funds but on how they relate to the nearest comparable investor, namely mutual funds (Lliev and Lowry 2014, Çelik and Isaksson 2014, Gilson and Gordon 2015). Mutual funds and index fund share some key

traits, like their large asset size and diversified client and beneficiary base, making the comparison a useful starting point of researchers. Further, most of the literature focuses on the incentives to vote and the market reaction to their voting behaviour, not on the relative power these funds normally have (Edmans 2014, Davis and Kim 2007, Lliev and Lowry 2014, M. Becht, et al. 2009, Appel, Gormley and Keim 2016, Azar, Schmalz and Tecu 2015). Even focusing on this intuitively close relationship, the limitations on how comparable they are has been surprisingly stark.

Our understanding of mutual fund behaviour and their social value is framed by their conflicts of interest. The ultimate way an asset manager can serve the interests of her clients is to affect the direction of a firm to produce a larger return on investment, or to achieve another valuable goal that is none financially beneficial to her client. Conflicts of interest appear when an investment fund does not act in the interests of its ultimate beneficiaries (i.e. those whose money they invest) but instead acts in the interests of those who pay them the most for their services (i.e. the directors of large firms).

The finding that mutual funds are prone to conflicts of interest is central to our understanding of them and their limitations. Davies and Kim (2007) established this foundational fact in the study of mutual funds and their business ties. Mutual funds are less likely to vote against the management of firms who invested their firm's pension with that fund. Mutual funds make a substantial profit from taking firm pensions private and they did not want to push away their clients, the directors, even if that undermined how well they served the ultimate beneficiaries, the workers who's pensions they invest. This disheartening discovery cast doubt on those who had predicted mutual funds and mass stock ownership might lead to a democratisation, even socialisation, of large firms via the stock market[ii] (Wells 2015, 19-20, Drucker 1976, Otto 2011).

Index funds don't show signs of conflicted voting. A recent study of all proxy votes cast between 2006 and 2010 in the USA showed that index funds show no significant changes in their voting behaviour on the basis of client ties[1], while the conflicts of interest remained central over time to the voting of mutual funds (Lliev and Lowry 2014, 464). Several additional variables that predict a mutual fund voting against management did not predict index fund voting. Variables normally associated with voting such as fund and asset manager size in assets, fund office location, or turnover rate where insignificant for predicting the voting behaviour of index funds. Lliev and Lowry (2014) pass over this with less than a page in their paper and to date the fundamental question of why this would be is unanswered in the literature.

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[1] Client ties is shorthand for a link between a fund and the directors of a firm that might hire them for a service. The most common example would be firms hiring mutual funds to take the firms pension fund private and charging fees for the management of that fund. The directors of the firm or the workers in the firm may pay these fees but ultimately the account remains with the fund at the director's discretion.

Lliev and Lowry (2014) found two factors that did affect index fund voting behaviour; the amount of capital they had invested in a firm and the percentage of the firm's shares the Index Fund held. The former had only a moderate effect on voting but the later was highly significant, with an additional 1% of ownership increasing the odds of voting with management by .43. This is interesting because the percentage of outstanding shares a shareholder owns controls the shareholders control of the firm by determining: 1) how many votes they have against directors in the next AGM, and; 2) how many votes they can sell to other investors who might wish to pursue a hostile takeover of the firm (Edmans 2014, Appel, Gormley and Keim 2016).

This issue of control is perplexing because it implies something different to what most authors would predict. Many authors would say that large investors would vote against management less often than smaller investors because they receive privileges as a result of their higher voting power (for examples, see Becht, 2009, and Appel, Gormley, and Keim, 2016). Essentially, they get to set the agenda of a coming vote and so their voting power entails a great level of influence downstream, removing the need to actually vote against management (M. Becht, et al. 2009, Appel, Gormley and Keim 2016). This predicts that funds with significant shareholdings are likely to use proxy votes less often. However, this theory cannot explain why large index funds would vote at lower levels than mutual funds when they have more firm control. For this we need to develop the main hypotheses of how index fund behaviour will differ from all other types of fund.

Index funds are more likely to vote with management than mutual funds when they have more control over a target firm. This implies that, all else being equal, index funds with a large amount of control are much more likely to vote with management than mutual funds with a large amount of control.

2.4   RETICENT INVESTOR AND STEALTH ACTIVIST INVESTOR THEORY

In the literature there are two perspectives on the power position of index funds: the 'reticent investor' hypothesis and what I will refer to as the 'stealth activist' hypothesis.

Gilson and Gordon (2015) coined the phrase "reticent investor" to mean an investor who engages in, "a generally reactive, low cost activism" (Gilson and Gordon 2015, 33). Those who see index funds as reticent investors say that index funds have a preference for not pursuing shareholder activism. Gilson and Gordon (2015) argue that index fund passivism is due an undervaluation of the financial returns to activism. They assert that all activism has a cost but index fund structures tend create a perverse incentive where the fund manager will be rewarded more for keeping costs low than they will for improving firm governance (Gilson and Gordon 2015, 33-34). The reticent investor theory also fits some political positions that major asset managers have taken in the past. For example, BlackRock recently published a report against the idea of differentiated voting rights for long term investors (BlackRock 2015). This is an idea some regulators have put forwards that investors who hold their stake in a firm for 2-3 years should receive more voting power for their shares. For example, German regulators in 2015 considered giving long term stock holders twice the voting power of short term ones. If BlackRock is pursuing active

corporate governance then this would seem like a great advantage. They only rarely sell their equity in a firm and so are likely to frequently benefit from this rule. Yet they advocated a position opposing it, claiming, "Voting power should match economic exposure". Even index funds are currently if large owners of a firm this measure would protect them from having their own position in that firm affected by hostile takeovers. Such behaviour would be strange for a firm interested in pushing out short-term investors and pursuing long-term improvements in firm governance.

The reticent investor argument is attractive and seems plausible at face value. However, other studies point at a different situation of 'stealth activism'. Becht, et al. (2009) performed a comprehensive case study of one index fund's governance activism in the early 2000's. They convincingly show that the fund pursued and profited from activism. The researchers witnessed the fund successfully removing CEOs, having divisions sold, and changing core parts of the target firm, which are all typical governance behaviours. Further, they found that the returns to the fund for activism were abnormal profits of 4.9% above the FTSE All Share-Index, 92% of which was attributable to that activism (M. Becht, et al. 2009, 3121). Other support for index fund activism comes from Appel, Gormley and Keim (2016). They found that by looking at the whole market, index funds taking larger positions in a firm was often associated with more independent board chairs, access procedures and positive changes in the markets evaluation of the firm's governance. They argue that these changes were due to index funds expanding proxy voting power and take it as proof that the funds were passive investors but not passive voters. In these instances of stealth activism, the index funds have a preference for behind the scenes activism but have the same, if not similar, incentives to seek governance of firms that all other types of investors share. This view of index funds' behaviour would predict they follow the same fundamental patterns of behaviour as mutual funds.

Beyond economic arguments we can imagine other reasons index funds might prefer to be reticent. As index fund holdings continue to expand they frequently have a substantial amount of voting power on multiple firms across whole markets. The only comparable breadth of ownership can be seen in with investors such as J.P. Morgan, who used financial power to create industry wide monopolies that effectively controlled economic relations in the USA (Wells 2015). In the current literature few people are explicitly talking about index funds growing monopolistic potential, and those that do (Azar, Schmalz and Tecu 2015) tend to focus on the financial impact rather than elaborate the kind of political control this could be developed into. Observing from a political-economic perspective I would presume that any desire not to attract additional regulation on the part of index funds could be met with increased passivity through easily observable mediums like proxy voting. On the other hand it could prompt index funds to pursue activism against their cost incentive because they fear looking too lenient on bad governance, which would favour the stealth activist position.

