ESSAYS ON FINANCIAL INSTITUTIONS

A Dissertation

by

SYED IMRANUL HAQUE

Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Chair of Committee,	Hwagyun Kim
Co-Chair of Committee,	Shane A. Johnson
Committee Members,	Adam C. Kolasinski
	Ke-Li Xu
Head of Department,	Sorin M. Sorescu

August 2016

Major Subject: Finance

ABSTRACT

In this dissertation, I study the role of a specific group of financial institutions, institutional investors, in the asset allocation process as well as in shaping corporate policies. The first essay investigates the role of institutional investors in affording flexibility to firms' payout policy during periods of capital market stress. Treating the financial crisis as a systemic shock, I find that institutional ownership is positively associated with the likelihood of payout cuts during the crisis. The payout reduction is overwhelmingly driven by cuts in share repurchases and by the presence of quasi-index investors. I conclude that institutional shareholding is valuable because it allows firms to tap into an internal source of financing during times of systemic financial stress.

The second essay exploits a regulatory feature governing foreign institutional investors (FIIs) in India to study the timing of increases in the firm-specific limit on aggregate FII shareholding for a cross-section of Indian companies. We find that controlling shareholders (promoters) exploit their information advantage to sell overvalued equity to FIIs around valuation peaks. Despite the initial positive market reaction to greater anticipated FII shareholding, we find severe under-performance in the long run, both in stock prices and operating performance. At the same time, there are no changes in board structure. Our study thus reevaluates the role of FIIs in markets characterized by an opaque information environment.

The final essay focuses on the role of two specific classes of active institutional investors - mutual funds and hedge funds - and their contribution to the asset allocation process. In this study, I investigate the extent to which the use of private information explains the performance of actively managed investment funds. Specifically, we examine the relationship between the R^2 measure from regressing mutual funds' returns on pricing

factors and future fund returns. Contrary to the argument which posits that low R^2 is a proxy for skill, we instead propose that it represents private information advantages and provide evidence to support this claim.

DEDICATION

To my family, especially my eldest brother, Ehtesham, who encouraged me to take this step and supported me in every possible way on the long road to my PhD.

ACKNOWLEDGEMENTS

This thesis would not have been possible without the incredible support of faculty, colleagues and my friends in the Department of Finance at the Mays School.

I am extremely grateful to my committee chairs, Professors Hagen Kim and Shane Johnson, for their extraordinary support and valuable advice during my research. I am truly indebted to Hagen for his research advice, unwavering support and warm friendship. I can't thank Shane enough for his many constructive research critiques and helpful advice. I have always admired his critical thinking ability, strong work ethic and deep understanding of corporate finance. I would also like to thank my committee member, Adam Kolasinski, for all his valuable comments and feedback during my discussions with him. I would also like to extend my gratitude to Professors Ed Swanson and Keli-Xu for being part of my dissertation committee and for their help and advice during the process.

I would like to take this opportunity to thank my close friend, colleague and co-author, Shradha Bindal, without whose help and friendship, this thesis could not have been written. I am also grateful to James Nordlund and Nan Yang for their amazing friendship and research collaborations during my time here. Many thanks to all my friends and colleagues at A&M for their support during my PhD years.

Finally, I would like to acknowledge my deep gratitude to the Mays School, which provided me with the generous resources to fulfill my scholarly ambitions.

TABLE OF CONTENTS

Page

LIST OF FIGURES

FIGURE Page

LIST OF TABLES

TABLE Page

1. INTRODUCTION

In recent years, institutional shareholding has become the dominant corporate ownership paradigm in the United States, accounting for 67% of the shares of listed companies (Blume and Keim (2012)). They have also become important players in the capital markets of the fast growing economies of China, India and Brazil which are collectively referred to as the emerging market economies. Institutional investors run the gamut from relatively passive asset management entities such as pension funds, endowments, index tracking funds to active investment vehicles such as mutual funds, hedge funds and private equity. Regardless of their investment style, they increasingly play an outsized role in global financial markets and their actions are intensely scrutinized by corporate managers, policy makers and the media.

The literature on the effect of institutional shareholding can be broadly categorized into two separate lines of research. The first line of literature is concerned with the role of active institutional investors, such as mutual funds and hedge funds, in the asset allocation process. The key research question is whether the active style of asset management adds value or not? Actively managed investment funds, such as mutual funds and hedge funds, claim to be skilled at selecting stocks and hence charge large fees for managing portfolio of investments. But do active portfolio managers add value or are investors better off allocating their resources to index mimicking funds with low fees? The vast mutual fund literature and the rapidly growing body of research in hedge funds still remain inconclusive about this important question. Even if there appears to be some positive evidence regarding the ability of fund managers to generate alphas Kosowski, Timmermann, Wermers, and White (2006), the literature is mostly silent about the source of such outperformance. In this thesis, I provide time series and cross-sectional evidence that suggests that pri-

vate information advantages can partially explain the ability of active fund managers to outperform their benchmarks.

The second and more recent line of research examines the effect of institutional investors on corporate policies. The separation of ownership and control can lead to agency conflicts that reduce firm value (Berle and Means (1932)). The problem is exacerbated when ownership is diffused and the free rider effect prevents effective coordination among shareholders to discipline firm managers. Thanks to their size, scale and sophisticated information processing abilities, institutional investors can engage in effective monitoring of managers (McCahery et al. (2015)) and reduce the information gap between firm insider and outsiders (Boone and White (2015)). The literature has shown that institutional shareholding has implications for a range of corporate decisions ranging from dividend policy Crane, Michenaud and Weston (2014) to corporate disclosures (Bird and Karolyi (2015)).

The first chapter of this dissertation explores the relationship between institutional ownership (IO) and firm's payout policy during adverse capital market conditions, when access to external financing is severely restricted. I argue that greater level of IO enables firm managers to pursue a more flexible payout policy in that it allows them to access an internal source of financing by reducing payout to shareholders. My identification strategy relies on using the financial crisis of 2008-09 as an exogenous shock to firms' access to capital markets. Using a sample of firms with non-zero payout before the crisis, I estimate a panel regression to estimate the relationship between the extent of institutional shareholding in firms and the propensity to reduce payout, dividends and share repurchases, during the crisis period. Institutional ownership is significantly related to the probability of a firm reducing share repurchases, which constitutes the most common method of returning surplus cash holdings to shareholders. I also examine the role of investor heterogeneity during the financial crisis. Using Bushee's classification of institutional investors by portfolio turnover and investment horizon Bushee (1998), I find that payout reductions

are primarily driven by quasi-indexers. Thus, despite their passive investment style, index tracking mutual funds are far from passive owners as previously shown by Appel, Gormley and Keim (2015) and significantly influence adjustments to payout policy during periods of stress.

I further attempt to understand the mechanism that underlies the relationship between institutional ownership and the ability of firm managers to reduce payout during periods of systemic financial stress. Is the reduction in information asymmetry brought about by greater institutional shareholding a factor in firms' ability to pursue a more flexible payout policy? To test this hypothesis, I replace the institutional ownership variable with proxies for the degree of information asymmetry in the panel regressions. I find that lower levels of information asymmetry are associated with a greater likelihood of reducing payout during the financial crisis. I infer this result to be consistent with the argument that institutional shareholding lowers the information gap between management and outside investors thus enabling firm managers to tap an internal source of financing during the crisis period.

Finally, a small, but growing body of finance research examines the role of institutional shareholders operating outside of their home markets, also referred to as Foreign Institutional Investors (FIIs). These are sovereign wealth funds, pensions, endowments, mutual funds, hedge funds and index tracking funds that are domiciled in the United States and other developed countries who seek to find valuable investment opportunities in the developing world. Such investments have become an important source of equity financing in the fast growing economies of the emerging market countries. Given their reputation as sophisticated investors with little or no conflicts of interests at the local level, such investors are expected to invest in emerging market companies with strong growth potential but with limited access to capital. They are also expected to take advantage of their experience in instituting robust corporate governance practices in their home countries and to export the same to developing markets where expropriation of minority investors is a major concern.

Using a sample of mostly OECD countries, Aggarwal et al. (2009) and Aggarwal et al. (2011) find evidence that suggests that FIIs are successful at exporting good governance practices and increasing firm value.

In contrast, Stulz (2005) takes a more pessimistic view of financial liberalization in countries with weak legal institutions and where expropriation by the state and powerful, controlling shareholders is a first-order concern. Outside of the OECD countries, lack of transparency and information asymmetry between firm insiders and foreign investors can lead to wasteful allocation of foreign investment capital. Accordingly, some have taken the view that foreign portfolio capital is simply "hot money" which has the effect of pushing valuations away from fundamentals without having any meaningful effect at the firm level.

My dissertation contributes to this debate by studying a unique regulatory setting in the important emerging market of India which has seen increased FII activity in recent years. I track firms which facilitate greater FII shareholding by raising the statutory firm-specific limits on foreign portfolio shareholding. I study the timing of this decision by the firm's controlling shareholders (promoters) to see if it is driven by financing needs or is simply an attempt by the promoters to divest overvalued equity. While the increase in the limit results in greater FII shareholding and reduced insider ownership, it does not translate into gains for these new investors. In fact, I document strong declines in stock prices and operating performance in the the subsequent years. The change in the shareholding pattern also do not lead to improvements in corporate governance such as increase in the fraction of independent directors or limiting CEO-Chairman duality. The analysis reveals a strong tendency by the promoters to sell equity to FIIs when valuations and profitability are at a peak. Thus, I conclude that the opaque nature of firms in emerging markets can severely impede the ability of foreign investors to make value enhancing investments and could partly explain the well documented "home bias effect".

2. INSTITUTIONAL OWNERSHIP AND PAYOUT POLICY DURING ADVERSE CAPITAL MARKET CONDITIONS: EVIDENCE FROM THE FINANCIAL CRISIS

2.1 Introduction

According to the Miller and Modigliani (1961) dividend irrelevance proposition, in the absence of capital market frictions, payout policy should not be a first order concern for firm managers. However, in the presence of information asymmetry and incentive conflicts, regular cash dividends to shareholders and share repurchase activity can be seen as a costly mechanism to convey information about firm quality by management to shareholders (Bhattacharya (1979), Miller and Rock (1985) and John and Williams (1985)). Regular payouts to shareholders can also serve as a monitoring device to prevent entrenched management from wasting internal firm resources and engaging in empire building for their private benefits (Jensen (1986)). Given the costly trade-offs involved in committing firms to a consistent payout policy, in certain scenarios, a more flexible policy might be optimal. This chapter argues that greater institutional shareholding can in fact facilitate such a flexibility in payout policy and examines this claim in the context of the financial crisis of 2008-09.

Stock prices have been known to react to announcements that convey changes in payout policy, positively to dividend increases and negatively to dividend cuts (see Aharony and Swary (1980) and the literature survey in Allen and Michaely (2003)). The negative response of stock prices to dividend cuts also provides support to theories which posit that payout related decisions provide outside investors with valuable information about the firm's future prospects, including its growth opportunities. It also implies that if a mechanism were to arise which reduces information asymmetry between firm insiders

and outsiders, stock prices should become less sensitive to fluctuations in payout policies. Amihud and Li (2006) find that the negative reaction to dividend cut announcements is subdued for firms with high institutional ownership. This seems to suggest that greater institutional ownership makes payout policy less rigid, which in turn affords flexibility to firm managers in setting their payout policy. Thus, managers adjusting their payout policy, in the wake of new information, can rely on more sophisticated institutional investors to back them up. Allen, Bernardo and Welch (2000) argues that quality firms prefer institutional shareholders because they tend to be better informed investors. This flexibility in payout policy should become especially valuable for the firm when the supply of external capital becomes costly or when access to the capital markets is severely restricted, as occurred during the financial crisis of 2008-09.

In this chapter, I examine the propensity of firms to reduce payouts, as a function of institutional shareholding, in response to the severe credit crunch of 2008-09. I exploit the financial crisis of 2008-09 as a quasi-natural experiment which resulted in a negative, exogenous shock to firms' access to capital markets to test the hypothesis that institutional investors afford flexibility to firms' payout policy. The crisis period provides an ideal setting to examine this question because from the firm's perspective, the shock to the supply of external capital was unanticipated. Therefore, all else remaining the same, the use of costly payouts as a signaling mechanism or an instrument to prevent managerial waste became a less pressing concern. Duchin, Ozbas and Sensoy (2010) study corporate investments in a similar setting. They observed that corporate investments declined significantly during the crisis period, with the effect strongest for financially constrained firms and firms strongly dependent on external financing. Bliss, Cheng and Denis (2013) document a sharp reduction in corporate payouts dividends and share repurchases in response to the credit supply shock induced by the crisis. In light of their findings, I further posit that firms with high level of institutional ownership, where the interests of management is

most strongly aligned with that of shareholders, are more likely to reduce or even eliminate payouts in response to the crisis after controlling for other plausible firm-specific determinants of payout policy.

I find that institutional shareholding was instrumental in affording flexibility to firms' payout policy by enabling them to reduce payout to their shareholders during the crisis period. The results are strongly significant and economically meaningful for reduction in share repurchase. However, I fail to find robust evidence for cuts in cash dividends. My findings are in line with the view that considers repurchase activity to be a more flexible method of payout as described in Jagannathan, Stephens and Weisbach (2000) and the survey of Brav et al. (2005). A 1 standard deviation increase in institutional shareholding is associated with a approximately 12% higher likelihood of the firm reducing share repurchase during the financial crisis. In addition, I find that heterogeneity in institutional ownership matters. The payout reductions are driven by quasi-indexers who are traditionally considered to be passive investors. This result complements the findings in Appel, Gormley and Keim (2015) who show that passive institutional investors are far from passive owners and significantly affect governance.

As a robustness check, I carry out the same analysis for the 2001 economic shock and the results are qualitatively similar. Since, a relatively small number of firms pay reduce or eliminate cash dividends, I don't have a large enough sample to generate sufficient statistical power in my regression estimation. The reluctance to cut cash dividends on the part of firms can be primarily attributed to two reasons. Firstly, cash dividends constituted a smaller fraction of payout to shareholders in the pre-crisis period (39%). Secondly, firms that pay significant cash dividends are large, mature companies with low growth opportunities and lots of free cash flows (Floyd, Li and Skinner (2013)). Another plausible explanation for why firms don't drastically adjust their cash dividends during the crisis can be attributed to the "dividend smoothing argument" whereby firms dislike volatility in their

regular dividends to shareholders.

Share repurchase has the advantage that unlike cash dividends, firms are not firmly committed to a specific amount to be paid out or the exact timeline and therefore the repurchase activity can be scaled back should the circumstances change. Almeida et al. (2011) show that when financially constrained firms are faced with a significant shortfall as a result of a large fraction of their long-term debt maturing around the credit crunch, about 10% of the shortfall is met by reducing share repurchase while only 1% of it comes from reducing cash dividends. Therefore, I expect results on total payout to shareholders (sum of cash dividends and share repurchase) to be similar to those on share repurchase. This is exactly what I observe in my analysis. Consistent with my hypothesis, I find that there is a significant relation between the likelihood of firms reducing total payout to shareholders and institutional ownership. Finally, I attempt to examine the operating mechanism behind institutional ownership (IO) and payout flexibility by replacing the IO variables with proxies for information asymmetry . Using analysts forecasts and the probability of informed trading (PIN) as measures of information asymmetry, I find that firms with better information environment are more likely to reduce payout during the crisis period. Thus, I conclude that it is their better information collection and processing abilities that enable IO to afford flexibility to firms' payout policy.

There is now ample empirical evidence on the negative consequences of the credit crisis on real firm policies. As the crisis gathered speed in early 2008, firms suddenly found themselves shut out of the capital markets, unable to finance investments and rollover existing debt. For firms looking to finance positive NPV projects, costly payout policy became especially prohibitive during this period. I argue that institutional shareholders with their more sophisticated information processing skill and effective monitoring ability were most likely to allow firm managers the necessary flexibility to adjust payout policy in response to the crisis. Therefore, even though institutional investors may prefer dividend

paying firms and regular share repurchasers (Grinstein and Michaely (2005)), they would be expected to support temporarily reducing payout during the financial crisis in order to continue financing current investments.

The role of institutional owners and large shareholders in mitigating information asymmetry and reducing agency conflicts between firm insiders and outsider has been widely discussed in the literature. Amihud and Li (2006) observe a declining trend in the sensitivity of stock price reaction to the announcement of dividend cuts for firms with significant institutional ownership. They attribute this trend to the increase in institutional ownership at firms, who are considered more sophisticated and better informed than retail investors. Bushee (1998) and Wahal and McConnell (2000) document a positive relation between institutional ownership and R&D activity. Rajgopal, Venkatachalam and Jiambalvo (2002) provide evidence that institutional shareholding is negatively related to discretionary accruals. This chapter highlights another positive outcome of the special role of institutional investors which enables firms to shift to more optimal financial policies when faced with adverse, external circumstances. I also shed light on the importance of investor heterogeneity by documenting the differential response of firms with varying ownership structure. In this regard, my research takes a relatively positive view of index tracking investors in contrast to dedicated long-term and transient short-term investors.

The rest of the chapter is organized as follows. Section 2.2 develops the hypothesis of the chapter. In Section 2.3, I discuss the time variation in payout policy in the last two decades, which includes the 2001 recession in the aftermath of the tech bubble and the financial crisis of 2008-09. Then I briefly describe the sample construction methodology and report summary statistics. Section 2.4 presents the main regression results, including robustness checks. Finally, I conclude in Section 2.5.

2.2 Literature review and hypothesis development

This chapter is related to the broader literature on payout policy as well as financial flexibility and how these variables are influenced by the presence of institutional shareholders. The literature on payout policy continues to evolve but researchers have found it challenging to clearly identify the motives behind firm's pursuit of a costly, consistent payout policy or why and how firms choose between cash dividends and share repurchases. The underlying reason is that market imperfections such as the differential tax rates on dividends and capital gains, information asymmetry between insiders and outsiders, clientele effect and management incentives all interact in a complex way to determine a firm's payout policy. Allen and Michaely (2003) provide an excellent survey on the possible determinants of the choice of payout policy and the empirical evidence. Broadly speaking, theories of dividend policy, can be thought of as either driven by signaling motives or non-signaling reasons (taxes, agency, transaction costs, clientele effect). However, it is quite possible that a particular set of empirical results may be consistent with both theories.

Dividend signaling theories argue that firms use dividends as a mechanism to overcome the adverse selection problem. Since, firm managers have superior information about the firm's future cash flows and growth opportunities, they can use dividends to signal their private information to outsiders thereby increasing firm valuation. For example, Ofer and Thakor (1987) develop a model which analyzes the role of both dividends and share repurchase in signaling true firm value and the differential price reaction to them. Testing the signaling theory is a challenging enterprise. There is a large body of research that has attempted to test the signaling hypothesis and the conclusions are mixed at best. The findings of Ofer and Siegel (1987) that dividend changes are followed by analysts updating their expectations of future firm earnings points in favor of the signaling hypothesis. Of course, initiation and increase in dividends may also indicate that the firm has exhausted

its investment opportunities. Other studies in the literature have strongly questioned the signaling motive behind firms' payout policies (see survey by Brav et al. (2005)).

DeAngelo, DeAngelo and Skinner (2008) document the phenomenon of dividends being increasingly concentrated in a few large firms with high, stable earnings which runs counter to the implications of the signaling theory. Similarly, Grullon and Michaely (2004) fail to uncover evidence that would show that share repurchase announcements are followed by marked improvements in operating performance. Instead, recent studies point to alternative explanations for the cross sectional variation in firms' payout policies such as differential tax rates (Chetty and Saez (2003)), the preferences of institutional investors (Hotchkiss and Lawrence (2007)), the level of disagreement between firm management and shareholders (Huang and Thakor (2013)) or wealth transfer between the selling shareholders and the firm (Peyer and Vermaelen (2005)). In a similar vein, researchers have examined the role of institutional investors in shaping payout policy. Exploiting exogenous variation occurring during annual rebalancing of the Russell 1000 and 2000 indices, Crane, Michenaud and Weston (2014) find that firms with high institutional investors pay more dividends and repurchase more shares. They attribute the shift in payout policy as a consequence of greater monitoring of firm managers by institutional investors.

There has been a secular trend towards increased ownership of firms by large institutional investors in the last two decades. Institutional shareholders held about 67% of publicly traded equity in the US stock market as of 2010 (Blume and Keim (2012)). Moreover, they play an outsized role commensurate to their actual share because of intense media scrutiny of their actions and their ability to engage in proxy fights with firms' management. Shareholder activism has a become a prominent feature in today's financial markets as large, influential shareholders attempt to influence corporate policies and prevent managerial entrenchment (Gillian and Starks (2007)). Since, monitoring and information production is costly, institutional investors are seen as more efficient in mitigating

agency conflicts and reducing information asymmetry because of the scale effect and their ability to coordinate with other investors (Huang (2015)).

There is a large body of literature which models the disciplinary effect of institutions on firms' management. Admati and Pfleiderer (2009) show how large shareholders can use their private information to resolve the problem of diffused ownership and the concomitant "free rider problem", through a credible threat of exit. Large shareholders can also discipline managements, through direct intervention in their decision making, also referred to as the "voice mechanism" or as Edmans (2009) argues, implicitly through the threat of exit. The growth in index based investing in recent years has led to concerns that it will lead to less monitoring of management decisions. However, contrary to such fears, Appel, Gormley and Keim (2015) show that these so called passive investors are far from passive owners. Exploiting the annual rebalancing of the Russell 1000/2000 indices, which causes exogenous changes in the level of passive mutual fund ownership, they show that increased shareholding by such investors is associated with governance improvements such as appointment of more independent directors and removal of anti-takeover provisions. Institutional shareholders are also credited with increased information production (Boone and White (2015)) and improving the quality of corporate disclosures (Bird and Karolyi (2015)).

Given that payouts, dividends and repurchases, continue to constitute a critical policy for firms, a better understanding of the link between shareholding pattern and the payout policy has important implications for corporate investments, innovations and governance. However, institutional ownership in a firm can increase without disturbing the existing agency and information asymmetry dynamics of the firm. For example, institutional shareholdings can also be linked to a investor clientele effect. Institutional investors may be attracted to large, dividend paying firms for regulatory or tax reasons. Therefore, establishing causality from institutional ownership to firm's payout policy presents strong

empirical challenges. Grinstein and Michaely (2005) find that institutions tend to prefer firms that pay regular dividends or repurchase shares, but their presence does not cause firms to increase dividends and repurchases. On the other hand, Crane, Michenaud and Weston (2014) link increased institutional ownership with higher dividend payments and more share repurchases.

The financial crisis of 2008-09 provides an ideal setting to test the role of institutional investors in enabling firm managers to adjust their payout policies because of its plausibly exogenous nature. The crisis developed as a result of large losses suffered by banks and financial firms on their portfolio of subprime mortgage securities. The financial crisis escalated into a full blown credit crisis after the collapse of Lehmann Brothers in September, 2008. Ivashina and Scharfstein (2009) documents a severe contraction in new lending to large borrowers during the height of the crisis (4th quarter of 2008). Credit markets froze as financial institutions refused to lend to each other and firms found it increasingly difficult, and at times, even impossible, to access capital markets (Campello, Graham and Survey (2010)). Thus, from the perspective of non-financial firms, the economic recession of 2008 can be seen as an exogenous shock to the ability of firms to borrow funds for investment purposes. There is no doubt that the scale of the economic crisis lead to a severe deterioration in the investment opportunities for firms. However, by focusing on the early period of the crisis, I hope to exploit the crisis as a quasi-natural experiment, whereby firms suffered a negative shock to the supply of external capital. This allows me to identify the role played by institutional investors in the ability of firms to adjust their payouts in response to unanticipated, adverse circumstances.

2.3 Data description and summary statistics

I follow Bliss, Cheng and Denis (2013) and Li and Zhang (2008) in compiling the data on annual payout to shareholders through cash dividend and share repurchases. The sam-

ple consists of publicly traded firms from 1990 to 2012. I use COMPUSTAT and CRSP to extract annual information on payouts and firm fundamentals. In line with the literature on dividend policy, I exclude companies in the financial sector and (SIC codes 6000-6999) and utilities (SIC codes 4900-4999). The payout policies of such firms is heavily influenced by regulatory considerations and hence is not suitable for the current analysis. I also drop firms which have missing observations on assets (item 6, AT), cash dividends (DVC, Item 21), purchase of common and preferred stocks shares outstanding (PRSTKC, Item 115), net reduction in preferred shares outstanding (Item 56, PSTKRV), shares outstanding (CSHO, Item 25) and end of fiscal year share prices (PRCC_F, Item 199). Cash dividends (DVC) are obtained from the COMPUSTAT Annual file. Information on share repurchases are obtained from COMPUSTAT by subtracting any net reduction in preferred shares outstanding (Item 56, PSTKRV) from the firm's purchase of common and preferred stocks (PRSTKC, Item 115). Following Bliss, Cheng and Denis (2013), I set the share repurchase amount to 0, if the amount is less than 1% of the previous year's fiscal year end market capitalization of the firm.

2.3.1 Measures of institutional ownership

I define institutional ownership as the fraction of shares held by institutional shareholders (mutual funds, bank trusts, pension funds, insurance companies, investment advisers). Data on institutional holdings as a fraction of total share outstanding is obtained from the quarterly 13f form filings of the aforementioned institutions which is available on the Thompson 13F Spectrum database. According to SEC regulations, institutional investors with more than $100 million in assets under management are required to report their long equity positions on a quarterly basis. I also employ alternative measures for institutional shareholding such as the fraction of shares owned by the top 5 institutional shareholders and the number of institutional investors as a measure of institutional shareholding.

To examine the association between payout policy and heterogeneity in institutional ownership, I use Bushee's investor classification methodology Bushee (1998) to group institutional investors into three categories - Dedicated (DED), Transient (TRA) and Quasi-Indexers (QIX). The methodology uses the investor's portfolio turnover and portfolio concentration as the basis for the classification. Dedicated investors are those with low portfolio turnover and concentrated portfolio holdings. Transient is the opposite with high portfolio turnover and diversified holdings. Quasi-indexers like "Dedicated" have low portfolio turnover but similar to "Transient" have a well diversified portfolio, owing to them being index trackers.

2.3.2 Control variables

The literature on corporate payout policy has found that several firm characteristics are related to the payout decisions of firms. Accordingly, I use several firm-specific variables as controls in the panel regression. The set of control variables is taken from Bliss, Cheng and Denis (2013). *Capex* is defined as capital expenditures (CAPX) divided by book value of assets (AT) while *R&D* is research and development expenses (XRD) divided by books assets (AT). *Firm age* is calculated by subtracting the year of first appearance in the Compustat database from the current fiscal year. *Losses* is the number of times the firm has experiences negative income (NI) in the previous five fiscal years. *Market leverage* is long-term debt (DLTT) plus current liabilities (DLC) divided by firm's market capitalization (PRCC_F * CSHO). *Cash* is cash and short-term investment (CHE) divided by divided by book assets (AT) while *Cash Flow* is defined as operating income before depreciation (OIBDP) divided by lagged total assets (LAT). *Tobin's Q*, a measure of the firm's growth opportunities, is computed as market value of equity plus book value of assets minus book value of equity divided by book value of assets. *Total payout* is cash dividend plus share repurchases divided by total assets (AT). Stock volatility is defined as

standard deviation of the market adjusted monthly stock returns for the fiscal year. Finally, *Crisis* is a binary variable that is set to 1 for the credit crisis period - 2008 and 2009 and 0 for the years before the crisis. Similarly, for the 2001 shock, I define *Bubble* as a dummy variable which takes the value 1 for the fiscal year 2001.

2.3.3 Time series variation in payout policy

Table B.1 presents historical information from 1990-2012 on the number and percentage of firms paying dividends, engaging in shares repurchases or both. The fraction of firms paying dividends declined throughout the 1990s as documented in French and Fama (2001) and Floyd, Li and Skinner (2013). Consistent with their observations, I find that dividends have made a comeback after a period of secular decline during the 1990s with the fraction of dividend paying firms showing a sharp increase after 2002. A plausible explanation could be the reduction in the tax rate on dividends as part of the tax reforms in the Jobs and Growth Tax Reconciliation Act (JGTRRA) of 2003. Chetty and Saez (2003) provides strong evidence that the JGTRRA, which eliminated the tax disadvantage of dividends by reducing the tax rates on dividends to 15%, lead to dividend initiations and increases by a large number of firms. Consistent with the observation in the literature on payout policy, firms also appear to have increased their reliance on share repurchases during the time period under consideration.

The financial crisis of 2008-2009 led to a sharp reduction in the fraction of firms paying dividends or repurchasing shares, with the effect of the crisis being the strongest on share repurchase activity. A similar pattern is observed for the 2001 recession in the aftermath of the bursting of the tech bubble. This is consistent with the dividend smoothing argument whereby firms appear to be reluctant to adjust cash dividends, particularly firms with stronger information asymmetry problems (Leary and Michaely (2011)). Reducing share repurchases is more commonly observed because of its flexible nature. The observed pat-

tern in payout policy during the crisis is also consistent with the findings of Daniel, Denis and Naveen (2012) who report that when facing cash shortfalls, firms appear to be strongly reluctant to cutting dividends.

Figure A.1 shows payout policy for the cross-section of COMPUSTAT firms (excluding financials and utilities) from 1990-2012. I observe a sharp decline in the percentage of firms paying cash dividends, in response to the financial crisis. Similarly, firms substantially curtailed their repurchase activity as a result of the crisis. Most of the reduction in payout is concentrated in 2008 and 2009 at the peak of the financial crisis. Payout activity appears to revert to their pre-crisis levels after 2010. A similar pattern is observed for other periods of stress in the financial markets (the 1992 recession and the 2001 shock). As is clear in Figure A.2, cash dividends are much smoother and there's a sharp jump in dividend cuts only during economic contractions. In Table B.2, I document the percentage of firms that reduced/eliminated dividends and share repurchases in response to the financial crisis. In 2009, almost 36% of firms reduced share repurchase in contrast to roughly 14% that did the same in 2006. Similarly, the number of firms that completely eliminated dividend payments jumped to 97 in 2008 from 39 in 2006. Thus, as previously documented by Bliss, Cheng and Denis (2013), firms appear to respond to recessions or distress in the capital markets by significantly reducing payout to shareholders.

2.3.4 Sample summary statistics

To test the relation between institutional ownership and flexibility in payout policy, I follow Bliss, Cheng and Denis (2013) and restrict the sample time period to 2005-2009. Following their definition of regular dividend payers and share repurchasers, I further restrict the sample of firms to those which had a positive average payout two years prior to the sample period. Table B.3 presents means and standard deviations of firm characteristics for the firms in my sample.

The average firm in the sample is mature with stable leverage and earnings. The mean firm age is approximately 14 years. While book leverage during the sample period is stable at 0.21, market leverage on the other hand jumped to 0.62 because of the sharp drop in the market value of equity during the crisis. Consistent with the trend towards increased institutional ownership (IO), the mean IO for the sample is 63%. The mean holdings of the top five institutional shareholders is 27% while the average number of institutional shareholders is 184. The typical firm in the sample has an average of 5.2 analysts covering them. In the next section, I examine the role of institutional shareholders in enabling firm managers to reduce payout during the financial crisis.

2.4 Payout reductions during the financial crisis and institutional ownership

In this section, I use panel regression with industry and year fixed effects to investigate the role of institutional investors in enabling payout flexibility during the financial crisis of 2008-09. I define flexibility, in this context, as the propensity of firms to reduce payout to shareholders during financial distress. As discussed earlier, I argue that firms with higher institutional ownership have greater flexibility in their payout policy. This flexibility turns out to be particularly useful when access to capital markets is severely restricted, as was the case during the financial crisis.

2.4.1 Univariate analysis

Table B.4 presents univariate analysis of the propensity of firms to reduce payout during the crisis period and its relationship to institutional ownership. The dependent variable in the univariate regression is a dummy variable which takes the value 1 if a firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. I report standardized OLS regression results over logit regression because of ease of interpretation of the coefficient estimates. The former also enables me to control for industry and year related effect in the regression.

Industry fixed effects are used to account for industry level variation in payout activity. Institutional ownership is measured as the fraction of firms' shares held by institutional shareholders and is lagged by a year. Crisis is a binary variable which takes the value 1 for the financial crisis years - 2008 and 2009. All the independent variables, including institutional ownership, have been standardized by subtracting the corresponding mean and dividing the same by the standard deviation.

The coefficient on the *Crisis* dummy variable is statistically significant for all three dependent variables. This is consistent with the sharp decline in payout by firms that I observed in Figure A.2 and with the findings in Bliss, Cheng and Denis (2013). The interaction of the *Crisis* variable with lagged institutional ownership (*Inst. Holdings*) is statistically significant for both share repurchase and total payout. Firms with greater institutional shareholding were more likely to cut share repurchase and consequently total payout. The mean level of institutional ownership is 63% with a standard deviation of 28%. According to the univariate analysis, a 1 standard deviation increase in institutional holdings increased the propensity to reduce share repurchase by approximately 13%. Therefore, institutional share ownership played an economically significant role in allowing firms to adjust their payout policy in response to the financial crisis. The coefficient of the interaction between the crisis and institutional ownership for cash dividend is positive too, but statistically insignificant. The corresponding coefficient for total payout is close to that for share repurchase. When faced with sharply reduced access to capital markets, firms respond by adjusting the most flexible form of payout, share repurchases.

2.4.2 Main results

The univariate analysis provides preliminary evidence in favor of institutional ownership playing a significant role in firms' decision to reduce payout during the financial crisis. However, it is possible that this effect may be attributed to firm characteristics that

affect payout policy. For example, firms facing severe cash shortfalls at the onset of the credit crisis would be expected to reduce payout more than others. Risky firms should be more prone to cutting dividends and share repurchase in the face of an economic contraction. Similarly, a firm with large fraction of its debt maturing in the midst of the financial crisis would be forced to cut dividends to avoid the possibility of default (Almeida et al. (2011)). Therefore, it is important to control for firm specific variables which could be related to the propensity to reduce payout to shareholders. In subsequent analysis, I estimate the likelihood of reducing dividends and repurchases during the financial crisis, as a function of the level of institutional ownership, after controlling for relevant firm-specific characteristics. I follow Bliss, Cheng and Denis (2013) in choosing the set of control variables in my panel estimation.