2.5   TWO DIMENSIONS OF SHAREHOLDER POWER

I suggest we look at shareholder power on two dimensions: an absolute and a relative one. The first is total equity ownership, typically measured as the percentage of all shares of one

firm an owner holds. It is used frequently, has familiarity to many, and is already known to affect both types of fund that are the subject of this study. The size of an investment in a firm is essentially equivalent to the voting power the shareholder has over that firm's board (Lliev and Lowry 2014, Edmans 2014, Davis and Kim 2007). However, this measure of power is easily shown to be weak when we consider the simple fact that voting power is not determined by the amount of votes one has but the amount of votes relative to ones opponents. For example, the current literature will frequently talk about the number of positions a shareholder has above the 5% level because that is considered a significant voting bloc. This occludes any knowledge of true power because being one of ten funds with a 5% holding is fundamentally weaker than being a holder of a 5% stake in a firm with otherwise atomised ownership. I thus propose that we start a discussion of shareholder power by including a measure of relative voting power, which I will call dominance, and contrasting it to a discussion of absolute voting power[iii], which I will call ownership.

Total equity ownership in the firm and how that level of ownership compares to other shareholders are the necessary conditions for asset manager power. With these two conditions an asset manager has the power to force compliance to her agenda. Without at least one of these two conditions she does not. As such they represent the essential of a measure of a shareholders force in a proxy struggle. A shareholder with high a large ownership stake in a firm where there are no other large owners has much more power than other combinations of those two factors. For example, a shareholder may have an abnormally high level ownership in Firm *X* compared to the average ownership level of any fund over any firm in the market but still have a relatively low ownership Firm *X* compared to other funds in that firm. In this case a large shareholder is still weak.

I speculate that shareholders will use force only rarely because it is considered hostile and detrimental to relations, while being unnecessary when shareholders are undeniably powerful. However, I'm theorising here that in the mid-range of ownership and dominance we would see the most use of proxy voting because it was at this point that it was the least clear whether a shareholder had the force to override management. All things being equal a shareholders ownership of a firm will not implicitly incentivise her to vote against that firm's management except in cases where ownership was sought to oppose management. All other shareholders should have no more incentive to vote against management caused by their level of equity holding in a firm. The only reason they would show a relationships between their levels of ownership and voting is the effect ownership has on the odds of winning a vote. With large shareholders being catered to in advance with agenda setting privileges and small fund not wanting to damage relations this implies the probabilities of observing a vote should be higher in the mid-range of dominance and ownership.

2.6   HYPOTHESES

The two perspectives on index funds corporate governance strategy – reticent and stealth activist - carry different implications for their voting behaviour. The stealth activist position would assume that index funds incentives are the same with only the additional cost of voting being an impediment. All else being equal they would thus pursue activism as frequently as mutual funds but pursue it to a vote less often. If this is correct then they will

respond to having the power to force through an agenda the same way a mutual fund will but will do so less frequently at every level of their power.

The reticent investor theory will predict a much more drastic difference between index funds use of power and mutual funds use of power. Essentially the reticent investor hypothesis would predict a far lower use of proxy voting for index funds but would also predict that index funds do not respond to their power to win a vote. This is because a voter who does not want to vote and has no interest in being powerful will not use their vote to pursue an agenda when they are in a powerful position. These are the differences we would expect to see between mutual and index funds in both hypotheses. Also, both hypotheses share an assumption that larger shareholders will get more access, either because they stand out from the crowd or have taken an intentionally larger position in a firm after gaining access to directors. This is central to the governance strategy that was observed by Becht, et al. (M. Becht, et al. 2009).

With these points in mind, I assert the following hypotheses:

- *H1:* The probability of voting against management will decrease as an asset manager's *ownership level* in that firm increases.
  - o *H1.2:* The probability of voting against management will follow an apex (inverted-U shaped) distribution, being lower than a linear model would predict at the highest and lowest levels of *ownership*.
  - o *H1.3*: The probability of voting against management will increase more for index funds than actively managed funds as *ownership level* increases.
- *H2:* The probability of voting against management will decrease as the level of an asset manager's *dominance* over a firm increases.
  - o *H2.2:* The probability of voting against management will follow apex (inverted-U shaped) distribution, being lower than a linear model would predict at the highest and lowest levels of *dominance*.
  - o *H2.3:* The probability of voting against management will increase more for index funds than actively managed funds as *dominance* increases.

3   METHODS

3.1   DATA SOURCES

Two sources where used to gather the data: 1) The Institutional shareholder Services (ISS) VDS proxy voting database, and; 2) the Orbis database by the Bureau van Dijk. Proxy votes were gathered from the ISS-VDS database and firm/ shareholder information, such as ownership structures and market capitalisation, where gathered from Orbis.

ISS is a proxy voting advisory company that sells analysis of how to vote to major shareholders. ISS VDS is a publically accessible version of the ISS proxy insights database. 130 USA mutual funds and asset managers have their votes for the years 2013-2015 listed in this database. The database records management recommendations and how shareholders voted in over 8 million proxy votes. ISS competes with only a small number of advisory firms to construct databases to aid client decisions and satisfy USA regulation that mandates proxy votes be public. The VDS is a variation of that database that presents the votes of all firms from the last 2 years in a publicly accessible portal, normally displayed on the website of an ISS client.[iv] The subsample provided by ISS-VDS includes all major asset managers for the last two complete years, with good records of smaller mutual funds and asset managers for at least the year 2014- 15. This database contained the ticker symbols of all firms that were voted on, the name of the fund that voted the proxy, the date the vote was cast and counted, and the ISS ID number the shareholder.

The Orbis database, run by the Bureau van Dijk (BvD), is a global database on the ownership relations of firms and their subsidiaries and shareholders. The database covers over 170,000,000 companies, listing their directors, key financial information, shareholders and the amount of the company that the shareholders control. This data was downloaded and cleaned by the Corpnet project and accessed via their dataset. The main features of this dataset for this project are the presence of financial data and the presence of ownership level data, both of which are missing from the ISS-VDS. Orbis is considered a trusted data source that has been used in previous academic research (Heemskerk and Takes 2015). Underrepresentation of small firms outside of the major western economies is a known flaw but as this analysis focuses mostly on the voting patterns of USA investors in USA firms this problem is marginal.

3.2   THE DATABASE

Merging these two sources caused a loss in the number of votes that could be accurately linked to a voting shareholder. 57% of the target firms in the full voting database where present in the final dataset, the other 43% could not be accurately matched to a voting shareholder. This was primarily because some shareholders where not present in a useable way in the Orbis database. Frequently the data on financial firms in the voting database was harder to interpret and of poorer quality than the information on target firms. The final dataset also contained fewer proposals being voted on. The subsidiary information listed in Orbis must be missing some of the links between asset managers and target firms. Orbis was much more complete for major asset managers than small asset managers. There are

likely small asset managers in the final dataset with links to firms that are not present in the data.