Table B.5 presents standardized estimates for the firm-specific variables which are related to the probability of reducing payout. Similar to the univariate analysis, the dependent variable is an binary variable which takes the value 1 if a firm reduced or eliminated payout to shareholders. I conduct separate analysis for reduction/elimination in cash dividends, reduction in share repurchase activity and reduction in total payout to shareholders. As with the univariate analysis, I include industry and year fixed effects to control for industry variations or year specific effects that may be related to reduction in payout.

I find that institutional ownership is positively related to the probability of a firm reducing payout to shareholders during the crisis, after controlling for firm-specific variables. As with the univariate analysis, the effect is mostly driven by reduction in share repurchase activity. The coefficient for the interaction between the *Crisis* dummy and the level of institutional ownership (*Inst. Holdings*) is positive for both dividend cuts and reduction in share repurchase. However, the interaction term is not statistically significant for dividend cuts. As far as repurchase and total payout is concerned, the coefficient is statistically and economically significant at the 1% level. Accordingly, firms with institutional holdings

greater than 1 standard deviation from the mean, were approximately 12.3% more likely to reduce share repurchase and total payout to their shareholders during the financial crisis.

I also employ an alternative measures of institutional ownership in my panel regression which proxies for the concentration of institutional shareholding. Demiralp, D'Mello, Schlingemann and Subramaniam (2011) show that concentrated ownership by institutional shareholders confers substantial monitoring benefits on the respective firms. Burns, Kedia and Lipson (2010) find evidence suggesting that more concentrated holdings induce greater monitoring and hence reduces incentives for firms to engage in financial misreporting. Accordingly, in Table B.6, I replace the fraction of shares held by all institutional shareholders with the fraction owned by the top 5 shareholders (*Top 5 Holdings*). For this measure of institutional ownership, I find that its interaction with the *Crisis* dummy is statistically significant for both dividend cuts (10% level) and repurchase reductions (5% level). For dividend cuts/elimination, the coefficient for the interaction term is 0.018. Therefore, a 1 standard deviation increase in *Top 5 Holdings* is associated with an approximately 2% higher likelihood of dividend cuts. For reductions in share repurchases, the likelihood increases by approximately 3.4%.

Finally, I also use the number of institutional investors (*InstN*) in my panel regression estimation. The standardized coefficient estimates for this measure are reported in Table B.7. Similar to Table B.5, its interaction with the *Crisis* variable is significant for reduction in repurchase and total payout, but not for cash dividends. A 1 standard deviation increase in *InstN* increased the probability of the firm reducing share repurchases by 15%.

2.4.3 Robustness check

As a robustness check, I follow Duchin, Ozbas and Sensoy (2010) and measure all independent variables in the above panel estimation, including institutional shareholdings, prior to the crisis period i.e. at the end of 2006. The conclusions are similar to the ones

in the previous sub-section. Firms with relatively high institutional ownership prior to the crisis period were more likely to reduce share repurchase and total payout to their shareholders.

As a further robustness check, I employ the same strategy during the economic contraction of 2001, following the bursting of the tech bubble. The year 2001 also saw the terrorist attack on the World Trade Center in New York in September which led to significant, short-term disruptions in the financial markets. Figure A.2 shows a spike in dividend cuts and curtailment of share repurchase activity in 2001, although the effects are relatively mild compared to the more severe financial crisis that erupted in 2008. Table B.2 shows that the percentage of firms reducing repurchases increased from roughly 21% in 2000 to about 28% in 2001. However, the spike in dividend cuts/elimination is negligible. Nevertheless, as shown in Table B.8, the conclusions are similar to those for the 2008-09 financial crisis. The estimated regression coefficient for the interaction between the recession dummy, *Bubble* and institutional ownership (*Inst. Holdings*) is statistically significant for share repurchase and total payout, but not for cash dividends.

2.4.4 Payout cuts and institutional ownership type

We next examine whether investor heterogeneity mattered for payout policy during the financial crisis. I conjecture that the investor's type (active vs passive), ownership concentration and investment horizon should be an important input into management's decision to adjust the existing payout policy. Accordingly, I replace the institutional ownership variables in the previous regressions with the shareholding of three separate classes of investors - Dedicated (DED), Transient (TRA) and Quasi-Indexers (QIX). Table B.9 presents standardized coefficient estimates for the interaction of the *Crisis* dummy with the fraction of shares held by the three classes of investors. For passive investors (Quasi-Indexers), the interaction coefficient for share repurchase and total payout cut is highly

significant and is of the same order of magnitude as for the overall institutional ownership in Table B.5. In contrast, interaction coefficients for the Dedicated group of investors is statistically insignificant. Thus, firms with concentrated shareholding were relatively less likely to reduce share repurchases compared to those with more passive institutional investors. However, both groups of investors afforded firms more flexibility in their payout policy than Transient investors during the crisis period. A 1 standard deviation increase in Transient type shareholding had the effect of reducing the likelihood of dividend cuts by 2.2 percentage point.

The results in this section add to the evidence on the important role played by passive mutual funds (Vanguard, BlackRock, State Street and so on) and similar index tracking institutional investors despite their low-key profile in the financial markets. While Appel, Gormley and Keim (2015) highlight the role of such investors in improving corporate governance, my results shows the implications of such investors for firms' financial policies, especially during periods of unanticipated stress in the capital markets. Finally, the results for Transient is consistent with the observation that short-horizon investors emphasize near-term earnings over long-term value enhancement Bushee (2001).

2.4.5 The role of information asymmetry

So far, I have presented evidence linking the presence of institutional shareholders to the reduction in payout by firms during periods of systemic financial distress and restricted access to capital markets. Specifically, I provided empirical evidence to show that there existed a positive relation between institutional ownership and the likelihood of reducing payout during the crisis period. Here, I attempt to investigate the operating mechanism by which institutional investors provide flexibility to a firm's payout policy during crisis periods. As argued earlier, firms where the information gap between management and outside investors is lower are expected to have greater flexibility in adjusting their payout

policy, when faced with adverse external circumstances. Similarly, when incentives of firm insiders and outsiders are strongly aligned, I expect management to have a freer hand when it comes to reducing payout to conserve cash for precautionary motives or to continue funding current investments. Institutional investors tend to be better informed about macroeconomic conditions and their ability to coordinate effectively can be particularly useful during periods of systemic shocks. Therefore, I next use proxies for information asymmetry in my panel regression specification to test the hypothesis that firms with better information environment had a greater likelihood of reducing payout.

To do so, I replace the institutional ownership variable with measures of informational asymmetry that have been extensively used in the literature - analysts forecasts and a market microstructure based measure, PIN (Chang, Dasgupta and Hilary (2006), D'Mello and Ferris (2000) and Krishnaswamy and Subramaniam (1999)). Chen, Harford and Lin (2014) exploit an exogenous shock to analyst coverage in the form of broker closures and mergers to establish a causal link between reduced analyst coverage and a host of poor management decisions ranging from increased likelihood of value destroying acquisitions to greater earnings management. Using the same identification strategy, Derrien and Kecskes (2013) link reduced analyst coverage to decrease in investments and financing. Li and Zhang (2008) use analyst earnings forecast errors and the dispersion in analyst forecasts as proxies for information asymmetry and find a negative relation between a firm's level of information asymmetry and the likelihood of the firm paying a dividend, initiating a dividend or the amount of dividend paid. They argue that their findings does not support the signaling theory of dividends.

I begin my analysis by replacing institutional ownership with the number of equity analysts *Analyst* covering the firm. Previous research suggests that financial analysts produce meaningful information which has real effects on corporate policies (Chen, Harford and Lin (2014) and Derrien and Kecskes (2013)). A higher analyst coverage is associated with

a lower degree of information asymmetry between firm insiders and outsiders. I average the quarterly analyst estimates for a given year from IBES to create an annualized measure of analyst following for a firm. If information on analyst coverage for a firm is missing in IBES, I assign zero analysts coverage to that firm. This allows me to use the complete Compustat database as there are several firms which have missing analyst related information in the IBES database. The standardized regression estimates are shown in Table B.10. The interaction of analyst coverage *Analyst* with the *Crisis* dummy is significant for repurchase and total payout reduction, but not for reduction in cash dividends. Firms with larger analyst coverage had a higher likelihood of reducing share repurchase and total payout to their shareholders. A 1 standard deviation higher analyst coverage (6.67) increased the probability of a firm reducing total payout to its shareholders by approximately 8%.

Continuing with my analysis, I use another proxy for informational asymmetry - the dispersion in the earnings forecasts of analysts. Elton, Gruber and Gultekin (1984) examine the nature of the errors in analysts' forecasts and find that most of the error is firm-specific and unrelated to industry or economy related factors. However, to calculate the standard deviation of the earnings' forecast, I need a firm to have several analysts providing forecasts. Unfortunately, that is not the case. Nevertheless, in the panel regression analysis, I include the standard deviation measure for those firms for which I am able to calculate the measure along with firm-specific characteristics used in the previous estimations. Table B.11 shows the standardized coefficient estimates for the regression. Due to limitations with respect to calculating the standard deviation of forecasts, the number of observations in the regression is significantly reduced. There exists a positive association between the probability of reducing cash dividends and the dispersion in analysts' forecasts *Forecast Disp.* during the crisis period. However, the relationship between this measure and reduction in repurchase or total payout is statistically not different from zero.

To resolve the problem posed by data limitations for analysts based measures of infor-

mation asymmetry, I turn to an alternative, microstructure based proxy for the degree of information asymmetry - probability of informed trading (PIN). PIN is an estimate of the probability that the counter-party in a trade is acting on private information. The PIN measure is computed from a maximum likelihood estimation of a model of informed trading proposed by Easley, Kiefer and O'Hara (1996), henceforth referred to as EKOP. Several studies have used PIN to measure the degree of information asymmetry faced by a firm's investors such as Brown, Hillegeist and Lo (2004), Vega (2006) and Mansi et al. (2011). I use a PIN measure computed using the Venter and DeJong model which is an extension of the basic EKOP model. Brown and Hillegeist (2007) argue that the extended PIN measure is more robust than that obtained from the basic EKOP model. I obtained the modified PIN variable from Stephen Brown's website.

In Table B.12, I estimate the panel regression with the *PIN* measure for the firm as the proxy for information asymmetry and examine the interaction of the *Crisis* dummy with this variable. It should be recalled that a higher value of the PIN measure indicates a greater degree of information asymmetry. Therefore, I expect a negative sign for the coefficient of the interaction term in order for the analysis to be consistent with the results in the previous tables. That is exactly what I find. For the regression where the reduction in share repurchase dummy is the dependent variable, the interaction term is negative and strongly significant. However, as in previous tables, I again find the corresponding coefficient for cash dividends to be statistically indistinguishable from zero. Finally, the probability of a firm reducing total payout to shareholders is also decreasing in its PIN value.

Thus, it appears that the degree of information asymmetry is positively associated with the likelihood of reducing payout during the financial crisis. Firms with greater analyst coverage and more informed investors showed a higher propensity to cut payout during the crisis, primarily in the form of reduced share repurchases. Since, institutional shareholding

has been shown to improve firms' information environment (Boone and White (2015)), I conclude that the operating channel behind the link between institutional ownership and payout cuts during the financial crisis is reduction in information asymmetry between management and shareholders. However, alternative explanations such as greater incentive alignment between firm management and shareholders, leading to reduced agency conflicts, cannot be ruled out.

2.5 Conclusion

In this chapter, I examine the role of institutional investors in affording flexibility to a firm's payout policy during periods of unanticipated, systemic distress in the capital markets. Institutional shareholders are better informed and have more sophisticated monitoring expertise than diffused retail investors. Therefore, firms with high institutional ownership are expected to have lower information asymmetry and agency conflict problems. Consequently, I argue that managers in such firms will have greater maneuverability over their payout policy. To test this hypothesis, I use the financial crisis of 2008-09 as a negative shock to firms' access to capital markets in order to investigate the role of institutional shareholders in enabling firm managers to access an internal source of financing, by reducing payout to shareholders.

Using panel regression estimation, I find that firms with greater institutional ownership had a greater propensity to reduce payout to their shareholders during the crisis. The effect is stronger for share repurchase than cash dividends because of the flexible nature of the latter as documented in the literature on payout policy. The effect is robust to several alternative measures of institutional ownership. I also find that heterogeneity in investor type matters. The reduction in payout is primarily driven by the presence of passive investors, in contrast to dedicated or transient type investors. Using proxies for information asymmetry in the regression specification allow me to shed further light on

the nature of the operating mechanism behind this flexibility. My findings indicate that institutional investors reduce information asymmetry and hence there is less uncertainty about managerial intent underlying the payout reductions. This affords managers added flexibility in their payout policy when faced with capital market shocks.

3. FOREIGN INSTITUTIONAL INVESTORS, CONTROLLING SHAREHOLDERS AND INFORMATION ASYMMETRY IN EMERGING MARKETS: EVIDENCE FROM INDIA

3.1 Introduction

How effective are foreign institutional investors (FIIs) in identifying valuable investment opportunities and exporting good governance practices to capital markets in developing countries? This question is particularly relevant for emerging market countries where foreign portfolio investors have become a prominent source of equity capital. In a frictionless world, financial liberalization would ideally benefit all the parties involved in the transaction. Financially constrained firms in developing countries would be able to invest in their growth options at a lower cost of capital (Bekaert and Harvey (2000)) while investors in the developed world would receive a higher return on their savings. But in a world where most emerging market firms have controlling shareholders, significant risk of expropriation exist for minority investors, weak legal institutions and high information barriers, does the bargain still hold? (Stulz (2005)) The purpose of this essay, co-authored with my colleagues, Shradha Bindal and Suman Saurabh, is to investigate this very question.

Using a unique regulatory feature governing FII investments in Indian companies[1], we study the timing of increases in the limit on aggregate FII shareholding for a cross-section of Indian firms. While the initial market reaction to greater anticipated FII shareholding is strongly positive, the stocks of these firms severely under-perform in the long run. We also document a significant decline in real firm outcomes thereafter. Our evidence points

[1] Aggregate FII shareholding for any given Indian firm is initially restricted to a total of 24% of the paid up capital of the company. This limit can be raised if the board passes a resolution to that effect, the same is subsequently approved by the company's shareholders followed by approval by the central bank of India (The Reserve Bank of India or RBI). See section 3.2 for more details.

to promoters facilitating greater FII shareholding at a time when the firm has reached a peak in terms of its growth opportunities. It appears that promoters exploit their information advantage to sell overvalued equity to a subset of foreign institutional investors (FIIs). Thus, contrary to their reputation as sophisticated investors, FIIs appear to be relatively uninformed and buy stocks at excessive valuations. The information asymmetry between the controlling shareholders (promoters) and FIIs thus has negative consequences and leads to inefficient allocation of foreign investment capital.

The theoretical literature on blockholders has offered new insights into how large shareholders can leverage their size and their reputation as informed traders to discipline management (see: Admati and Pfleiderer (2009), Edmans (2009)). This has implications for the role of FIIs in developing countries given their reputation as informed, uncompromising investors whose actions are intensely scrutinized by local financial markets. Anecdotal evidence suggests that foreign portfolio investors engage in both the "voice" and the "threat of exit" disciplinary mechanisms. They can also coordinate with domestic institutional investors to confront entrenched promoters and prevent expropriation[2].

However, there may be limits to what FIIs can achieve when they invest in emerging market countries. The "twin agency problems" of state and private expropriation as highlighted by Stulz (2005) could reduce the actual rate of return on their invested capital. Firstly, FIIs may face direct expropriation by the state through unfair rules or unpredictable tax and regulatory changes. Their investments in state owned enterprises (SOEs) may also be diverted to fulfilling social welfare objectives rather than towards firm value

[2]Maruti Suzuki, a subsidiary of Suzuki corporation of Japan, has substantial FII ownership totaling 21.5%. When the company attempted to transfer a project to the parent firm in Japan, domestic mutual funds and insurance companies teamed up with FIIs which included, HSBC, Credit Suisse and Norway's government pension fund, to oppose the decision. They collectively argued to the company's directors and regulatory authorities that this amounted to transferring over a valuable investment project to the promoter's (Suzuki) instead of using it maximize shareholder value. The coordinated actions of the institutional shareholders were helped by developments in corporate law which require companies to seek the approval of public shareholders in the case of such transactions.

maximization. Secondly, foreign investors may face private expropriation from promoters who often have the backing of the local authorities. FIIs may discover that their efforts to protect themselves from such expropriation is stymied by weak legal institutions and slow legal enforcement actions. In addition, information disadvantages relative to domestic investors may also lead to inefficient capital allocation (Choe et. al (2005)). Thus, when foreign capital and expertise runs into deep institutional flaws, the outcome may not be value maximizing. The persistence of the well documented "home bias effect", despite the near elimination of barriers to the flow of financial capital, indicates that the aforementioned factors significantly deter the flow of investment from the rich world to developing economies.