Table.1 - Coverage of Whole dataset

	ISS-VDS	Final Dataset	Percentage Maintained
# Target Firms	14,040	8,036	57.2%
# Large Mutual Funds	130	53	40.7%
# Proposals	6,223,183	985,205	15.8%

As a result the large asset managers are better represented. Table.2 demonstrates the coverage of the big three asset managers is excellent, with the exception of State Street. As such we can conclude that we are dealing with the population of ISS recorded votes that can be found via the Orbis database through this technique.

Table.2 – Coverage of Major Asset Managers

	Total Voting database	Final Dataset	Percentage Maintained
BlackRock	206,325	187,184	91%
Vanguard	119,144	100,446	84%
Fidelity	236,667	192,350	81%
State Street	367,922	119,518	32%

Producing a single dataset has several difficulties because the datasets only shared 1 key, the unique stock ticker of the target firms. Solving this required manually creating a key in both datasets that would allow investors to be accurately linked to target firms. In practice this meant simply going through all the funds listed in the downloaded database and trying to figure out who the asset manager was based on the funds information. For some funds this was very easy, for example those with the name of the asset manager in the title. Others required more work but typically they could be tracked down by finding their information on Bloomberg Research, which typically gives information of an asset manager whenever you fund a fund it recognises. Further help came from ISS-VDS itself, which does not give the shareholders unique stock ticker but it does provide the funds name and a

unique ID code that identifies the asset manager the fund belongs to. For example, BlackRock had multiple funds labelled with 'BlackRock' in their titles but also all funds had the ISS-VDS ID '1615'. After identifying the asset manager that each ID belonged to, I coded in their unique Orbis BvD_ID and merged the datasets.

The dataset produced by the above method alone was too weak to produce a conclusive assessment of the hypothesis of this study because the biggest asset managers in the world were underrepresented. For example, using this method alone all but excluded Vanguard's funds because those funds are all listed as separate legal entities with no ultimate owner. As such they could not be found by the search procedure and Orbis has no recorded link between them. Additionally, BlackRock and Fidelity were underrepresented in the data, wrongly appearing equal in prominence as smaller asset managers. This would have been a sub-optimal sample because BlackRock, State Street and Vanguard are the world's foremost providers of index funds, and Fidelity is the foremost provider of mutual funds. Without their presence the dataset overwhelmingly contained smaller mutual funds managers, along with some index funds from Fidelity and some pension funds that operate as mutual funds. A far more representative setup was to use string-matching methods to increase the presence of these four firms. This created a dataset that not only more closely represents the actual distributions of mutual and index funds in the market but one that is larger and has more chance of disproving the central hypotheses.

String matching is a fancy phrase for searching for key words within datasets. The exact steps varied slightly for each large asset manager but began the same. I searched for any funds containing the asset manager's full name or common abbreviations of that name (i.e. SPDR for State Street), and downloaded the funds this brought up. I then proceeded to search one at a time through from largest to smallest through a list of names attached to the largest funds within each asset manager. Once all the ones that could be identified had been I assigned every fund the same ISS-VDS client ID as the funds from the first method and merged their ownership information back to the firms they voted on.

3.3   CONSTRUCTION OF MODEL VARIABLES

3.3.1   Vote Disagreement

The dependant variable is voting in disagreement with management, or *vote disagreement*. 8.8% of votes in the data are cast in disagreement with management. Vote disagreement occurs when management lists a recommendation on how shareholders should vote on a proposal and the shareholder votes in any other fashion. The possible votes are, "For", "Against", "Withhold", or, "Abstain", with a 5th option of simply not voting. There is some confusion about whether different votes should be assigned a different meaning. Some might assume that 'Withhold' for example is a softer version of 'Against', yet the SEC has suggested that such votes should only be cast to mean withhold this director (White 2015). The only certainty is that any vote in disagreement is rare and does not show support for management's position.

3.3.2   Ownership Percentage

This was the most significant variable in predicting index fund behaviour found to date (Lliev and Lowry 2014). Ownership's power is predicted to come from the ability of shareholders to engage in proxy voting, or their ability to sell those votes to a third party. Ownership records the total percentage of a firm that is owned by a single asset manager. It is constructed by summing the ownership levels of multiple funds under the same owner and is the first core variable. Essentially this means that if an asset manager had multiple funds vote in the same proposal in the same fund in the same year they will not be counted twice but instead be counted as a single voter with ownership equal to the summed ownership of both funds. *Ownership percentage* is capped at 50% in the model to reduce the data's skewedness, all values higher than 50% have been made equal to 50%. This is beneficial to the measurement of quadratic effects (see below), and acceptable because any shareholder with more than 50% has de facto control of the firm. Their additional shares make them no more powerful.

3.3.3   Dominance

The confounding in the literature of size and power is frequent. This is because the power of a shareholder is fundamentally based on how much of a firm she owns and how much of all firms in the market she owns. In other words size seems a good proxy. However, as Bonacich, and many others would note, "power comes from being connected to those who are powerless" (Bonacich 1987, 1174) but powerful people who are constantly facing confrontations with other powerful people are relatively speaking normal or even weak actors. To then know how much a shareholders proxy voting power is dominating a firm you need to know their weighted voting power against other shareholders.

This *dominance* can be defined as how much power the asset managers votes will give it when taking into account the relative power of other voters. Unlike ownership, which corresponds to the absolute level of voting power, dominance is the level of power in the context of other players' power. The difference is that a shareholder with a 5% stake in two firms could be relatively powerless in the face of another investor with 10% but powerful against a series of investors with less than 1%. The variable is a similar to the normalized Herfindahl–Hirschman Index, a common market competition indicator. It is calculated by taking the amount of equity held by investor i in firm j and divided by the square root of total equity held by all investors in firm i squared:

$$\frac{Firm\ Equity\%_i}{\sqrt{\sum Firm\ Equity\%_{ij}{}^2}}$$

Using this formula if shareholder i owns 100% of the firm then there Dominance will be 1, if i owns 50% and another shareholder owns 50% their dominance is 0.707, and if i owned

50% and two other shareholders held 30% and 20% *i* would receive 0.811. The measure reflects the relative power of a shareholder on a scale between 0 and 1. This variable was also highly skewed to the right because most shareholders are relatively powerless.

All cases where the *Dominance* variable was equal to 1 where dropped because these cases where improbable outliers. A Dominance of 1 is only possible in outright ownership situations and this should have been extremely rare in our data. Limited numbers of successful match ups between firms and the specific voting case are the far more likely reason a firm in this data set would have a dominance of 1. The analysis was run with and without these cases and the effect on voting outcomes was insubstantial. In total this involved dropping 101 proposals. This measure of dominance relies on the data quality to some extent, because if there is an unlisted large shareholder it will be miscalculated. However, this dataset is much more likely to have left out additional small investors than to be missing additional large ones. Additional small owners in a firm will not change the relative power of the firm's owners, so even assuming there additional small owners not in this data the true level of fund dominance will approximate that measured here.

3.3.4 INDEX FUNDS

A dummy variable was coded for index funds in the dataset. While many of the big three's funds are index funds this is not true of all of them. As such a variable was coded to identify funds as index funds when they had either "index" or "ETF" in the fund's name. All ETF funds are index funds and there are seemingly no funds with the word index in their title that are not in fact index funds. Despite being simple this procedure identified the known index funds. This was assessed by randomly going through the dataset and upon finding a fund listed as being an index checking that this was correct. I then looked at list of funds for the largest asset managers for any index funds or ETFs that would not contain either word in the title and could find none. The same was also true, at least in these large funds, for the opposite situation, with no non-index funds containing the word in their title. For simplicity I refer to mutual funds that are not index funds as active funds in this study from here on.

The coverage of the big 3 being better than the coverage of other asset managers has meant that 25% of funds in the sample are index funds or ETFs, however this still leaves a majority of funds as actively managed mutual funds.

Dominance and ownership percentage are highly correlated, with a coloration of 66%. This is not unexpected because one variable is created in part from the other. A test of extreme multi-collinearity was performed that revealed they are not in fact collinear, showing an Eigen-index value of less than 2.5, which is well within acceptable levels.

3.3.5 QUADRATIC EFFECTS

Introducing the squared term of a variable into the model tests for that variable having a quadratic relationship with an outcome. The interpretation of this effect is complicated and complicates the understanding of the simple effect of that variable being tested for curvature. In the coefficients table below it is best see as part of a rate of change calculation

that is not meaningful except in how it affects the variable it is the square of. This is explained more in the results section. When searching for quadratic effects the procedure is biased by skewed variables. The variables ownership and dominance are both strongly skewed to the right and so they have been transformed to a $\log_n$ scale. When investigating if a variables has a quadratic relationship to the outcome any outliers produced by skew will likely enhance the appearance of a curve (Osborne 2015). Skewed independent variables do not violate assumptions of logistic models and $\log_n$ scales reduce interpretability, so other variables have been left untransformed. Additionally these two variables have been centred Centring was done for technical reasons. Centring allows for simpler calculations of the effects of the continuous interaction effect in each model and also more flexible calculations of the slope of the quadratic curves.

3.3.6 CONTROL VARIABLES

The control variables in this study are the size of the target firm (represented by its market capitalization) and the amount in dollars invested by the shareholder. The size of the target firm has been found to alter voting in previous studies of mutual funds (Davis and Kim 2007). Larger firms are harder to dominate, as their shares are more expensive, as such it important to control for firm size. Controlling for the assets invested is also important because the amount of money invested in a firm is more likely to determine where a shareholder will place the focus of their time and energy than the total amount of the firm they own. This was also the only other variable with known effects on index fund behaviour (Lliev and Lowry 2014). This variable is simple to code but has been relativity little addressed before the criticism by Edmans (2014) who noted its potential use for modelling asset manager behaviour. The assets invested were calculated by simply multiplying the ownership level by the firm's market capitalization.

Figure.2 – *This Is a Correlation Graph Showing the Main Variables and their correlations. The nodes are coloured green for index funds and blue for non-index funds.*
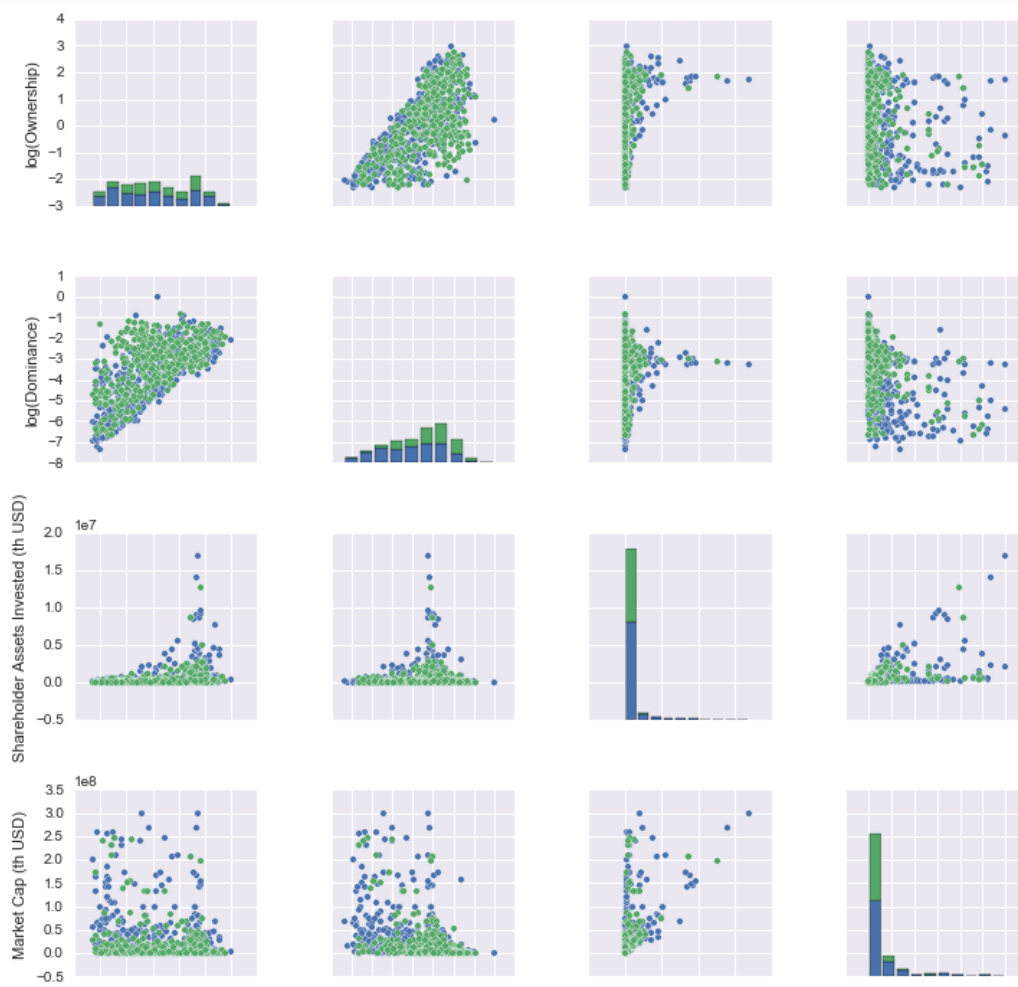
Table.3 – Range and Central Tendency of All Variables

	Count	*Mean*	*std*	*min*	*25%*	*50%*	*75%*	*max*
log(Ownership)	*985161*	*-0.01*	*1.31*	*-4.61*	*-1.14*	*-0.07*	*1.16*	*3.91*
log(Dominance)	*985161*	*-3.71*	*1.48*	*-7.78*	*-4.86*	*-3.42*	*-2.54*	*0.00*
Shareholder Assets Invested (th USD)	*985161*	*513383.88*	*1605751.34*	*6.00*	*17193.74*	*72049.14*	*312792.25*	*34360070.00*
Market Cap (th USD)	*985161*	*26761850.09*	*50883523.22*	*254.00*	*2070839.00*	*7865723.00*	*26967967.00*	*628154800.00*
Index Fund	*985205*	*0.40*	*0.49*	*0.00*	*0.00*	*0.00*	*1.00*	*1.00*
Vote Disagreement	*985205*	*0.09*	*0.28*	*0.00*	*0.00*	*0.00*	*0.00*	*1.00*

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4 RESULTS

Table.4 shows the results of the logistic regression models sequentially to display the additional effects of each new variable to the reader. Every variable is significant, which shows that all effects are unlikely given the null hypothesis and is not a mistake but the result of having a large sample size[vi]. Studies with large samples often feature high p-values and it is best to look at the substantial effects to assess a variables importance. As all effect sizes are significant at the p<0.001 level I will forgo reporting them after each effect. The sequential models are designed to show how each additional feature from the model before affects the overall trend. In all models the effects are robust and in the same direction. The coefficients decrease somewhat when more variables are added but because the effects are not significantly different I will focus on the most elaborate model (model 3). While model 3 is the best fitting the fit is surprisingly low compared to that of the model in similar studies, I will address this issue below.