We first examine the firm characteristics that influence the decision by firms to raise the aggregate FII limit. An examination of corporate disclosures reveals a host of explanation offered including firm expansion, liquidity enhancement, improvement in governance and so on. For instance, the board of Kajaria Ceramics, an Indian manufacturing firm specializing in ceramics, while calling for an increase in the FII limit declared, "It is proposed to facilitate greater FII investment in the Company, which would not only provide depth and liquidity to the Companys shares but will also reflect the Company's commitment to the highest standards of disclosures, transparency, corporate governance, its operational efficiencies, global competitiveness and proven management track record." We find that relative to the overall sample of domestic Indian companies, firms that increase their FII limit are larger, more profitable and have higher capital expenditures. We further show that firms that facilitate greater FII ownership have strong growth opportunities as proxied by their market-to-book ratios. Analysis of the firms' shareholding pattern in the quarters prior to the limit increase reveals an increasing trend in greater foreign portfolio ownership. Thus, the promoters appear to time the increase in the FII limit to coincide with high market valuations, strong operating performance and significant buying interest among

FIIs.

Next, we examine the short-term reaction to the increase in the FII limit. The anticipation of greater shareholding by foreign institutional investors (FIIs) is associated with strong positive stock price appreciation for firms in our sample. An event study analysis reveals average market-adjusted price appreciation of up to 1.5%. Using a set of event windows, we find cumulative abnormal returns (CAR) in the range of 1.14%-1.38%. The stock market appears to strongly approve of the increase in the FII limit. To rule out the possibility that the positive market reaction is driven by demand pressures on the announcement date, we also analyze the stock price reaction on the board approval dates. [3] The CAR results for board approvals also reveal strong stock price gains. Consistent with the market's expectations, mean FII shareholding for firms that raise the limit increases by up to 6 percentage point relative to firms that don't. The greater FII shareholding is accompanied by a 3.5 percentage point reduction in the promoter ownership.

If the increase in limit is truly value-enhancing, then we should observe a similar outcome in the long term. On the other hand, if the positive short-term reaction is caused by investor's irrational exuberance, we should observe a correction as new information is revealed. Therefore, we conduct a buy-and-hold return (BHAR) analysis to see if the positive reaction in the short-run is justified. In other words, do foreign portfolio investors receive a good return on their investments or do they simply end up acquiring overvalued equity? From the BHAR analysis, we conclude that it is the latter. Firms that raise their FII limit strongly under-perform the aggregate market index by about 39% over the next 3 years. This contrasts with strong gains of over 200% previous to raising the FII limit. Similarly, when we compare the long-run returns against the corresponding industry returns, the under-performance is even worse. We find average, industry adjusted long-run

[3]Board approval is an interim step that does not result in buying of shares by FII. See section 3.2 for detailed description of the regulatory process.

returns of -221% over a period of 3 years after the limit is raised. Thus, promoters of these firms appear to time the increase in the FII limit when the firm is clearly overvalued and is at a peak in terms of future growth prospects. Also, unlike their supposed reputation for picking good quality companies (Ferreira and Matos (2008)), FIIs appear to be overly optimistic and extrapolate into the future based on past performance. In contrast, domestic institutional investors seem to come out better because their ownership in these firms stays roughly the same.

We supplement the BHAR analysis by comparing long run operating performance of these firms with those from the rest of the sample. Specifically, we compare industry adjusted EBITDA, ROA and sales growth of the two groups during a period of 2 years before the limit increase to 2 years after. The former have higher industry adjusted EBITDA, ROA and sales growth prior to the limit increase. The differences, however, disappear one-year post the limit increase.[4] In fact, the trend actually reverses for ROA – in the 2 years after the event, firms that increase the FII limit have significantly lower ROA than that of the remaining firms. Furthermore, examining board structure of such firms, we fail to find any evidence of corporate governance improvements as a consequence of greater FII shareholding. Thus, the increase in the FII limit does not appear to add value in the long run. Instead, it results in wealth transfer from foreign investors to the controlling shareholders.

Finally, we investigate acquisition related activity by firms that raise their FII limit. Previous studies have found that firm managers use overvalued stock prices as a currency to acquire real assets through M&A activity (Rhodes-Kropf, Robinson and Viswanathan (2005), Dong, Hirshleifer, Richardson and Teoh (2006), Ang and Cheng (2006)). We observe a similar pattern here too. Firms that raise their FII limit are 6%-13% more likely

[4]Firms that increase the limit have significantly higher sales growth even after two years post the limit increase. However, in unreported results, we find that the difference disappear for future years.

to engage in asset or company acquisition in the subsequent year relative to firms that don't. This again indicates that promoters of such firms clearly believe that valuations are inflated and take advantage of their stock's temporary mispricing to acquire real assets. The stock price reaction to these acquisition announcements is negative indicating that the market doubts that such investments are value-enhancing.

Our paper is broadly related to existing studies that have highlighted the role of international capital flows in lowering cost of capital and exporting good governance practices. Bekaert and Harvey (2000) exploits cross-sectional variation in capital market liberalization at the country level and documents reduction in cost of capital of up to 75 basis points. Using a panel of firms in OECD countries, Aggarwal et al. (2011) finds that institutional investors from the United States are linked to improvements in corporate governance and higher Tobin's Q. Similarly, Ferreira and Matos (2008) use a panel of firms again from mostly OECD countries to show that foreign institutions are associated with higher Tobin's Q, better operating performance and lower capital expenditures.

This paper complements their research by presenting evidence contrary to the claim that foreign portfolio investment is smart money by focusing on a major emerging market country, India. The literature on FIIs has for the most part focused on firms in OECD countries where institutions are closer to the Anglo-Saxon model and capital markets are well developed. Our paper extends the scope of their research into emerging markets characterized by family firms, significant risk of expropriation for minority shareholders, weak legal institutions and less liquid financial markets. This provides a more ideal setting to test Stulz (2005) theory according to which benefits of financial globalization have their limits in markets characterized by the "twin agency problems". In this particular context, expropriation of foreign investors by the controlling shareholders is facilitated by information barriers to the value of the firm's growth options and future prospects.

We make several contributions to the literature in this paper. Firstly, our study com-

plements the extant research on the role of institutional shareholders in instituting corporate governance and analyzing firm-specific information (see Appel, Gormley and Keim (2015), Boone and White (2015), Gillan and Starks (2000), Gompers and Metrick (2001), Gompers et al. (2003), Bhojraj and Sengupta (2003) and Smith (1996)). Our focus here is on institutional shareholders from developed countries operating in emerging markets. We provide evidence on the propensity of supposedly sophisticated FIIs to overpay for foreign assets, their failure to strengthen corporate governance and overcome information asymmetry. Thus, we add to the literature on the impact of financial globalization (see Lane and Milesi-Ferretti (2008)) as well as to the broader research on international corporate governance (see Denis and McConnell (2003), Stulz (2005), Aggarwal et al. (2011)), with a particular focus on developing countries. Secondly, we contribute to the literature on corporate insider trading which looks at the ability of informed investors to profit using private information (Wu (2015)). Our paper adds to this literature by analyzing the timing of equity sales of promoters of growth firms in India. We also contribute to the burgeoning literature on behavioral corporate finance as well as to the research on the financial policies of family owned Indian business groups. Our research sheds light on a possible mechanism through which underdiversified promoters reduce their holdings and their ability to time such diversification related sales. Finally, our study reveal new facts about event study analysis and cautions against overly relying on short-term market reaction as a measure of value creation.

The rest of the chapter proceeds as follows. In Section 3.2, we discuss the legal and institutional environment that regulates the shareholding of foreign institutional investors (FIIs) in Indian companies. Section 3.3 describes the methodology for data collection and presents descriptive statistics. Section 3.4 examines firm characteristics that influence the decision to raise the FII limit. It also shows variation in shareholding pattern around the said event. In Section 3.5, we conduct short-run and long-run event studies to test changes

in equity value following FII limit increases. Section 3.6 investigates the real effects of FII limit increase on firm performance and investment activities. Section 3.7 concludes.

3.2 Institutional background

As a result of the market liberalization measures introduced in the early 1990s by the Indian government and the gradual reduction in bureaucratic red tape, the Indian economy has seen high rates of economic growth in the last two decades. Economic growth, which had bottomed out in the early 1990s, revived in the wake of the rollback of the state from the economy. The Indian government embarked upon a major privatization initiative that saw the divestment of under-performing state owned assets to private companies along with sale of equity in major state owned corporations. Far reaching economic reforms by the government, adaptation of robust corporate governance measures and dismantling of barriers to foreign capital investments saw a proliferation of new firms list on the stock market as economic growth reached a peak of 10% in 2010. (See World Bank figures)

To bring transparency to securities markets and facilitate active participation by investors, domestic and foreign, the Securities and Exchange Board of India (SEBI), was set up in 1988 and given quasi-judicial enforcement powers to regulate such markets along the lines of the Securities and Exchange Commission (SEC) in the United States and the Financial Services Authority (FSA) in the UK. The two prominent exchanges in India, the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) have taken further steps to bring about increased corporate disclosure and better governance practices by imposing listing requirements similar to exchanges in the US and other developed countries. A major piece of reform was introduced and implemented in the form of Clause 49 requirements in the early 2000s. Clause 49 mandated greater board independence, independent audit committees and improved financial disclosures. Using an event study methodology, Black and Khanna (2007) find a significant announcement effect for large

firms, ranging from 4% to 10%. Taking advantage of the sequential implementation of the reforms, Dharmapala and Khanna (2012) conduct a difference-in-difference estimation and report an average improvement of 6% in firm values. As a result, foreign capital flows to India have grown steadily in the last two decades.

A major thrust of those reforms was towards liberalizing the capital markets, thereby allowing market forces to determine securities pricing[5], followed by opening of the financial markets to foreign portfolio investments. Foreign Institutional Investors (FIIs) have been allowed to participate in the Indian debt and equity market through the so called Portfolio Investment Scheme (PIS) since 1992. Panel A of Table E.1 presents the list of investment vehicles that are permitted to register themselves as FIIs and trade in debt and equity securities of Indian companies in the primary as well as the secondary markets. These include mutual funds, pension funds, endowments, sovereign wealth funds and even global central banks. For example, one such FII is the California Public Employee Retirement System (CALPERS), an institutional investor with a track record of actively engaging corporate management in the United States (Barber (2007)). Panel B of Table E.1 shows a partial list of India related FIIs which are sponsored by or affiliated to CALPERS.

The flow of foreign capital to India has been steadily increasing since the financial liberalization of the 1990s as foreign investors flocked to take advantage of investment opportunities in the second fastest growing economy in the world. As shown in Figure D.1, the number of FIIs participating in the Indian financial markets has been on an steady, upward trend. Figure D.2 shows net inflows of foreign investments, for both the debt and equity markets from 2000 onwards. For most of the period, investments in the equity markets constituted the vast majority of the capital inflows. Foreign equity investments

[5]For instance, controls on IPO pricing was abolished in 1991 and new issue pricing was allowed to be set by an auction mechanism.

peaked, at roughly $17 billion, in 2007 just as the stock market in India reached its highest levels before reversing course as a result of the global financial crisis, attesting to the at times volatile nature of global capital. FII activity picked up again after the crisis subsided reaching pre-crisis levels in 2009. Interestingly, for the first time in 2014, net foreign purchase of debt securities exceeded that of equities. At the end of 2014, the total net inflow of FII investments in India stood at $40 billion, the highest levels since the country opened its markets to foreign investments.

The entry of foreign portfolio investors into the Indian equity markets has been regulated in the form of a statutory limits on the fraction of shares of a given firm that can be held by such investors. At present, the initial limit on aggregate FII shareholding is set at 24% of the firm's paid up capital while the percentage of shares held by an individual FII cannot exceed 10%. The initial FII ceiling in state owned banks is set at 20%. Companies can raise the initial limit of 24% to a higher percentage if the board approves the proposal, the shareholders pass a resolution to the same effect and the Reserve Bank of India (RBI) consents to it. The top panel in Figure D.3 depicts the time-line and steps involved in raising the FII limit. Once the new limit is approved by the Reserve Bank of India (RBI), it notifies the new limit through a public announcement. The public notification of FII limit increases enable us to conduct event studies to measure the short-term and long run effect of increase in the FII limit.

The RBI also monitors the aggregate FII shareholding for each company and issues notifications *cautioning* against further purchases, if those holdings get to within 2% of the current limit. The bottom panel in Figure D.3 illustrates the monitoring of aggregate FII ownership by the RBI. For example, if a firm has not raised the default limit of 24% on aggregate FII shareholding and if those holdings reach 22%, the RBI will *restrict* further purchases of shares in the company without its prior approval. Usually such notifications are accompanied by the announcement that the "trigger point" has been reached thereby

necessitating prior approval for further share purchases ("Trigger") by FIIs. In the case of the aggregate FII holdings in a firm hitting the limit, the RBI will *prohibit* further purchases of the firms' shares and indicate the same in a public notification ("Ban"). The restrictions on buying of shares by FIIs are lifted only when the aggregate foreign portfolio holdings in the firm fall below the trigger limit or if the company increases the limit to a higher percentage amount.

3.3 Sample selection and descriptive statistics

In this section, we provide further details on the collection of the sample of event dates for our analysis. Detailed description of shareholding patterns and construction of firm characteristics from the relevant databases is also provided here.

3.3.1 Sample construction

We hand collect data on FII limit increases for individual companies from the RBI website. We also gather data on board approvals of FII limit increases from press releases on Factiva for those firms for which the data can be found.

Figure D.4 provides an example of a situation where aggregate FII shareholding in a firm reached to within 2% of the existing FII limit ("Trigger") whereby further buying of shares by foreign portfolio investors was restricted by the RBI. The existing limit on aggregate FII shareholding for Kaveri Seed Company Ltd. was 24%. Following the "Trigger" event, the board and the shareholders of the firm approved a resolution raising the limit to 49%. The RBI then issued a press release as shown in Figure D.4 notifying the new limit. In the same resolution, the central bank also lifted restrictions on purchase of shares by FIIs as a result of aggregate foreign portfolio holdings falling below the new limit of 49%.

Panel A of Table E.2 presents statistics on the frequency of FII limit increases from 1998-2014. Our sample begins in 1998 because the RBI notifications for the limit increases are not available before it. The number of such limit increases picked up signifi-

cantly in the second half of the last decade, peaking in 2006 and then slowing down subsequently. For example, of the 385 shareholder resolutions, 121 or roughly 30% of them took place in the years 2006 and 2007. Panel B of Table E.2 shows the distribution for the limit increases over time. FII limit increases are well distributed across industries ranging from Agriculture to Manufacturing. Given the prominent role that software and other related industries have played in the growth of the Indian economy, it is not surprising that the Business Services sector features most prominently at 15%. Other industries that are well represented in the sample are Food, Chemicals, Primary Metal and Communications.

We begin by excluding financial companies and state owned enterprises (SOEs) from our sample. Most banks in India are state owned and thus highly susceptible to political interference. Kumar (2016) shows that Indian banks engage in unproductive lending to farmers during election cycles as a consequence of undue political pressures. Similarly, SOEs with significant government ownership may be forced to fulfill political objectives rather than focus on shareholder value maximization. Accordingly, greater FII shareholding may not result in visible improvements in operating performance or corporate governance in such firms. The number of FII limit increases drops to 229 after excluding banks, state owned enterprises and firms with missing returns from the sample. We then use Factiva and Google search to collect date of board approvals. We are able to find 75 event dates for board approvals.

3.3.2 Firm characteristics

We use the security returns file from the Compustat Global database to calculate daily stock returns for the event study analysis. As a robustness check, we also use stock return data from Bloomberg and Datastream. The market index returns for estimating betas and computing the abnormal daily returns are obtained from MSCI India index. Data on firm characteristics comes primarily from the annual file of the Compustat Global

database. We augment the Compustat Global file with firm-specific variables from the DataStream/Worldscope annual files and the Prowess database. The Prowess database is an India specific database which provides financial information for over 5000 domestic companies.

We construct several firm specific variables which may be related to FII shareholdings: *Capex ratio* is defined as capital expenditures (CAPX) divided by book value of assets (AT) while *R&D ratio* is research and development expenses (XRD) divided by books assets (AT). *Firm age* is calculated by subtracting the year of incorporation available in the Prowess database from the current fiscal year. *Leverage* is book value of leverage calculated as long-term debt (DLTT) plus current liabilities (DLC) divided by firm's assets (AT). *Cash ratio* is cash and short-term investment (CHE) divided by divided by books assets (AT) while *Cash flow* is defined as operating income before depreciation (OIBDP) divided by lagged total assets (LAT). *EBITDA Ratio* is earnings before interest, tax and depreciation (EBITDA) scaled by book assets (AT). *Tobin's Q*, a measure of the firm's growth opportunities is computed as market value of assets plus market value of equity divided by book value of assets. Alternatively, we construct a market to book ratio (MB) as market value of equity divided by book value of equity (BE). The dividend declaration file from the Prowess database provides information on the dividend rate for each firm in a given year. We classify firms as Dividend Payers for a year if they have a positive average dividend rate for that year. All the variables in the form of ratios are winsorized at the 1% and 99% to mitigate the influence of outliers.