Table.4 – Results of Logistic Regressions

Variables	Model 1	Model 2	Model 3
Dependant variable: Vote Cast In Disagreement			
Centred Log (Ownership Percentage)	-0.282***	-0.448***	-0.501***
	(-67.55)	(-83.58)	(-81.08)
Centred Log(Dominance)	0.269***	0.418***	0.490***
	-66.38	-81.3	-82.95
Centred Log(Ownership Percentage)^2		-0.0822***	-0.0844***
		(-24.58)	(-25.20)
Cantered Log(Dominance)^2		-0.122***	-0.110***
		(-48.69)	(-41.93)
Centred Log(Ownership Percentage) x Index Fund Dummy			0.152***

			-18.07
Cantered Log(Dominance) x Index Fund Dummy			-0.207***
			(-24.53)
Centred Log(Dominance) x **Cantered Log(Ownership Percentage)**	-0.0407***	0.139***	0.154***
	(-16.40)	-29.63	-29.94
Centred Log(Dominance) x Cantered Log(Ownership Percentage) x Index Fund Dummy			-0.0831***
			(-14.56)
Index Fund Dummy (1=Index Fund)	-0.260***	-0.256***	-0.105***
	(-33.08)	(-32.82)	(-10.13)
Shareholder Assets Invested (th USD)	-6.91e-08***	-6.47e-08***	-6.32e-08***
	(-20.11)	(-18.54)	(-18.14)
Market Capitalisation (th USD)	3.54e-09***	4.22e-09***	4.25e-09***
	-43.62	-50.21	-50.53
Constant	-2.298***	-2.165***	-2.208***
	(-377.35)	(-317.49)	(-307.91)
N	985060	985060	985060
McFadden's R^2	0.019	0.024	0.025
AIC	574773.3	572026.9	571430.3
BIC	574844.1	572121.3	571560.1

I plotted the probability of observing a vote against management against ownership percentage and dominance using software designed to produce

topographical maps [vii] . Multiple interaction effects in logistic regression produce results with no true central tendency but the full range of possible interactions can be capture using contour graphs. This is an underused technique that I highly recommend for explaining complex interaction effects. The maps, Figure.2, show all possible interactions between ownership and dominance. The intersection between ownership and dominance can be read as the coordinates of a map, with the height of land in the map now representing the probability of observing a vote against management at that point. For example, to find the probability of voting against management at the mean of both variables for index or active funds you simply follow the lines at zero on both axis and examine the colour.

The effect of ownership is negatively associated with voting against management in most places on the probability maps for index and active funds and at no point follows an inverted-U shaped distribution. Starting from any position on the map and running your finger up you will find the colours slide towards blue. When all other effects are taken into account this supports Hypothesis 1.1, showing that ownership has a negative relation to the probabilities of voting against management. Showing that ownership does not follow a quadratic relation with the predicted probabilities disproves H1.2. However, the quadratic term is not totally inaccurate. Positive interaction effect does not follow a U-shaped curve in all places in figure.2 but could be said to show an accelerating return, with the effect becoming more pronounced as ownership increases. From looking at this graph one can infer that H1.3 is also disproven. On the whole index funds are less likely to vote against management than active funds.

Dominance is positively associated with voting against management at most levels of ownership but consistently shows an inverted U-shaped relation with ownership percentages at or below the mean. Starting from any position and moving your finger right you will find the colours trend towards yellow in both graphs but then decline again. I would conclude that H2.1 is generally false and dominance shows a positive relation with the outcome. Hypothesis 2.2, that dominance will have an inverted-U shaped relationship with the probabilities of voting has been proven true in cases where ownership is at or below the mean value of ownership, which is 2.16% of a firm. In cases above the mean value of ownership dominance has different effects on index funds and active funds. For index funds it raises the odds of voting against management inconsistently or not at all, suggesting only a weak relationships between higher dominance and more probability of a vote when ownership is above average. Over the mean value of ownership for Active funds the effect is more linear, simply rising as dominance increases. H2.3 is generally false because index funds in most positions relating to dominance are less likely to vote against management than active funds. Finally, when comparing index funds to active funds the overall conclusion is that index funds are more

passive in their voting behaviour than active funds in most votes and over most levels of the other variables in the model.

Index funds with lower levels of firm equity do not follow the active pattern of voting behaviour (i.e. an inverted-U shaped distribution of probabilities predicting more voting against when dominance is near the mean). Above the mean value of ownership (approx. 1% of firm equity) index funds also fail to show any practically significant response to their changing dominance.
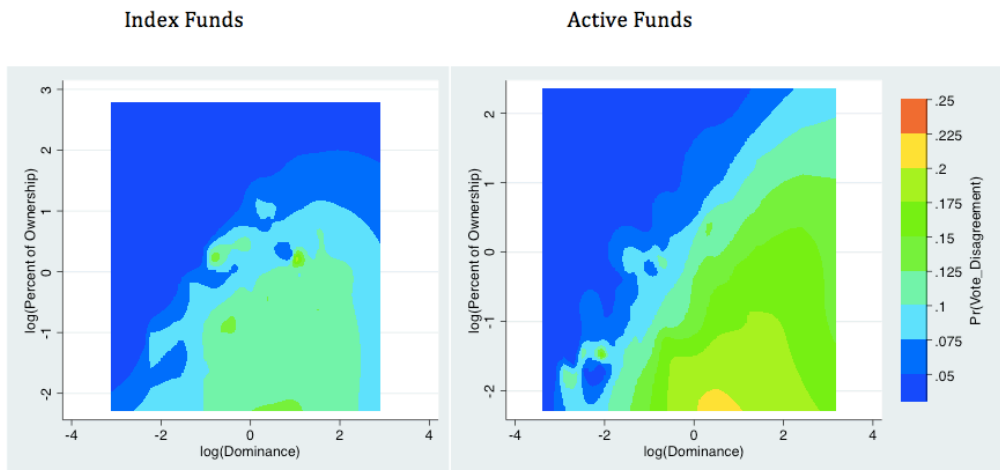

Figure.2 – *(Top) Contour Plots Showing The Probabilities Of Voting In Disagreement With Management Over All Levels Of Ownership And Dominance For Index And Active Funds. The scales are centred so the mean of each variable is 0. The standard deviation for dominance falls approximately at +/-1.5 from 0, and the standard deviation for ownership percentage falls approximately at +/-1.3 from 0.*
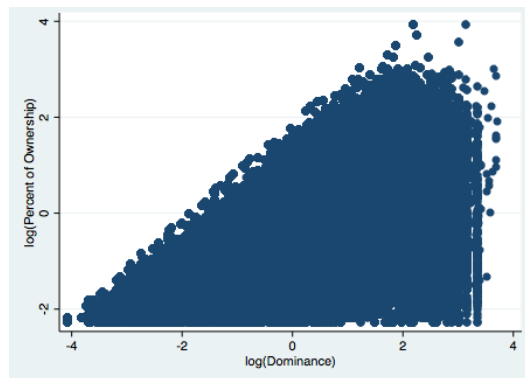
(Bottom) Scatter Plot-Showing Relation between Ownership and Dominance.

The voting pattern for active funds has two distinctive differences to that of index funds. In figure.2 the active funds with a level of ownership below the mean (which is approximately 1% of a firm's equity) vote in a way that is clearly affected by their dominance. If you asked what the effect of dominance is for an active fund with below average ownership the answer is that as dominance raises the odds of observing them vote against management will raise near the mean level of dominance and then fall at above a mean level. Dominance near the mean level would predict a situation where there are

multiple investors of approximately equal voting strength in a firm. This tells us that relatively weaker shareholders and relatively stronger shareholders are less likely to vote against management than shareholders whose dominance is average when ownership is lower than average. Finally, the control variables for this study follow the predicted patterns and are effectively vary minor in their total effect.

The graph is a centred log scale so the mean of each variable is 0[viii]. The standard deviation for dominance falls approximately at $+/-1.5$ from 0, and the standard deviation for ownership percentage falls approximately at $+/-1.3$ from 0. The exact probabilities of voting against management can be found in the tables below for the 10th through 90th percentiles of each variable (see: tables.5.1 and 5.2.). Additionally, the exact numerical value of those points in un-transformed scales (i.e. ownership present between 0-100%) in Appendix.i for key values emanating from those points.

Some positions on the contour plot are impossible to reach in real life. If you look at the scatter plot in figure.1 you will see that at there are no cases above a certain horizontal point. This is because there is a dependant relationship between dominance and ownership. You cannot have extremely high dominance and low ownership, or vice versa. The reader should use caution when interpreting cases near the deep blue boundary of figure.2 but otherwise this graph remains the best tool for displaying the main results. To avoid confusion about this boundaries I have presented key probabilities in tables 5.1 and 5.2.

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Index funds

Percentile	Ownership Percentage	Centred log(Ownership Percentage)	Probability Of Observing A Vote Against Management				
90th	0.17	1.816	*N/A*	*N/A*	0.047	0.057	0.060
75th	0.32	1.170	*N/A*	0.036	0.066	0.077	0.079
50th	0.92	-0.060	0.035	0.065	0.104	0.113	0.111
25th	3.17	-1.127	0.052	0.088	0.127	0.131	0.123
10th	5.98	-1.759	0.060	0.097	0.156	0.159	0.148
		Centred log(Dominance)	-2.196	-1.153	0.286	1.166	1.783
		Dominance	0.003	0.008	0.032	0.078	0.147
		Percentile	10th	25th	50th	75th	90th

Table 5.1 and 5.2 – *The tables show the exact probabilities of voting against management at 10th, 25th, 50th, 75th and 90th percentile of dominance and ownership. The N/A values indicate the interaction of the variables is impossible at the given level.*

Active Funds

Percentile	Ownership Percentage	Centred log(Ownership Percentage)	Probability Of Observing A Vote Against Management				
90th	0.17	1.816	*N/A*	*N/A*	0.044	0.072	0.092
75th	0.32	1.170	*N/A*	0.024	0.067	0.100	0.120
50th	0.92	-0.060	0.025	0.058	0.121	0.154	0.167
25th	3.17	-1.127	0.053	0.101	0.166	0.186	0.186
10th	5.98	-1.759	0.075	0.128	0.186	0.194	0.184
		Centred log(Dominance)	-2.196	-1.153	0.286	1.166	1.783
		Dominance	0.003	0.008	0.032	0.078	0.147
		Percentile	10th	25th	50th	75th	90th

4.1   THE ADVANTAGES AND DISADVANTAGES OF A POWER BASED MODEL WITHOUT CONTROLS FOR INCENTIVES

The variables here do not have a high R^2 value (McFadden's R^2 = .025). This implies that despite the strong and statistically significant relationship between ownership, dominance and voting there is significant variation in when we could expect to see a firm vote against management. In short, it's difficult to predict how a shareholder will vote based only how much you know about her ownership of and dominance over a company. It's also difficult to predict how a shareholder will vote given those two facts and knowing that they represent an index fund or non-index fund. While none of the hypotheses are about how well shareholder voting could be predicted here this is still a finding worth pausing over. In short, this finding implies that when asset managers are casting a proxy vote they might be taking little regard of their change of winning that vote as a standalone factor.

The R^2 of this study is low compared to comparable work that studies the proxy voting incentives of index funds, however none of those studies have produced high model fit. The most similar studies to this one are Lliev and Lowry (2014) who find only a moderate fit despite having 30 variables (McFadden's R2 = .07) and Davies and Kim (Davis and Kim, Business ties and proxy voting by mutual funds 2007) who used a population sample of all votes cast by the largest 12 mutual funds and so forwent discussions of R^2. Using population samples in future work avoids discussion of model fit but it is surprising that Lliev and Lowry's sample, with so many cases and variables, produced only moderate fit. It is possible this and comparable studies have yet to find the correct predictors of index fund voting behaviour, or that voting behaviour of funds might in fact be highly variable, with different funds have highly different cause for their behaviour. More work is needed to establish where models of fund voting behaviour are missing an as yet unconsidered key variable or whether the response to the causes of voting are is simply highly varied.

Despite the R^2 not being high this model does have some advantages over alternative possibilities that would use more variables. The main advantage is a clear and parsimonious elaboration of the simple effects of power on behaviour. The main disadvantages are that it obscures the wide variety of interests shareholders may possess that soften their willingness to use force to get what they want and obscures similarities between different types of investor beyond their voting strength. Yet, the differences between different shareholders in terms of interests might be so vast as to be practically speaking hard to model without over-fitting the model to hundreds of variables. Shareholders clearly take account of multiple factors when voting and are even then still variable because study's with tens of logically applicable variables still find high variation. In short the model fit for a model

with just the essential controls and then measures of power is not high but it does allow us to show that there is still a conclusive effect of power on voting. What it leaves us with for future research is the need to find what things most simply compliment power to raise the model fit and improve understanding without over fitting.

5   DISCUSSION

Dominance has a significant effect on voting behaviour that is different to ownership for both active mutual funds and index funds. This affirms the claim that power matters to shareholders in their considerations of voting behaviour. Dominance, the relative power of shareholders, is a key variable to understanding index fund voting behaviour. The use of dominance in this study is, to my knowledge, the first use of a variable that can assess a shareholders relative power in the study of their ultimate behaviour. This corrects a surprising gap in the current literature because this seems like an important precondition to wining a vote, and thus an important precondition to having influence and power over a target firm. There is a strong case for including a relative power variable in future studies on shareholder power. Beyond this general finding the substantive conclusion is that there are differences between index funds and active funds that are not explained by either hypothesis.

What we are seeing is a combination of the stealth activist and reticent investor positions, which complicates both pictures. Index funds with a below average level of ownership seem to behave in a similar way to stealth activists, and then those with a level of ownership approaching or greater than the mean level switch to a voting pattern that is much more reticent. This can be seen clearly in tables 5.1 and 5.2, which show the set of probabilities for observing a vote against management over the 10th-90th percentiles of ownership and dominance.