3.3.3 Shareholding pattern

Firms domiciled in India are required to report their shareholding pattern to the stock exchange. We take advantage of this regulatory provision to collect ownership data from India's oldest stock exchange, the Bombay Stock Exchange (BSE). The historical owner-

ship coverage on the BSE website begins in 2001. This enables us to construct a much richer and longer shareholding series for Indian firms, including foreign institutional ownership in contrast to the FactSet/LionShares database whose coverage for emerging markets is relatively sparse. The detailed quarterly shareholding report of Indian firms allows us to focus on ownership broadly for the following categories of shareholders: promoters or corporate insiders who in most cases are the firm's founders and typically tend to have a controlling stake, domestic mutual funds, financial institutions such as banks, insurance companies and finally foreign institution investors (FIIs). The quarterly filings also provides information on the exact number of individual investors in each investor class. Finally, we augment our hand collected data on shareholding pattern with similar information in the *Equity major investors* and *Equity ownership pattern* files in the Prowess database.

3.3.4 Summary of firm characteristics

Panel A of Table E.3 reports summary statistics on firm characteristics for firms which increased their aggregate FII limit (FIILimit firms) between 1998 and 2014. Panel B presents the same for the cross-section of all Indian firms in the Compustat Global database during the same period. FIILimit firms in our sample are 2.5 years younger than the average Indian firm. Comparing market equity and total assets, we find that they are also significantly larger in size (3-5 times). Furthermore, FIILimit firms tend to be more profitable as evidenced by their higher earnings ratio and return on assets. About 59% of these firms are constituents of the BSE-500 Index compared to only 12% for the typical Indian firm in Panel B. A more significant difference exists in the fraction of dividend payers across the two groups of firms. While half of Indian firms pay cash dividends, almost 78% of Indian firms that increase their FII limit do so.

The two groups of firms also differ significantly in terms of their cash holdings and

leverage. FIILimit firms have higher cash reserves and lower leverage. The cash holdings (14% of assets) may seem unusually large but it should be considered in the context of financial markets characterized by significant financial constraints. In the United States with its highly developed capital markets and low transaction costs of raising funds, high cash holdings is seen as opening the possibility to managerial waste and empire building (Jensen (1986)). However, the literature has taken a mixed view of the same when it comes to developing countries. In a cross-country analysis, Pinkowitz, Stultz and Williamson (2012) find that the link between cash holdings and firm value is relatively much weaker in countries with weak investor protection compared to that in other countries. The greater reliance on internal cash over external financing can be explained by less developed capital markets, particularly the market for debt based financing. In fact, Allen et al. (2012) report that large Indian firms meet 46.6% of their financing needs through internal cash followed by equity sales and bank borrowing. In contrast to developed markets, they find that corporate bonds make up a small fraction of external financing. Huang, Elkinawy and Jain (2013) examine the cash holdings of firms that cross-list through ADRs and find that they actually hold more cash than their corresponding non-ADR match.

FIILimit firms have lower promoter ownership and significantly greater foreign stock-holding compared to the average domestic firm. Thus, firms that increase their FII limit are those that already have substantial foreign shareholding which can explain the willingness of foreign investors to purchase additional equity from the promoters. Nevertheless, promoter ownership for such firms is still substantial at 42%. In the context of developing countries, this is unsurprising as family run businesses are the most prominent form of corporate enterprises there. In fact, outside of the Anglo-Saxon world, family run companies continue to dominate as evidenced by the fact that they constitute 40% of firms with annual revenues of over $1 billion even in developed countries such as France and Germany (Economist (2015)).

Thus, firms that increase their FII limit tend to be more profitable as evidenced by their higher earnings and return on equity. The above differences indicate that FIILimit firms are well placed to attract foreign portfolio investments given their size, visibility, strong past performance, high growth options, and a surge in interest by FIIs. Given this, we start our analysis by first investigating firm characteristics which are associated with an increase in the FII limit. We then test how the financial market reacts to the event and then analyze the long term performance of the FIILimit firms.

3.4 Increase in FII limit and firm characteristics

3.4.1 Probability of increasing FII limit and firm characteristics

We begin by examining firm characteristics which may be related to the decision to increase the FII limit. The increase in the FII limit may occur when a growth firm requires external financing from FIIs to invest in new projects. Given the perceived reputation of FIIs as sophisticated investors and effective monitors, the promoters of such firms may signal the quality of their investments and alleviate concerns about potential expropriation by obtaining financing from these investors. However, an alternative view allows for the possibility that promoters of firms with good past operating performance and high valuations take advantage of temporary market mispricing to engage in opportunistic equity sale. In other words, the promoters use their information advantage to partially divest their ownership stake by selling overvalued equity to foreign portfolio investors. Therefore, according to this interpretation, the promoter's need for diversifying their wealth and opportunistic behavior rather than investing in the firm's growth options, is the motive behind the FII limit increase.

Accordingly, we estimate a linear probability model where the dependent variable is a dummy that takes the value 1 for a firm-year with a FII limit increase. In column 1 of Table E.4, we present coefficient estimates for a pooled OLS regression with year fixed

effects. Column 2 shows estimates with year and industry fixed effects while in column 3 we control for firm and year fixed effects. For industry fixed effects, we use SIC 2 digits classification but the results are robust to using Fama-French 48 industry classifications(unreported). All covariates are lagged by one fiscal year.

We find that firm size is not positively related to the choice to increase the limit on FII ownership while younger firms are statistically more likely to do so, although the coefficient on firm age is approximately 0. The coefficient for cash ratio and dividend payers is significant. It is likely that large cash balances and consistent dividend payments attracts foreign investors. Grinstein and Michaely (2005) find that institutional investors tend to prefer firms that pay regular dividends or repurchase shares. The increase in the FII limit thus could be an attempt by the firm's promoters to take advantage of their strong balance sheet to raise additional financing for further investments. Alternatively, large cash balances may be a sign of the firm reaching a plateau in terms of its growth opportunities. Thus, under this scenario, promoters anticipate this thanks to their information advantage and subsequently decide to engage in market timing.

Continuing with the analysis, we find that the coefficients for sales growth (unreported) and Market-to-book ratio are both positive and statistically significant. The neoclassical literature tends to view these variables as proxies for growth or investment opportunities. Therefore, in this setting, raising the FII limit enables the firm to alleviate financial constraints and raise financing at a lower cost to invest in their valuable growth options. Alternatively, Market-to-book ratio can be viewed as a proxy for misvaluation because uncertain growth options constitute a significant component of the firm's value relative to assets in place. Thus, a higher market to book ratio then signals irrational investor sentiment that leads to market prices diverging from firm fundamentals.

Finally, we examine the association between recent trend in shareholding pattern and the decision to increase the FII limit. We find that lagged FII ownership is positively

related while lagged promoter's stake is negatively related to the decision to increase the FII limit. Thus, the increase in the FII limit is likely to happen in firms that have elicited strong interest from foreign investors recently.

3.4.2 Shareholding pattern following FII limit increase

Does the increase in the FII limit lead to meaningful changes in firms' ownership structure? We investigate this by first looking at within firm variation in shareholding pattern for companies that increase the FII limit followed by cross-sectional comparisons. Panel A in Table E.5 shows quarterly changes in the mean ownership for firms that raise the limit for three main groups of investors - Promoters, Foreign and Domestic Institutional Investors.

We find that aggregate FII holdings increase from a mean of 20.3%, prior to the FII limit increase, to 23.23% in the quarter immediately after it. This represents an increase of approximately 14% in average FII shareholding for such firms. At the same time, the promoter's stake drops from an average of 41.82% in the quarter prior to the FII limit increase to 40.60% post limit increase, a decline of 1.23 percentage point. However, we don't observe any changes in the level of domestic institutional ownership. Thus, the FII limit increase primarily results in an equity transaction between the promoters and foreign portfolio investors.

If we expand the window to 1 year (4 quarters), the change in FII ownership is even greater, increasing from a mean of 13.81% to about 23%. On the other hand, there is no such variation in the level of domestic institutional shareholding for the same group of firms. We also look at time series variation in the total number of FII investors and document substantial increase in their numbers. In unreported results, the number of FIIs increases from an average of 84 in the pre-shareholder resolution quarter to 97 in the quarter after it, an increase of 16%.

Next, we do a cross-sectional comparison of changes in shareholding pattern by estimating a panel regression with the change in ownership stake of the three class of investors as the dependent variable. Specifically, we define the dependent variable as the difference between the ownership stake in the year after the limit was increased and that in the year previous to it. The variable of interest is *FIILimit*, a dummy variable that takes the value 1 for a firm-year in which the FII limit was raised. The coefficient on the *FIILimit* variable compares the average change in ownership pattern between firms that increase the FII limit and those that leave it unchanged. The estimation results are shown in Panel B of Table E.5. For the univariate case, FII shareholding in firms that raised the limit increases by 6 percentage point relative to other firms while the promoter's stake comes down by 3.6 percentage point. There is no statistically and economically meaningful change in domestic institutional shareholding at the same time. In the next set of regressions, we add a set of control variables which may be associated with changes in ownership structure. We also include firm fixed effects in the regressions to account for firm heterogeneity. The estimated coefficient for the key independent variable, *FIILimit*, remains highly significant and is similar in magnitude to the univariate case. Other firm specific variables associated with changes in the shareholding pattern are capital investments, cash holdings, dividends and sales growth.

3.5 Long-run and short-run effect of increases in FII shareholding

In this section, we examine the short-run and the long-run stock market effect of the increase in the FII limit using the event study methodology. To test the short-run announcement effect, we calculate cumulative abnormal returns (CAR) on the board approval dates as well as the dates on which the FII limit increase is notified by the RBI. If the market interprets the limit increase as subsequently leading to relaxing of financial constraint, mitigation of agency conflicts or a reduction in adverse selection costs, as indicated by

some firms in their disclosures regarding this step, then we expect stock price gains both in the short and the long run. On the other hand, if investors interpret the announcement as opportunistic market-timing by the promoters, then we would expect a correction in the long run as new information is revealed. The abnormal return for a firm is calculated using the market model. Specifically, abnormal return (AR) is defined as:

$$AR_i = Ret_i - \hat{\alpha}_i - \hat{\beta}_i * MarketRet \tag{3.1}$$

The firm's market beta ($\hat{\beta}_i$) and alpha ($\hat{\alpha}_i$) are estimated from a time series regression of the daily stock return on the market index return using the [-250, -10] window.

3.5.1 Announcement effect of FII limit increase

Panel A of Table E.6 presents the cumulative abnormal returns (CAR) for the trading days surrounding the notification of increase in the FII limit by the RBI. We present CAR results for a range of windows - [-1,1], [-2,2], [0,1], [0,2] and [0,5]. All the CAR estimates are statistically and economically significant with the mean CAR increasing from 1.20% to 1.38% as we adjust the event window from [-2,2] to [0,2]. Using the standard event window ([-1,1]), the abnormal CAR is 1.17% with a Patell's Z-statistics (Patell (1976)) of 3.16. Other unreported t-statistics measures such as the sign t-test, the cross-sectional t-statistics and the Boehmer's statistics (Boehmer et al. (1991)) are also strongly significant. Thus, the market reacts in a strongly positive manner in the short-run to the increase in FII limit.

3.5.2 Announcement effect of board approvals

To alleviate concerns that the strong stock price gains surrounding the announcement of FII limit increase may be due to demand or liquidity pressures, we repeat the event study analysis for the board approval dates. Board approval is an intermediate step and

does not result in changes to the aggregate FII limit as the firm still requires approval from its shareholders and the RBI. Therefore, an event study for board announcements is unlikely to be affected by demand or liquidity shocks.

We conduct an extensive search of press coverage of board meetings for Indian companies using Factiva and Google search engine. This yields 87 observations on board approvals for which we have enough stock price data to do an event study estimation. We further restrict the sample of board approvals to exclude financial firms and state-owned enterprises leaving us with a sample of 75 event dates. Despite the small sample size, the results from the previous analysis hold. In fact, the CAR for the board approval dates are greater than those around the RBI announcement dates for certain event windows. For example, for the [-1,1] window, we find that the average CAR of 1.65% for board approvals is significantly greater than that for the official FII limit increases (1.17%).

3.5.3 Long run stock performance

Is the positive short-run reaction to the announcement of the FII limit increase justified by value enhancement in the long-run or is the market displaying "irrational exuberance" and overestimating the gains from greater FII shareholding? To answer this question, we measure the long term stock performance of firms that raise their FII limit using a buy and hold abnormal return (BHAR) analysis. Accordingly, for each *FIILimit* firm, we calculate the abnormal returns in the subsequent months by subtracting the return of a benchmark portfolio from the firm's monthly return. We use both the market index (BSE500) and the returns on the Fama-French 12 industry to which the firm belongs as the benchmark. We also employ the monthly returns on a set of matched firms as the reference portfolio. Accordingly, for each *FIILimit*, we find a matching set of up to 3 control firms in the same Fama French 48 industry using size, market-to-book ratio and profitability as matching covariates. The monthly abnormal returns are compounded over a period of 6 to 36 months

after the limit increase to calculate the BHAR. We also compute BHAR over a period of 12 to 24 months preceding the FII limit increase. Panel A of Table E.7 presents the BHAR results using the MSCI market index for India as the benchmark while in Panel B we use the Fama-French 12 industry as the reference portfolio.

The BHAR analysis reveals a striking pattern of reversal in long term stock returns after the FII limit is raised. While these firms show exceptionally strong share price increases prior to the limit increase, their stock significantly under-performs both the market index and the industry subsequently. Using the market index (FF12 industry) as the benchmark, stocks of these firms earn mean compounded abnormal returns of 172% (125%) during the 12 months prior to the FII limit increase. However, in the 12 months following the event, the mean BHAR returns relative to the FF12 industry returns is -45% (t-stat -7.05). The BHAR for 24 months is -112% (t-stat -10.67) and that for 36 months is -221% (t-stat -13.25). BHAR using the market index as the benchmark is less negative, -20% (t-stat -3.01) for 24 months and -39% for 36 months (t-stat -5.87). Long term stock performance using the matched set of firms as the benchmark (unreported) reveals under-performance of similar magnitudes (unreported).

The reversal in the stock prices of firms that raise their FII limit strongly point towards a market-timing motive rather than signaling or governance one. Promoters of these firms appear to time the limit increase to coincide with stock price peaks. Thus, the subsequent sale of equity from promoters to FIIs reported in Table E.5 represents a significant wealth transfer between the two groups of investors. It must be recalled that domestic institutional shareholding did not change after the limit increase. Thus, domestic institutional investors turn out to be better informed than their foreign counterparts about the intrinsic value of these firms.

The BHAR results also has implications for market efficiency. The disconnect between the short-run and long-run share prices indicates that irrational investor optimism fails

to anticipate opportunistic market-timing behavior by corporate insiders. The poor long term stock performance also raises question on the efficacy of foreign portfolio investors in identifying good investment opportunities in emerging markets. It also casts doubts on their supposedly superior information processing abilities, especially in more opaque financial markets. The systematic under-performance documented here shows that information asymmetry between the promoters and foreign investors, especially with regards to growth firms, can lead to inefficient allocation of foreign capital in emerging market countries. The presence of such information asymmetry may also partly explain the persistence of the "home bias" phenomenon despite the spread of financial liberalization to the developing world.

3.6 Real effects of raising the FII limit

In this section, we compare the trend in operating performance and other firm characteristics prior to and subsequent to raising the FII limit. Given that the vast majority of domestic Indian companies have substantial promoter ownership, raising the FII limit is a major strategic decision for the firm. If the FII limit is raised to convey a positive signal about the firm's growth options or alleviate financial constraints, then we expect to find improved operating performance compared to industry peers. On the other hand, if the promoters use their private information to engage in opportunistic market-timing, then we should observe no such gains or even negative real outcomes vis-a-vis peer firms. Under this scenario, promoters time the equity sale right before they expect firm profitability and growth to flatten or start declining.

3.6.1 Operating performance and FII limit increase

To test these opposing hypotheses, we compare the fundamentals of firms that raise the FII limit with all other firms in the sample before and after the limit increase. We compare EBITDA ratio, ROA and sales growth of the two sets of firms over a period of 4 years

around the FII limit increase. The three variables are industry-adjusted i.e. for each firm we calculate the financial metric by subtracting the industry average of all firms (excluding the firm itself) in the same industry and the same fiscal year.

Figure D.7 compares industry adjusted EBITDA of *FIILimit* firms with other firms. We observe that EBITDA for the former is on a steep declining trend prior to the FII limit increase. In contrast, the EBITDA for the remaining firms is slightly increasing over the same time period. We find a similar pattern for industry adjusted ROA in Figure D.8. Finally, in Figure D.9 we compare the log of industry adjusted sales growth for the two sets of firms. Again, *FIILimit* firms exhibit steep decrease in their sales growth following the limit increase. It should be noted that for such firms, the level of these variables tends to be significantly greater than the others prior to the limit increase. However, after the limit increase, we observe a convergence in the levels as depicted in the figures.