Essentially, index funds owning .32% of a firm or less (the bottom 25% of cases) follow the stealth activist pattern of proxy voting; their votes rise and then decline across the changing levels of dominance like the active funds do but they vote in total less often. However, funds with at least mean ownership, which in this dataset is around 1% of a firm, vote in a pattern that much more closely resembles the reticent investor hypothesis. For index funds at any given level of ownership the odds of voting against management rise up to the mean level of dominance but then simply don't change by a substantial margin after that point. This is not the pattern of active funds, which becomes more likely to vote against management as dominance rises. Effectively then index funds with low ownership act more like stealth activists, and index funds with average or large ownership act more like reticent investors. This means that most index funds, and especially the largest ones, will not use their additional dominance over a firm to vote

against that firm's management, even when equally powerful active funds would.

The question is why index funds and active funds would respond differently to having the same amount of power to win a vote. The stealth activists would answer that it's because they have an extra cost to voting so will do it less overall but for the same reasons. The reticent investors would argue that they would not care about their power to win a vote because they are not incentivised to win votes, only voting when they have to be seen to. Both theories have trouble explaining the patterns observed for medium and large index funds. The reticent investor hypothesis can explain why a medium to large index fund wouldn't respond to having more dominance over a firm, however, this hypothesis fails to explain why index funds then vote less as their ownership increases. In figure.2 the mean level of ownership is 0 because the scale is centred. At this level and above we can see that different levels of dominance only have a small effect on the probabilities of voting against management when compared to the effect on active funds but as ownership rises the probabilities tend to fall. This would not be expected with the current definition of reticent investors. Gilson and Gordon's reticent investor pursues "generally reactive, low cost activism" (Gilson and Gordon 2015, 33), and that is the essence of their prediction. This is too simple a position to explain the results well. For example we see that index fund behaviour is related to increasing ownership, though less related to increasing dominance. While having little incentive to vote would explain the lack of change when dominance changed, it would not explain the presence of change when ownership did. This also can't be explained with the stealth activist hypothesis because that assumes a combination of economic incentives to vote being placated by rising agenda setting will determine voting behaviour. If this was the case then the lower voting as ownership rises would be explained but not the lack of change as dominance changes.

An additional limitation of the stealth activist position is that it was drawn from case studies of index funds that might no longer be applicable or not generalizable to all index funds. Case studies showing that index funds have incentives to be activists (M. Becht, et al. 2009), and that in sections of the market where more index funds are present there are measurable effects on firm board structures and stock performance (Appel, Gormley and Keim 2016). That they have power is also corroborated by studies suggesting that index funds lower the competitiveness of airlines they own (Azar, Schmalz and Tecu 2015). My current finding does not contradict these studies but does challenge how generalizable their findings are. For example, Becht et al. (2009) was an in-depth and convincing case study of an index fund in the UK in the early 2000s. Despite being comprehensive, the study's findings might be limited in their generalizability because it focused on a relatively small index fund, where my model would predict more activism might be present but also because they do not contrast this case study with a study of an

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equally powerful active mutual fund. As such the activism seen appears extensive but possibly because it lacks contrasts, which my study achieves with a less in-depth but broader focus.

The reasons dominance might stop being important to the voting behaviour of index funds are limited as it cannot apply to active mutual funds and it cannot apply to small index funds. Furthermore, the reason cannot be strictly to do with the power of funds to force compliance to their agenda. If this was the cause of changing behaviour then both dominance and ownership would change behaviour and yet only ownership is having substantial effect. This leaves few possibilities all built around the question how ownership affects funds when they are voting on firms that aren't related to the power it grants over the firm. The most likely possibility seems to be government regulation. As funds own more of a firm they are subjected to more scrutiny over how they vote. Index funds represent the biggest concentration of ownership and control that has been seen in over fifty years, so perhaps they are concerned about appearing to be in control of companies and so choose to vote with firm management instead of with their own preferences as their holdings get bigger. Few regulators would monitor their behaviour below an ownership threshold of .32% but more would monitor them above 1% and higher. This would explain why dominance has little effect after this point for index funds and not for mutual funds. It also explains the difference between the large index funds and the small ones. This would give us a theory of index fund voting behaviour that implies something like a "stealth activist plus" perspective, with the inclusion of strategically lower voting by index funds when their ownership becomes noticeably large.

What predictions we could make using a stealth activist plus hypothesis seem testable. Index funds might be engaged in politically strategic voting to appease regulators that are more important at the moment than winning any given proxy vote. If this was correct then we would expect to see some relationship between the regulatory actions of a jurisdiction and the voting of large index funds but not small ones. Future research could test this by conducting a longitudinal study, collecting the voting records of index funds back to 2001 when the first public disclosures where made and see how these funds vote in response to their ownership over time. If index funds consistently change their voting behaviour for a given country when they cross a disclosure threshold in that country then this would be evidence for this stealth activist plus hypothesis. This would especially be true if in the same time period mutual funds did not respond in similar ways.

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6   CONCLUSION

If this stealth activist plus idea is correct then it is difficult to assess the true intentions or incentives of large index funds and what value they may have for society at large. Index funds are relatively new and regulators may rightly cautious about their impact on markets. However, it seems arguable that if large index funds are restraining their actions against firm managers for fear of regulation there are two possibilities. Either this situation would continue forever, with large index funds becoming *de facto* reticent investors because of a fear of engaging, or, they will begin to assert more active positions in future and become simply stealth activist investors.

There is then an open question as to whether these results can tell us yet what index funds imply for the control of large firms in different markets. Index funds increasingly own larger and larger shares of firms in multiple markets. There is essentially no mechanism by which the ownership stake of an index fund can decline and this should make regulators ask why they are not using there largest ownership positions to vote as they would do with their smallest positions. As index funds size grows we are heading inevitably towards a world where shareholder capitalism increasingly looks like marketholder capitalism. If index funds continue to replace active funds they will absorb most of the remaining shares available in a market and their ownership will be come expansive, or even indomitable. We have already seen that institutional investors have held effective control the market for several years but without solving inherent flaws that lead to negative social outcomes. For index funds to improve this situation they would need to change firm behaviour for the long-term improvement of beneficiary and stakeholder conditions. At the moment their voting behaviour seems much more likely to be giving additional support to firm management regardless of their power to do other wise. In the coming years the meaning of index funds in the market will be set and it is vital that they are watched closely to see if this current passivity towards management decisions is s quirk of the last year, or a permanent sloth.

Finally, the lack of comprehensive empirical work on the study of index funds is a surprising shortcoming of the literature that must be addressed in the coming years. Without knowledge of index fund behavior we know increasingly little about one of the key actors in financial markets. Any assumption that they are like other types of investor is false and misleading. Index funds have created new forms of power dynamic that cannot be explained by simple recourse to a discussion of similarly sized mutual funds. Scholars need to close the growing gap between the importance of index funds and the knowledge about them.

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Appendix. I

This table shows the marginal effects of the likelihood of observing a vote against management at the 10th, 25th, 50th, 75th and 90th percentile of dominance and ownership, including all significance indicators and the differences for index and active funds.

Ownership Percentage*	Dominance*	Fund Type	Probability Vote Disagreement	z-score	P-Value	[95% Confidence Interval]	
-1.759	-2.196	Active	0.075	104.08	0	0.073591	0.0764158
		Index	0.060	55.8	0	0.0575891	0.0617819
	-1.153	Active	0.128	116.48	0	0.125809	0.1301152
		Index	0.097	79.19	0	0.0948215	0.0996343
	0.286	Active	0.186	96.9	0	0.1818146	0.1893213
		Index	0.133	81.21	0	0.1294891	0.1358939
-1.127	-2.196	Active	0.053	98.85	0	0.0521583	0.0542686
		Index	0.052	60.44	0	0.049905	0.0532503
	-1.153	Active	0.101	160.71	0	0.099693	0.1021546
		Active	0.088	102.99	0	0.0863173	0.0896664

	0.286	Index	0.166	132.15	0	0.1640054	0.1689433
		Active	0.127	108.78	0	0.1249257	0.12951
	1.166	Index	0.186	104.59	0	0.1826836	0.1896611
		Active	0.131	97.12	0	0.1285866	0.1338832
-0.060	-2.196	Index	0.025	48.2	0	0.0244285	0.0264994
		Active	0.035	37.94	0	0.0330823	0.0366865
	-1.153	Index	0.058	100.26	0	0.0569163	0.059186
		Active	0.065	70.99	0	0.0628797	0.0664503
	0.286	Active	0.121	159.56	0	0.1197436	0.1227219
		Index	0.104	129.14	0	0.1022695	0.1054217
	1.166	Active	0.154	136.21	0	0.1516524	0.1560804
		Index	0.113	129.97	0	0.1117388	0.1151604
	1.783	Active	0.167	105.48	0	0.1636234	0.1698194
		Index	0.111	109.83	0	0.1086415	0.1125896

1.170	-2.196	Active	0.009	24.41	0	0.0078 307	0.0091 98
		Index	0.018	20.69	0	0.0159 495	0.0192 869
	-1.153	Active	0.024	42.43	0	0.0228 397	0.0250 521
		Active	0.036	34.39	0	0.0340 05	0.0381 149
	0.286	Index	0.067	115.9 4	0	0.0656 494	0.0679 071
		Active	0.066	88.09	0	0.0645 398	0.0674 773
	1.166	Index	0.100	148.3 1	0	0.0985 053	0.1011 437
		Active	0.077	120.1 8	0	0.0762 054	0.0787 323
	1.783	Index	0.120	109.5 3	0	0.1180 863	0.1223 894
		Active	0.079	88.09	0	0.0773 552	0.0808 757
1.816	-2.196	Index	0.004	18.23	0	0.0038 509	0.0047 785
		Active	0.011	15.82	0	0.0097 369	0.0124 904
	-1.153	Active	0.014	29.03	0	0.0125 958	0.0144 196
		Index	0.024	24.7	0	0.0220 48	0.0258 483

	0.286	Active	0.044	67.17	0	0.0426053	0.0451663
		Index	0.047	55.94	0	0.0453938	0.0486902
	1.166	Active	0.072	102.58	0	0.0705121	0.0732591
		Index	0.057	79.96	0	0.0560459	0.0588626
	1.783	Active	0.092	91.9	0	0.0900401	0.0939644
		Index	0.060	65.78	0	0.058417	0.0620053

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[i] In most firms the votes are binding, but there are by-laws that will influence the vote outcomes. Google has one of the strictest such by-laws, which grants the firms founders a majority vote on firm issues no matter what their stake in the firm. This is the duel-share class structure. Some of these rules are discussed below as they pertain to shareholder power. A count of these structures is given for the USA as an example in Table.i (the USA is used because it is far easier to obtain such information there). Several different types of fund engage in proxy voting. Primarily the studies include Hedge funds (Boyson 2016), Private Equity firms, Mutual funds (Davis and Kim 2007), Sovereign Wealth Funds (Nili 2014), Exchange Traded Funds and Investment Trusts. Different

incentives and opportunities apply to each because of different legal constraints and their differing financial make-up. It is also possible for directors to simply implement some measures that pass a vote very slowly. For example, shell has been notoriously slow in producing documents about its climatological impact even when shareholders voted that they must produce regular reports on this. It is much harder to avoid removing a director once a shareholder majority has voted for their removal, and in many cases a director that fears this is coming with resign before it can to save face. Despite these issues the study of voting, often complimented with studies of private negotiations, is becoming a popular way to study shareholder power and influence.

Table.I – Number of Complex Board Structures in 2014

Voting Structure	N
Classified Board	564
Duel-Share Class	363
Other Important Firm Features	
Golden Parachutes Provisions	1240
Poison Pill	147
# Listed Firms	
USA	4,381

*Source: ISS Voting Analytics Database and World Bank, accessed via the WRBS.

[ii] Wells notes that this myth has existed in the USA content for almost a century. Starting in the 1920s but being brought into the academic fold by theorists such as Peter Drucker, who imagined it as pension fund socialism (Drucker 1976), or in more tempered revivals by theorists like Julia Otto (Otto 2011). I say myth because even in the USA, where stock ownership via pensions or direct investments is seen as common, only 65% of people owned any stock at the recorded peak of USA stock ownership in 2000 (Wells 2015, 20). Further, the typical stockholder can be summarized as, "rich, old and white" (Wells 2015, 25), raising issue the suggestion that share ownership will bring larger scale empowerment.

[iii] Some theorists would note that weighted voting power is fine a fine measure of relative power but is less precise than a known alternative, the power index. Power indexes are attributed to Shoebik and Shaply, or Banahazof's work on how to measure power to win a vote without overestimating the power of shareholders with relatively more votes but no practically greater hope of using them than other weak players. The measures are game theoretic and applicable here, however, they were designed to be

used on parties in a single parliament. To calculate them for over 8,000 parliaments would take an exceptionally long time or difficult to create algorithm and that is essentially the task we face here. Weighted voting averages will appropriate a power index accurately, reliably and with computational ease. I leave the improvement they offer to future research.

[iv] Other datasets of proxy voting votes are more expansive, with Thompson Reuters and the full ISS Proxy Insights databases including all votes be USA mutual funds since 2003. However, these databases are prohibitively expensive for a thesis project, costing at least several thousand euros.

[v] There are two possible ways to improve the current coverage for smaller firms. The first would be to use modern artificial intelligence techniques to train a computer to find the best possible matches between the names of the funds that are listed in both data sets and then link these funds to their asset manager. This is technically complex and inconceivably so for a thesis in political science. However, the second option is simply to expand the use of string matching to find the names of funds and their ownership levels and then link this back to the obvious ultimate owner. While computationally quite simple this method requires more domain knowledge and, if expanded to the smallest asset managers, a substantial amount of time. Both should be able to generate a larger population of votes that are linked to financial data.

[vi] P-values are in part calculated on sample-N and because of this big data projects often have every variable become significant. Readers may wonder how we can find meaningful effects when everything is significant or assume this is a mistake. However, the low p-values simply show that the null hypothesis is unlikely given the data for all the relationships seen here. The interpretation is unchanged with sample size, but the effects of these significant relations may be trivial. The best thing to look at is the substantive effect of the coefficients.

[vii] I find that the maps here are not precise enough to be used without marginal effects graphs below but they though they are accurate, and they show why multiple interactions in logistic regression are so difficult to interpret. An important point is that contour graphing software's are conservative in the probabilities they assign to a position. When faced with a choice between 2 possibilities at the same point the graph always plots the lower one. Also, producing these graphs is highly computationally expensive and so these graphs are produced on a sub-sample of the predicted results. The probabilities produces from the full sample is given below.

[viii] The software has some limitations in how results can be displayed (it does not allow important points to the marked, the axis tickers to be altered, or for lines to be overlaid on the plot), but there are several points the reader may wish to examine.