The strong declining trends in ROA, EBITDA ratio and sales growth surrounding the FII limit increase appears to undermine the signaling or financial constraint hypothesis. Instead, it suggests that promoters exploit their information advantage about the firm's fundamentals and future growth prospects to time the sale of equity to FIIs. For example, the promoters can look at their firm's order books to better forecast future profitability and sales growth than outside investors, including FIIs, who don't have access to such material information. In fact, Figure D.10 confirms this intuition. The increase in the FII limit occurs when the firm's market capitalization is at its peak. Subsequent to the limit increase, there is a strong reversal in the same. Thus, in selling equity to FIIs, the promoters simply appear to be taking advantage of temporary mispricing.

We formally test for the difference in firm fundamentals for the two groups of firms in Table E.8. We present mean and median estimates for industry adjusted EBITDA ratio, ROA and sales growth, for *FIILimit* firms and the remaining firms (Control) as well as for the differences in them from two years prior to the limit increase to two years post. We

first examine the levels for years 1 and 2, prior to the limit increase. For all three variables, the estimates for the *FIILimit* group is greater than that for the Control group. At the end of the event year, the differences become weaker. For example, the difference in means for industry adjusted ROA is significant only at the 11% level while for adjusted log sales growth, the means of the two groups is not significant at conventional levels. Examining firm performance after the limit increase, we find that the levels start converging. For example, in the year immediately after the event, the mean differences in EBITDA, ROA and sales growth between the *FIILimit* and Control groups are all statistically insignificant. The median difference is also insignificant except for adjusted log sales growth (z-stat -3.06) . Two years after the event, the trend reversal becomes even stronger. In fact, median industry adjusted ROA for *FIILimit* firms is actually lower than for the Control group with a p-value of 0.06.

The results in Table E.8 undermine the claim that FIIs can necessarily export their success to emerging markets. Rather, the opaque information environment of emerging market firms and the concentrated ownership structure makes them susceptible to trend extrapolation and opportunistic market-timing activity by insiders. Because of their information advantage, the promoters are able to identify trends in the firm and industry before outside investors do. Our findings also have important implications for market efficiency as stock prices appear to peak at a time when the reversal in fundamentals is already underway.

3.6.2 FII limit increase and acquisition activity

We next examine the acquisition activity of FIILimit firms after the limit increase. As has been documented in the M&A literature, deviations of market values from firm fundamental can lead to heightened merger activities (Rhodes-Kropf and Viswanathan (2004)). Given that promoters of firms that increase the FII limit appear to time the increase to co-

incide with valuation peaks and declining fundamentals, it is pertinent to ask whether they undertake acquisitions to increase the assets under their control? As shown before, these firms elicit strong interest from FIIs as a result of their past sales growth and profitability. Therefore, it is likely that promoters take advantage of the temporary over-valuations to engage in opportunistic divestiture of equity while simultaneously acquiring real assets.

We use the merger and acquisition file from Prowess database to identify acquisitions. Any acquisition labeled as "Sale of asset" is excluded. The acquisition variable takes the value for a firm-year when at least one such event occurs. For the group of FIILimit firms, the dummy takes a value of 1 only if the merger was announced at least 30 days and at most 365 days after the increase in limit (0 otherwise). Furthermore, we split the merger/acquisition sample into two - within and outside group. An acquisition is deemed within-group if the acquirer and target are owned by same parent company. Again, the key independent variable is *FIILimit* which takes the value 1 for a firm-year for which there is a FII limit increase.

Table E.9 presents panel regression results for M&A activity and its relation to the increase in FII limit. The columns show estimates for a linear probability model where the dependent variable is an acquisition dummy as described before. Column 1 estimates the model for all acquisitions, column 2 for within-group acquisitions and column 3 for acquisitions where the target is a firm outside the group. We control for firm-specific determinants of acquisition activity and industry fixed effects. The coefficient estimate for *FIILimit* in all three regression specifications is economically and statistically significant. Firms that increase their FII limit are 13% more likely to make an acquisition, within group or otherwise, in the year after the limit increase. These firms are more likely to acquire another company outside the group (9.8%) than within the group (6.3%). As expected, market-to-book ratio is a strong predictor of future acquisition activity. Higher equity

valuations enable firms to pay for acquisitions using their stocks. [6] Finally, the coefficient for leverage is negative. Levered firms may find it difficult to raise financing for M&A or it could plausibly make them less attractive buyer's from the target's perspective.

Are these acquisition value enhancing? If the acquisitions are driven by opportunistic market-timing behavior, seeking to take advantage of temporary mis-valuations rather than synergies, then we expect the answer to be negative. Alternatively, if the M&A activity is a form of corporate investment, intended to increase firm value, then the markets should view it positively. To test the competing hypotheses, we first compute CARs for all M&A announcement dates in our sample. Then we regress the CARs on the *FIILimit* dummy. The coefficient for *FIILimit* then tells us the differential market reaction to the acquisitions for firms that increased their FII limit in contrast to those that left it unchanged. The results are shown in Table E.10. For each acquisition type (All, Within-Group and Outside-Group), we present estimates for both univariate and multivariate regressions. While the announcement CAR for all M&A is positive (1%), that for the *FIILimit* group of firms is significantly lower and even negative. Such firms have 3.4 percentage point lower CAR (-2.4%) than that for all acquisitions. The result holds even when we control for a set of firm-specific variables that are related to M&A activity. Interestingly, *FIILimit* firms experience significantly negative CARs both for within group and outside group acquisitions.

3.6.3 FII limit increase and corporate boards

As shown earlier, the FII limit increase results in a significant transfer of equity from the promoters to the FIIs. Therefore, we also test whether the limit increase and the concomitant increase in FII shareholding lead to any meaningful changes in board structure.

[6] Although we do not have data on the mode of payment of these mergers, we check if the share outstanding of the firms that undertook an acquisition change from one quarter prior to the acquisition announcement to one or two quarters post the announcement. We find that share outstanding do change for XX% of these acquisitions. This quick test provides some evidence that firms use at least some stock to pay for their acquisitions.

Promoters may facilitate greater FII ownership to increase monitoring and reduce agency costs. If this is indeed the case, then we should expect to see more independent directors and less CEO-Chairman duality. Accordingly, in Table E.11, we regress changes in board size ($\Delta TotalDir$), fraction of independent directors ($\Delta IndDir$) and CEO-Chairman duality ($\Delta Dual$) on the *FIILimit* dummy. We also include industry fixed effects to control for industry-specific heterogeneity as well as a set of control variables associated with board structure. The coefficient for the *FIILimit* dummy is statistically insignificant in all the regressions. Thus, the increase in the FII limit, does not lead to more independent boards or reduction in the power of existing CEOs.

3.7 Conclusion

This paper documents opportunistic market-timing behavior by controlling shareholders (promoters) in India, which results in distorted allocation of foreign investment capital. Promoters use their information advantage as insiders to time the increase in foreign shareholding limits to coincide with temporary stock misvaluations. This results in the sale of overvalued equity by promoters to foreign institutional investors (FIIs). At the same time, domestic institutional shareholding remains unchanged. Although the short-term market reaction to the increase in the FII limit is strongly positive, we find severe underperformance in the long-run. The FII limit increase also leads to increased acquisitions with poor announcement returns. Thus, despite their reputation as sophisticated investors, a subset of FIIs repeatedly engage in poor investment decisions by extrapolating from past firm performance. These findings bring into question the quality of information processing by FIIs in markets characterized by opaque information environment. Our study thus reevaluates the role of FIIs in emerging markets and provides a partial explanation for the well documented "home bias effect". Finally, we also contribute to the literature on market efficiency by highlighting the contrast between short-term and long-run stock

performance.

4. SOURCE OF ACTIVE FUND ALPHAS: SKILL OR PRIVATE INFORMATION?

4.1 Introduction

Do active portfolio managers add value or are investors better off allocating their resources to index mimicking funds with low fees? The vast mutual fund literature and the rapidly growing body of research in hedge funds still remain inconclusive about this important question. Even if there exists some positive evidence regarding the ability of fund managers to generate risk-adjusted excess returns or "alphas", the literature is mostly silent about the source of such outperformance. Is the alpha of successful managers due to superior stock picking skills, sophisticated market timing and information processing abilities, or is it simply a result of better access to valuable private information? If some fund managers are able to gain access to material information from firm managers, then they can trade on this information ahead of other market participants and will appear to outperform their peers. But how do we test the latter given that private information by its nature is unobservable to outsiders? In this paper, we tackle this research question by exploiting the promulgation of Regulation Fair Disclosure (Reg FD) by the SEC which sharply reduced selective disclosure of material corporate information to individuals or entities.

Past research on mutual funds has arrived at the conclusion that while on average, active managers' net of fees returns underperform the benchmark (Jensen (1968), Elton et al. (1993) and Carhart (1997)), neverthless a subsample of fund managers are able to outperform the traditional benchmarks and generate alphas for their investors. Using a bootstrap technique, Kosowski, Timmermann, Wermers, and White (2006) show that a significant fraction of mutual fund managers are skilled stock pickers. Kacperczyk, Sialm and Zheng (2005) find that mutual fund managers that deviate from a well-diversified portfolio and

instead concentrate their investments into certain industries tend to perform better than their peers. They argue that such managers possess industry-specific knowledge that allows them to be superior stock pickers. Similarly, Cremers and Petajisto (2009) develop their "Active share" measure, which represents the share of the portfolio holdings that differs from the fund's benchmark and show that funds with high Active share outperform their respective benchmarks. More recently, Amihud and Goyenko (2013) show that when mutual funds are sorted on their R square values (R^2), estimated by regressing their past 24 month returns on the Carhart 4 factor model Carhart (1997), low R^2 funds outperform their high R^2 counterparts. A low R^2 indicates that a large fraction of the fund's returns cannot be explained by the benchmark. If such funds have high alphas at the same time, then they are able to outperform despite deviating from the benchmark. The authors take the view these funds must possess superior active management skills. In fact, splitting mutual funds into quintiles first by their estimated R^2 and then within each R^2 quintile by their estimated past *Alphas*, they report that funds with the highest *Alphas* in the lowest R^2 quintile have a positive annual alpha of 3.80%.

While it is plausible that the superior performance of low R^2 funds may be solely due to their superior stock selection abilities, there can be plausible alternative explanations that are consistent with the findings of Amihud and Goyenko (2013). For instance, the outperformance of these funds could arise as a result of them taking systematic risks that are unobservable, and hence not incorporated in the traditional Carhart four-factor benchmark. If managers of such funds are loading on risk factors absent from the Carhart model, then any risk premium earned by them from the omitted risk factors will show up as positive alpha and thus will be misinterpreted as skilled active management. This explanation is related to the "joint hypothesis problem" first formulated in Fama (1970). Another possibility is that managers of low R^2 funds possess information advantage that enables them to pick stocks that do well in the near future. According to this view, it is access to valuable

private information ahead of other market participants, rather than stock selection skills or sophisticated information processing abilities, which is the real source of outperformance.

This paper investigates the role of private information advantage, if any, in the ability of low R^2 funds to outperform their counterparts. We exploit the implementation of Reg FD as a negative shock to the exclusive access of non public, material information from corporate managers by market participants, include active portfolio managers. If managers of such funds are indeed better stock pickers and do not rely on privileged access to valuable corporate information, then their ability to outperform should be unaffected by the Reg FD. On the other hand, if access to private information is instrumental in their efforts to generate alpha, then we should observe noticeable decline in performance of low R^2 funds in the post-Reg FD period. More specifically, the association between estimated R^2 and future excess returns should weaken considerably after Reg FD goes into effect.

Based on a large sample of actively-managed, domestic equity mutual funds over the period 1988-2014, we document a significant change in the relationship between R^2 and subsequent fund performance in the post-Reg FD period. We are able to confirm the pattern shown in Amihud and Goyenko (2013), that is, smaller values of R^2 are associated with better abnormal fund returns going forward. However, this relationship largely disappears in the post Reg FD period. Furthermore, an examination of portfolio holdings of low R^2 funds reveals concentration in stocks characterized by strong degree of information asymmetry. Finally, we find a similar pattern for a sample of long only, equity-oriented hedge funds. Therefore, though it remains difficult to disentangle stock-picking abilities from those to access valuable information, our findings suggest that the use of superior information is one important source of funds' abnormal performance, and the implementation of Reg FD appears to have reduced that advantage to a significant extent.

The remainder of the paper is organized as follows. Section 4.2 describes the data we use in detail. Section 4.3 describes the implementation of Regulation Fair Disclosure

(Reg FD) and Section 4.4 discusses the main results of the paper. Section 4.4.4 provides a robustness check using hedge fund data. Finally, we conclude in Section 4.5.

4.2 Sample selection and summary statistics

The mutual fund sample is obtained from CRSP Survivorship Free Mutual Fund Database and includes domestic, equity mutual funds with varying investment styles. When a mutual fund has multiple share classes, the MFLINKS file is used to combine them into a single fund by weighting on the individual share's total assets. The sample selection procedure closely follows the traditional practice in the literature. First, we use the fund name variable to eliminate index funds or funds with missing name. Funds with index related keywords such "Index", "Ind", "S&P", "DOW", "Wilshire" or "Russell" are deleted. We then use the different investment objective codes available on the CRSP database to identify the sample of domestic, equity oriented funds.

We begin by first examining the Lipper, Weisenberger and Strategic Insight objective codes available on the CRSP database to identify actively managed equity funds[1]. We first examine the Lipper and Weisenberger objective code of a fund, and if both of these are missing, then we rely on the strategic investment objective code. When there is a conflict between the codes in terms of the fund's investment style, we drop the fund. For example, if the Lipper objective code does not identify the mutual fund as equity oriented, but the Weisengerberger code does, we still eliminate the fund from the sample. Finally, if the fund has a missing entry for all three investment codes, we look at its investment policy. If the policy states that the fund's primary investments are in common stocks (policy code "CS") and that the fund has at least 70% of its assets invested in equities, we keep the fund

[1]The Lipper fund objective codes included are the following: EI, EIEI, ELCC, G, GI, LCCE, LCGE, LCVE, LSE, MC, MCCE, MCGE, MCVE, MLCE, MLGE, MLVE, MR, S, SCCE, SCGE, SCVE, SESE, SG. The Weisenberger fund objective codes included are the following: GCI, IEQ, IFL, LTG, MCG, SCG, G, G-I, G-I-S, G-S, G-S-I, GS, I, I-G, I-G-S, I-S, I-SG, S, S-G-I, S-I, S-I-G. The SI objective codes included in the sample are: AGG, GMC, GRI, GRO, ING, SCG. The policy codes included are: C & I, Bal, Bonds, Pfd, B & P, GS, MM, TFM

in the sample. Following Amihud and Goyenko (2013), we eliminate any index funds, balanced funds, international funds (by style), sector and bond funds. Finally, to avoid very small funds affecting our analyses, we drop any fund with assets under management (AUM) below $15 million.

Panel A of Table G.1 reports summary statistics on the characteristics of mutual funds in our sample. The funds in our sample are very similar to those in the Amihud and Goyenko (2013) study. The average mutual fund in our sample is approximately 12 years old and has $1127 million of assets under management. Fund managers in our sample have a mean tenure of 5.41 years and they charge 1.24% of the fund's assets as fees. The typical fund in the sample has an R^2 of 92% with respect to the Carhart 4 factor benchmark. Thus, a large fraction of the typical mutual fund's returns can be explained by the returns on the value-weighted market index along with factor returns associated with the small cap, value and momentum. Finally, for the average mutual fund, the net returns have an annualized Carhart 4 factor alpha of -0.68% which is consistent with past findings, including those in Fama and French (2010).

4.3 Regulation fair disclosure and trading environment

On October 23, 2000, the Securities and Exchange Commission (SEC) ratified Regulation Fair Disclosure (Reg FD). This regulation prohibits firms from selectively disclosing material information to different groups of investors. Possessing non-public information ahead of other investors is clearly a huge and unfair advantage in financial markets, and the purpose of Reg FD was to level the playing field for all investors. In particular, the regulation was intended to prevent large institutional investors from gaining selective material information by exploiting their proximity with corporate managers. Koch, Lefanowicz and Robinson (2013) survey the empirical evidence related to this regulation. They report that it did lead to a level playing field among investors and analysts by preventing selective dis-

closures and inducing greater corporate disclosures. At the same time, they conclude that the regulation also had the unintended effect of making the information environment of small and high tech firms more opaque. For our study, we assume that Reg FD negatively affects corporate managers' incentive to selectively supply information to outsiders due to its potential legal ramifications, thereby reducing the degree of information asymmetry between market participants in the post-Reg FD world. Therefore, any trading strategy relying overwhelmingly on selective access to private information without sophisticated information processing, will no longer be profitable.

4.4 Empirical results

In this section, we present results for both time series as well as cross-sectional analyses. For the time series analysis, we begin by regressing a fund's excess returns over the past 24 months on the Carhart 4 factor returns and estimate the fund's R^2 and α. Then we sort the funds into quintiles by their estimated R^2 and within each quintile, funds are again sorted into alphas. Thus, we have 25 groups of funds (5X5) sorted according to R^2 and α. Then in month t, we calculate the average return for each of the groups. Finally, we regress the excess mean returns in each group on the Carhart 4 factor returns to obtain the time series alphas.

For the cross-sectional analysis, we rely on Fama-Macbeth regressions to estimate the relation between R^2 and the fund's future outperformance. Accordingly, after calculating each fund's R^2 and α from its past 24 months returns, we compute the fund's alpha in month t by subtracting the predicted return, based on the factor loadings, from the actual returns (ret_{it})

$$alpha_{it} = ret_{it} - \hat{\alpha_{i,t-1}} - \hat{\beta_{i,t-1}} * MktRf_{it} - \hat{\gamma_{i,t-1}} * SMB_{it} - \hat{\theta_{i,t-1}} * HML_{it} - \hat{\kappa_{i,t-1}} * MOM_{it} \tag{4.1}$$

where, $MktRf_{it}$ is the excess return on the market portfolio in month t, SMB_{it} is the return on a hedge portfolio which goes long in small cap stocks and short in large cap stocks, HML_{it} is the return on a hedge portfolio which goes long in stocks with high book-to-market ratio and short in stocks with low book-to-market ratio and MOM_{it} is the return on a hedge portfolio which goes long in stocks with high past returns and short in stocks with low past returns.

Then, we run a cross-sectional Fama-Macbeth regression of the fund's alpha in month t on its lagged R^2 value after controlling for lagged α as well as fund characteristics that may be related to the fund's ability to outperform the Carhart factor returns.

$$alpha_{i,t} = const_t + \gamma_t {R^2}_{i,t-1} + \beta_{1t} Expenses_{i,t-1} + \beta_{2t} LogTNA_{i,t-1} + \beta_{3t} {LogTNA_{i,t-1}}^2 + \\ + \beta_{4t} log(Fundage)_{i,t-1} + \beta_{5t} log(ManagerTenure)_{i,t-1} + \beta_{6t} alpha_{i,t-1} + e_t \tag{4.2}$$

4.4.1 Time series analysis

We begin by first replicating the results in Amihud and Goyenko (2013) by extending their sample to December 2014. Table G.2 presents annualized time series alphas for the 25 groups of funds sorted by their past R^2 and α. The average net of fees mutual fund alpha is -0.95% with a t-stats close -2. Thus, consistent with Fama and French (2010) the typical mutual fund in our sample underperforms the benchmark. Low R^2 funds perform better than high R^2 funds although the results are only statistically significant for funds in the highest alpha quintiles. Consistent with the observation in the mutual fund literature, there is some persistence in mutual fund returns as funds with high past alpha do better than those with low past alphas. According to Amihud and Goyenko (2013), the most skilled funds should be those with the lowest R^2 and the highest α. Our analysis confirms the same. Funds in the highest α quintile within the lowest R^2 quintile have an annualized

alpha of 2.51% (t statistics of 2.56). In fact, this subgroup of mutual funds appears to be the only one with the ability to generate risk adjusted positive returns for its investors.

After having replicated the results in Amihud and Goyenko (2013), we now conduct a subsample analysis by splitting our sample into two halves - pre and post Reg FD. Accordingly, we estimate the annualized time series alpha separately for the periods - Jan1990-Dec2001 and Jan2002-Dec2014. Table G.3 reports annualized alphas for mutual funds sorted by R^2 and α for the pre Reg FD period. The pattern observed is similar to that seen in Table G.2 but the economic magnitudes are stronger. For example, funds in the highest alpha quintile within the lowest R^2 quintile have an annualized alpha of 4.83% (t statistics of 2.99) which is almost twice that for the full sample. Similarly, low R^2 funds outperform their high R^2 counterparts more strongly in the first half of the sample.

We now examine the performance of mutual funds, sorted by past R^2 and α, for the post Reg FD period in Table G.4. We observe that the predictive power of past R^2 for future returns is significantly reduced. Low R^2 funds do not appear to generate positive abnormal returns any longer for their investors. In fact, mutual funds in the lowest R^2 , highest α quintile have a time series alpha of close to 0 (t statistics of 0.03). As described earlier, Reg FD severely restricted the ability of fund managers to gain access to non public, material information from corporate managers. Therefore, if a subset of fund managers relied on selective access to information, as part of their stock picking strategy, then Reg FD eliminates the profitability of such a strategy. Our initial findings then seem to suggest that the source of alpha in the first half of the sample could partly be attributed to private information advantages. However, these results are not inconsistent with plausible alternative explanations.

For example, it should be noticed in Table G.4 that the average mutual fund alpha in the post Reg FD time period is -1.38% (t statistics of -2.90). Thus it is possible that the inability of low R^2 funds to outperform may be a result of increasingly competitive

nature of the asset management industry whereby a greater number of funds compete for scarce and limited alpha opportunities (Chen at al. (2004)). The mutual fund industry saw explosive growth in the wake of the tech bubble and the number of funds in the mutual fund universe increased considerably as shown in Figure F.1. To alleviate concerns about potential confounding effects at the aggregate fund industry level, we focus our analysis on a very narrow window close to the promulgation of Reg FD. Accordingly, we restrict the pre Reg FD period to Jan1999-Dec2001 and the post reg FD period to Jan2002-Dec2004.

Table G.5 and G.6 present annualized time series alpha for the narrower window. We find that the outperformace of the low R^2 funds with respect to their high R^2 counterparts is much stronger than reported in Table G.3. For the low R^2, high *Alpha* group of funds, the Carhart 4 factor alpha is close to a staggering 20% (t statistics of 4.73). Thus, right before Reg FD went into effect, low R^2 funds clearly appear to be highly skilled and R^2 seems to be a reliable predictor of future fund performance. However, the situation reverses when we look at the time period right after Reg FD. Low R^2 funds no longer outperform high R^2 funds, economically or statistically. For example, the annualized Carhart 4 factor alpha of the low R^2, high alpha group of funds now is a meager -0.35% and statistically insignificant (t statistics of -0.31). Thus, within a very short time period after the implementation of Reg FD, the ability of the "skilled' or low R^2 mutual funds appears to have completely disappeared.

4.4.2 Cross sectional analysis

We now turn to examining the cross-sectional relationship between a fund's past R^2 and its ability to outperform the Carhart 4 factor benchmark. Accordingly, we follow Amihud and Goyenko (2013) and run Fama-Macbeth regressions of the fund's abnormal return ("alpha") at time (t) on its estimated R^2 at time (t-1), after controlling for fund characteristics that may be related to a fund's ability to outperform its benchmark. For

example, mutual fund's past alpha has been found to be positively related to future alpha (Brown and Goetzmann (1995) and Gruber (1996)) which could be attributable to persistence in fund returns. Similarly, there is evidence in the literature that suggests that fund size is negatively related to future outperformance because of diseconomies of scale and liquidity related factors (Chen at al. (2004)). High fund fees invariably results in lower net returns. Therefore, we control for fund size (*Log TNA*), fund expenses (*Expenses*) and fund's past alpha (*Alpha*) in the cross-sectional regressions. If low R^2 funds are skilled at stock picking, then we expect to find a negative coefficient on the fund's past R^2 after controlling for other fund characteristics.

Table G.7 presents Fama-Macbeth regression coefficients for the full sample (column 1), pre Reg FD (column 2) and post reg FD (column 3). For the full sample, consistent with Amihud and Goyenko (2013), we find that lagged R^2 is negatively related to future fund alpha. The coefficient on lagged R^2 is economically and statistically significant. Lagged alpha is also a significant predictor of future outperformance as evidenced by the positive coefficient on it. Fund expenses are negatively related to funds' ability to generate positive abnormal returns.

In column 2, we find that the negative coefficient on lagged R^2 becomes stronger when we do the Fama-Macbeth estimation for the pre Reg FD period. However, for the post Reg FD, the negative coefficient on lagged R^2 reduces in magnitude significantly and becomes statistically zero. The weakening of the predictive power of lagged R^2 occurs despite the fact that we have a much larger sample for this time period. Therefore, we can rule out the lack of statistical power as a plausible explanation. Furthermore, the coefficient on lagged alpha remains significant. Thus, the cross sectional analyses casts doubts on the claim that lagged R^2 is a robust predictor of fund's future outperformance or is a proxy for skilled fund managers. If the measure was robust, then its predictive ability should remain unaltered.

4.4.3 Portfolio holdings

If managers of funds with low R^2 values are skilled stock pickers, then there should be no systematic differences in the characteristics of the stocks held by such funds and those held by the broader mutual fund universe. On the other hand, if the source of the alpha of these funds is systematic risk exposure or private information advantages, then we should observe their portfolio holdings to be skewed towards stock characteristics that may be a "source of alpha". For example, if the portfolio of low R^2 funds is concentrated in illiquid stocks or stocks characterized by greater information asymmetry (Kelly and Ljungqvist (2012)), then it would shed more light on the source of their outperformance as these factors are not included in the Carhart model. Therefore, we next examine the stock characteristics of the portfolios of funds sorted by their past R^2 values.

Mutual funds and other investment firms, with assets greater than $100 million, are required to report their long, equity positions to the SEC on form 13f at the end of each quarter. Since, our sample includes only domestic, long only mutual funds, we are able to observe the entire stock holdings of a large group of funds in our sample. Accordingly, at the end of each quarter, we are able to observe every stock held by a given mutual fund as well as the number of shares of the same. Thus, we are also able to calculate the weight of each stock in the mutual fund's portfolio by dividing the market value of the stock holdings by the total assets of the fund.

For each stock in the mutual fund's portfolio, we attempt to match it with the relevant variables in the CRSP, Compustat, I/B/E/S and Thomson Spectrum Institutional Ownership (s12) databases. This allows us to compute stock characteristics such as market cap, book-market ratio, trading volume, volatility, analysts coverage, institutional ownership and so on for each of the stock in the fund's portfolio, provided that it is not missing in the corresponding databases. For each quarter end date t, we first sort funds into quintiles

by their estimated R^2 from the previous 24 months fund returns. We then average the portfolio's stock characteristics for each fund and then compute the cross-section average for each R^2 quintile in each quarter. Finally, we calculate the time series average of the portfolio characteristics over all the quarter end dates. Thus, we are able to calculate the average stock characteristics for mutual fund sorted by their R^2 across various dimensions. The portfolio characteristics are reported in Table G.8.

As is clear from comparing at funds' R square values, only about 80% of the variation in low R^2 fund returns can be explained by the Carhart model. In contrast, for funds in the highest R^2 quintile, almost 97% of their return variation can be accounted for by the 4 factor benchmark. These numbers remain roughly the same even if we replace the Carhart 4 factor benchmark with just the CAPM model. This confirms the observation in the mutual fund literature that the average long only fund generally tends to hold the broad market portfolio along with some exposures to the well documented size, value and momentum factors. Low R^2 funds are the only group of mutual funds that have a positive, net of fees annualized alpha (10 basis points). All the remaining R^2 fund quintiles have negative alphas after adjusting for expenses and fees.

An examination of portfolio holdings reveals significant differences between funds sorted by R^2 along several dimensions. Firstly, low R^2 funds tend to hold half the number of stocks (62) compared to high R^2 funds (150) while having a relatively concentrated stake in the stocks they hold (2.16% vs 0.42%). The average market cap of stocks held by low R^2 funds is relatively smaller ($17B vs $42B). Stocks held by such funds have lower trading volume and higher volatility. These funds also tend to hold stocks which have experienced significantly higher returns in the past 12 months (34% vs 27%). All these differences are statistically significant. Finally, stocks held by low R^2 funds have lower analyst coverage (14 vs 18) and lesser number of institutional investors (290 vs 474).

Since the best performing funds in the time series analysis are those in the highest

alpha quintile within the lowest R^2 quintile, we also compare the portfolio holdings of this particular group of funds with the rest of the mutual fund universe. Table G.9 reports the differences in stock characteristics for the two groups. These funds have a staggering annualized net alpha of 10%. In contrast, the sample of remaining mutual funds underperform the Carhart benchmark by 84 basis points. Again, we find that stocks held by the Low R^2, high funds are characterized by a greater degree of information asymmetry as evidenced by their smaller size, lower trading volume and analyst coverage.

Comparing the holdings of low R^2 funds with that of the broader mutual fund universe, it can be reasonably concluded that stocks held by these funds are characterized by a greater degree of information asymmetry. Smaller size, low volume, greater volatility and lower analyst coverage are all proxies for greater information asymmetry. Kelly and Ljungqvist (2012) provide evidence that shows that information asymmetry is priced in the cross-section of stock returns. They exploit the mergers and closures of brokerage houses which leads to an exogenous reduction in the analyst coverage for a stock and concomitant increase in information asymmetry. They find that increase in information asymmetry is followed by price decline and reduced demand, especially by uninformed investors. According to their analysis, information asymmetry is linked to prices through liquidity. Our findings appear to be consistent with this channel as low R^2 funds tend to hold relatively more illiquid stocks. Since, we conjectured earlier that managers of low R^2 funds possess private information advantages, they are likely to exhibit a greater demand for stocks with more opaque information environment.

4.4.4 Robustness check: Hedge fund performances

In this section, we extend the scope of our analysis by including long only, equity oriented hedge funds. Titman and Tiu (2011) show that low R^2 hedge funds tend to have higher Sharpe ratios, higher information ratios and higher alphas. We use the investment

style classification in the TASS database to exclude all but long only hedge funds. Since, the typical hedge fund has a significantly different investment style compared to the average mutual fund, the Carhart 4 factor model may not be the most appropriate benchmark for evaluating its performance. For example, hedge funds are allowed to take short positions in equities and trade in multiple asset classes such as bonds, currencies and derivatives. They are also known to rely on dynamic trading strategies characterized by non-linear payoffs (see Fung and Hsieh (1997)). Hence, the average hedge fund's returns will be better explained by an augmented factor model that accounts for such non-linearities. Given the long only nature of our sample, the Carhart model may still be a useful benchmark. Accordingly, we regress hedge fund excess returns on the Carhart factors and sort them into quintiles by their estimated R^2 and alpha, as done previously for the sample of mutual funds. The sample period is Jan 1996 - Dec 2013 as the coverage of hedge funds in the TASS database begins in 1994.

Table G.10 present annualized time series alphas for hedge funds sorted first into R^2 quintiles and then by past alphas. We find a similar pattern as observed for mutual funds. Low R^2 hedge funds outperform high R^2 ones and the best performing funds are those with the lowest R^2 and highest past alphas. The magnitude of hedge fund alphas is significantly higher compared to that for mutual funds which can be attributed to the superior investment skills of hedge fund managers. For example, hedge funds in the highest alpha quintile within the low R^2 group, earn annualized abnormal returns of 8.18% compared to only 2.5% for the corresponding mutual funds. However, the higher alpha for hedge funds could also be a consequence of the Carhart model being an improper benchmark.

To examine if the implementation of reg FD led to decline in hedge fund alphas, we again split the sample into two time periods - pre Reg FD (Jan 1994-Dec2001) and post Reg FD (Jan 2002-Dec 2013). Table G.11 shows annualized time series alphas for the former while Table G.12 reports the same for the latter. Due to data availability issues, the

sample size is smaller compared to that for the mutual fund sample. However, we find a similar pattern of declining alphas in the post Reg FD period. The ability of low R^2 hedge funds to outperform their high R^2 counterparts is significantly reduced in the latter half of the sample. For the subgroup of low R^2 and high alpha funds, the annualized alpha in the Pre reg FD period is 11.52% while in the post Reg FD period it is reduced to 6.22%. Nevertheless, unlike mutual funds, hedge fund managers continue to generate positive, abnormal returns even in the latter half of the sample.

Finally, we turn to cross-sectional analysis to examine the relation between lagged R^2 and future alphas for hedge funds. Similar to mutual funds, for each month t, we calculate the fund's alpha by subtracting the predicted returns based on the estimated loadings from the Carhart 4 factor regression as shown in equation (4.1). Then we run Fama-Macbeth regressions of the computed alphas on the lagged R^2 and fund characteristics such as fund size (*LogTNA*), dummy for high water mark (*HighWaterMark*), whether the fund uses leverage (*Leveraged*) and so on. The estimated coefficients are reported in Table G.13. For the full sample regression (1996-2013), we find a negative coefficient on lagged R^2 which is statistically significant (t statistics of -2). However, the statistical significance of this coefficient disappears when we split the sample into pre and post Reg FD periods. The insignificance on lagged R^2 for the pre Reg FD could arise because of statistical power issues. However, any such concern is mitigated for the second half of the sample where the number of observations is almost 80% of that in the full sample. Our findings suggest that private information advantages could also partially explain the alphas earned by hedge funds.

4.5 Conclusion

In this paper, we investigate the role of private information in contributing to the outperformance of low R^2 mutual funds as documented by (Amihud and Goyenko (2013)).

We exploit the implementation of Regulation Fair Disclosure (Reg FD) by the SEC as eliminating the comparative advantage of certain fund managers in gaining selective access to non-public, material corporate information. Lower fund R^2 indicates a larger deviation from fund benchmarks, possibly as a result of stock picking using private information. Using mutual fund data, we are able to confirm the negative relationship between R^2 and future fund returns. However, we find that the predictive power of R^2 disappears after the implementation of Reg FD in 2001. An examination of the portfolio holdings of low R^2 mutual funds further reveals that they hold stocks characterized by high degree of information asymmetry. Finally, a similar pattern exists for equity-oriented hedge funds. Taken together, our findings suggest private information is an important factor in explaining the performances of a subgroup of active managers, and that Reg FD has reduced fund managers' advantage in trading on private information to a significant extent.

5. CONCLUSION

In this thesis, I make contributions towards furthering our understanding of the role of institutional investors in financial markets, both in the United States and in the fast growing emerging market countries. Institutional investors are unique shareholders in the sense that they pool individual savings and thus are able to own a significant stake in publicly, listed companies. The literature views their ability to coordinate with other large investors and their sophisticated information processing abilities as instrumental in reducing agency conflicts and information asymmetry problems. Therefore, their interaction with firms has significant implications for corporate investment and financing decisions.

The first essay examines the effect of institutional shareholding on firms' payout policy during periods of stress in capital markets. When firms' access to external financing is restricted as a result of an external shock, they can tap into their internal cash holdings by reducing payouts to shareholders. However, in the presence of information asymmetry, this can signal negative firm prospects and thus make managers reluctant to resort to such an action. I argue that institutional shareholding can provide managers with the required flexibility to pursue such a policy. Using the 2008-09 financial crisis as an exogenous shock to capital markets, I show that greater institutional ownership is associated with a higher probability of payout reductions by firms. I also examine the role of investor heterogeneity and find that the effect is surprisingly driven by the class of passive investors, such as index mimicking funds. The essay thus adds to our understanding of the association between institutional shareholding and firms' ability to pursue a more flexible payout policy. This study also contributes to the growing literature on the significant role of passive investors in shaping corporate policies.

The second essay studies the interaction between foreign institutional investors (FIIs)

and controlling shareholders (promoters) in emerging market countries. The literature has increasingly taken a positive view of FIIs, crediting them with improving international corporate governance and identifying good investment opportunities. Financial markets in developing countries are characterized by concentrated ownership, opaque information environment and weak legal institutions. Therefore, the prospect for higher returns has to be balanced with credible concerns about expropriation by corporate insiders. In light of this trade-off, I study a unique regulatory setting in an important emerging market country, India, which sheds further light on the nature of such trade-offs. I examine firm-level relaxation in the limit on aggregate FII shareholding which results in sale of equity from the promoters to FIIs. While the short-term market reaction to the announcement is positive, I document strong underperfomance in the long-run. Careful examination of stock prices and operating characteristics reveals strong evidence of opportunistic market timing behavior by firm insiders. The equity transaction tends to coincide with periods of high valuations and declining growth prospects. I conclude that information asymmetry in emerging markets is a first order concern and limits the ability of foreign investors in efficiently allocating capital. My analysis thus introduces new perspectives to the literature on foreign institutional investors and its implication for global capital flows.

The final essay investigates the role of private information advantages in the fund management industry. Mutual funds and hedge funds are specific types of institutional investors who pool individual savings and allocate them across asset classes. They charge large fees to manage financial assets and in return claim to deliver positive, excess returns after adjusting for risks (*alphas*). While the literature has vigorously debated the merits of funds' claim to outperform their benchmarks, it is mostly silent on the source of any such outperformance. For example, does information advantage play any role in it? This essay sheds light on this issue by exploiting the implementation of regulation Fair Disclosure (reg FD) by the SEC, as a negative shock to the ability of investors to access undisclosed,

material corporate information. To do so, I compare the returns of mutual funds sorted by their correlation with the Carhart factor benchmarks (fund R^2) in the pre and post reg FD period. Funds with low values of R^2 are those whose returns are not well explained by the traditional factors and could partly be a result of private information advantages. Using both time series and cross-sectional analysis, I find that the outperfomance of low R^2 mutual funds disappears after reg FD. A portfolio analysis of funds sorted by their R^2 values reveals significant concentration of low R^2 funds in stocks characterized by high degree of information asymmetry. I also document a significant deterioration in the performance of long only, equity hedge funds in the post reg FD period. Thus, I conclude that the outperformance of certain active managers can be attributed to private information advantages. This study also contributes to the debate on the efficacy of reg FD in leveling the playing field for all investors.

REFERENCES

Admati, Anat and Pfleiderer, Paul, 2009, The "Wall Street Walk" and Shareholder Activism: Exit as a Form of Voice, Review of Financial Studies 22, 2645-2685.

Aggarwal, R., Erel, I., Stultz, R., and Williamson, R, 2009, Differences in Governance Practices between U.S. and Foreign Firms: Measurement, Causes and Consequences, Review of Financial Studies 22, 3131-3169.

Aggarwal, Reena, Erel, Isil, Ferreira, Miguel and Matos, Pedro, 2011, Does governance travel around the world? Evidence from institutional investors, Journal of Financial Economics 100, 154-181.

Aharony, J. and Swary, I., 1980, Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis, The Journal of Finance 35, 1-12.

Allen, F., Bernardo, A. E. and Welch, I., 2000, A Theory of Dividends Based on Tax Clienteles. The Journal of Finance 55, 2499-2536.

Allen, Franklin & Roni Michaely, 2002, Payout policy, In G. Constantinindes, M. Harris & R. Stulz (Eds), Handbooks of Economics, North-Holland.

Allen, Franklin and Qian, Jun and Qian, Meijun and Chakrabarti, Rajesh and De, Sankar, 2012, Financing Firms in India, Journal of Financial Intermediation 21, 409-445.

Almeida, Heitor and Campello, Murillo and Laranjeira, Bruno A. and Weisbenner, Scott J., 2007, Corporate Debt Maturity and the Real Effects of the 2007 Credit Crisis, Critical Finance Review 1, 3-58.

Amihud, Yakov and Goyenko, Ruslan, 2013, Mutual Fund's R2 as Predictor of Performance, Review of Financial Studies 26, 667-694.

Amihud, Yakov and Li, Keifei, 2006, The Declining Information Content of Dividend Announcements and the Effects of Institutional Holdings, Journal of Quantitative and Financial Analysis 41, 637-660.

Ang, J., Cheng, Y., 2006, Direct evidence on the market-driven acquisition theory, Journal of Financial Research 29, 199-216.

Appel, Ian, Gormley, Todd A. and Keim, Donald B., 2016, Passive Investors, Not Passive Owners, Journal of Financial Economics 121, 111-141.

Barber, B. M., 2007, Monitoring the monitor: Evaluating CalPERS' shareholder activism, Journal of Investing 16, 66-80.

Berle, Adolf, and Gardiner Means, 1932, The Modern Corporation and Private Property (MacMillan, New York , N.Y.).

Bekaert, G. and Harvey, C., 2000, Foreign speculators and emerging equity markets, Journal of Finance 55, 565-613.

Berk, Jonathan B., and Richard C. Green, 2002, Mutual Fund Flows and Performance in Rational Markets, Journal of Political Economy 112, 1269-129.

Bird, Andrew and Karolyi, Stephen A., 2015, Do Institutional Investors Demand Public Disclosure?, Working paper.

Bhattacharya, S., 1979, Imperfect information, dividend policy, and "the bird in the hand" fallacy, Bell Journal of Economics 10, 259-270.

Bhojraj, Sanjeev, Cho, Young Jun and Yehuda, Nir, 2012, Mutual Fund Family Size and Mutual Fund Performance: The Role of Regulatory Changes, Journal of Accounting Research 50, 647-684.

Bhojraj, S. and Sengupta, P., 2003, Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and Outside Directors, The Journal of Business 76, 455-475.

Black, B. S. and Khanna, V. S., 2007, Can Corporate Governance Reforms Increase Firm Market Values? Event Study Evidence from India, Journal of Empirical Legal Studies 4, 749-796.

Bliss, Barbara, Cheng, Yingmei and Denis, David, 2013, Corporate Payout, Cash Retention, and the Supply of Credit: Evidence from the 2008-09 Credit Crisis, Working paper.

Blume, Marshall E. and Keim, Donald B., 2012, Institutional Investors and Stock Market Liquidity: Trends and Relationships, Working paper.

Boehmer, E., Musumeci, J. and Poulsen, A.B., 1991, Event-study methodology under conditions of event induced variance, Journal of Financial Economics 30, 253-272.

Boone, Audra and White, Joshua, 2015, The effect of institutional ownership on firm transparency and information production, Journal of Financial Economics, Forthcoming.

Brav, Alon, John R. Graham, Campbell R. Harvey and Roni Michaely, 2005, Payout Policy in the 21st Century, Journal of Financial Economics 77, 483-527.

Brown, S. J. and Goetzmann, W. N., 1995, Performance Persistence. The Journal of Finance 50, 679-698.

Brown, S. and Hillegeist, S., 2007, How disclosure quality affects the level of information asymmetry, Review of Accounting Studies 12, 443-477.

Brown, S. and Hillegeist, S. and Lo, K., 2004, Conference Calls and Information Asymmetry, Journal of Accounting and Economics 37, 343-366.

Burns, Natasha, Kedia, Simi, and Lipson, Marc, 2010, Institutional ownership and monitoring: Evidence from financial misreporting, Journal of Corporate Finance 16, 443-455.

Bushee, B., 1998, Institutional investors, long term investment, and earnings management, The Accounting Review 73, 305-333.

Bushee, B., 2001, Do Institutional Investors Prefer Near-Term Earnings over Long-Run Value? Contemporary Accounting Research 18, 207-246.

Campello, Murillo, Graham, John R. and Harvey, Campbell R., 2010, The Real Effects of Financial Constraints: Evidence from a Financial Crisis, Journal of Financial Economics, 97, 470-487.

Carhart, Mark M., 1997, On Persistence in Mutual Fund Performance, Journal of Finance 52, 57-82.

Chang, Xin, Dasgupta Sudipto, and Hilary Gilles, 2007, Analyst Coverage and Financing Decisions, The Journal of Finance 61, 3009-3048.

Chen, Tao, Harford, Jarrad and Lin, Chen, 2014, Do Analysts Matter for Governance? Evidence from Natural Experiments. Journal of Financial Economics 115, 383-410.

Chen, Joseph, Hong, Harrison, Huang, Min and Kubik, Jeffrey, 2004, Does fund size erode mutual fund performance? The role of liquidity and organization, American Economic Review 94, 1276-1307.

Chetty, Raj and Saez, Emmanuel, 2003, Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut, Quarterly Journal of Economics 120, 791-833.

Choe, Hyuk, Bong-Chan Kho, and Rene M. Stulz, 2005, Do Domestic Investors Have an Edge? The Trading Experience of Foreign Investors in Korea, Review of Financial Studies 18, 795-829.

Crane, Alan D., Michenaud, Sebastien and Weston, James, 2014, The Effect of Institutional Ownership on Payout Policy: Evidence from Index Thresholds, SSRN Working Paper.

Cremers, Martijn and Petajisto, Antti, 2009, How Active is Your Fund Manager? A New Measure That Predicts Performance, Review of Financial Studies 22, 3329-3365.

Daniel, D., Denis, D.J. and Naveen, L., 2012, Sources of Financial Flexibility:Evidence from Cash Flow Shortfalls, Unpublished Working Paper, Drexel University and University of Pittsburgh.

DeAngelo H., DeAngelo L. and Skinner D. J., 2008, Corporate payout policy. Foundations and trends in finance 3, 95-287.

Demiralp, Ilhan, D'Mello, Ranjan, Schlingemann, Frederik P. and Subramaniam, Venkat, 2011, Are there monitoring benefits to institutional ownership? Evidence from seasoned equity offerings, Journal of Corporate Finance 17, 1340-1359.

Denis, Diane K. and McConnell, John J., 2003, International Corporate Governance, Journal of Financial and Quantitative Analysis 38, 1-36.

Derrien, Franois and Kecskes, Ambrus, 2013, The real effects of financial shocks:evidence from exogenous changes in analyst coverage, Journal of Finance 68, 1407-1440.

Dharmapala, Dhammika and Khanna, Vikramaditya, 2012, Corporate Governance, Enforcement, and Firm Value: Evidence from India, Journal of Law, Economics and Organization 29, 1056-1084.

Dittmar, Amy and Mahrt-Smith, Jan, 2007, Corporate governance and the value of cash holdings, Journal of Financial Economics 83, 599-634.

D'Mello, Ranjan and Ferris, Stephen, 2000, The Information Effects of Analyst Activity at the Announcement of New Equity Issues, Financial Management 29, 78-95.

Doidge, Craig, Karolyi, G. A. and Stulz, Rene, 2004, Why are foreign firms listed in the U.S. worth more?, Journal of Financial Economics 71, 205-238.

Dong, M., Hirshleifer, D., Richardson, S. and Teoh, S., 2006, Does investor misvaluation drive the takeover market?, Journal of Finance 61, 725-762.

Duchin, Ron, Ozbas, Oguzhan and Sensoy, Berk, 2010, Costly external finance, corporate investment, and the subprime mortgage credit crisis, Journal of Financial Economics 97, 418-435.

Easley, D., N. M. Kiefer, M. O'Hara and J. B. Paperman, 1996, Liquidity, Information, and Infrequently Traded Stocks, Journal of Finance, 51, 1405-36.

Economist 2015, Family companies: Special report. April 18.

Edmans, A., 2009, Blockholder Trading, Market Efficiency, and Managerial Myopia. The Journal of Finance 64, 2481-2513.

Elton, Edwin J., Martin J. Gruber, Sanjiv Das, and Matthew Hlavka, 1993, Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios, Review of Financial Studies 6, 1-22.

Elton, E.J., M.G. Gruber and M.N. Gultekin, 1984, Professional Expectations: Accuracy and Diagnosis of Errors, The Journal of Financial and Quantitative Analysis 19, 351-363.

Fama, E. F., 1976, Foundations of Finance. New York: Basic Books.

Fama, Eugene F. and French, Kenneth R, 2001, Disappearing dividends:changing firm characteristics or lower propensity to pay?, Journal of Financial Economics 60, 3-43.

Fama, Eugene F. and French, Kenneth R., 2010, Luck Versus Skill in the Cross Section of Mutual Fund Returns, Journal of Finance 65, 1915-47.

Ferreira, M.A. and Matos, P., 2008, The colors of investors' money: the role of institutional investors around the world, Journal of Financial Economics 88, 499-533.

Floyd, Eric and Li, Nan and Skinner, Douglas J., 2013, Payout Policy Through the Financial Crisis: The Growth of Repurchases and the Resilience of Dividends, Chicago Booth Research Paper No.12-01.

Fung, W., and D. Hsieh., 1997, "Empirical Characteristics of Dynamic Trading Strategies: The Case of Hedge Funds." , Review of Financial Studies 10, 275-302.

Gillan, S.L. and Starks, L.T., 2000, Corporate governance proposals and shareholder activism: the role of institutional investors, Journal of Financial Economics 57, 275-305.

Gillan, S.L. and Starks, L.T., 2003, Corporate governance, corporate ownership and the role of institutional investors: a global perspective, Journal of Applied Finance 13, 4-22.

Gillan, S. L. and Starks, L. T., 2007, The Evolution of Shareholder Activism in the United States, Journal of Applied Corporate Finance 19, 55-73.

Gompers, P., Ishii, J. and Metrick, A., 2003, Corporate governance and equity prices, Quarterly Journal of Economics 118, 107-155.

Gompers, P. and Metrick, A., 2001, Institutional investors and equity prices, Quarterly Journal of Economics 116, 229-259.

Grinstein, Y. and Michaely, R., 2005, Institutional Holdings and Payout Policy. The Journal of Finance 60, 1389-1426.

Grinblatt, M. and Titman, S., 1992, The persistence of mutual fund performance, The Journal of Finance 47, 1977-1984.

Gruber, Martin J., 1996, Another puzzle: the growth in actively managed mutual funds, Journal of Finance 51, 783-810.

Grullon G. and Michaely R., 2004, The information content of share repurchase programs. Journal of Finance 59, 651-680.

He, Wen and Shen, Jianfeng, 2014, Do foreign investors improve informational efficiency of stock prices? Evidence from Japan, Pacific-Basin Finance Journal 27, 32-48.

Hotchkiss, Edith S. and Lawrence, Stephen, 2007, Empirical Evidence on the Existence of Dividend Clienteles, SSRN Working Paper.

Huang, Jiekun, 2015, Shareholder Coordination and the Market for Corporate Control, SSRN Working Paper.

Huang, Ying and Elkinawy, Susan and Jain, Pankaj K., 2013, Investor protection and cash holdings: Evidence from US cross-listing, Journal of Banking & Finance 37, 937-951.

Huang, Sheng and Thakor, Anjan, 2013, Investor Heterogeneity, Investor-Management Disagreement and Share Repurchase, Review of Financial Studies 26, 2453-2491.

Ivashina, Victoria and Scharfstein, David S., 2008, Bank Lending During the Financial Crisis of 2008, Journal of Financial Economics 97, 319-338.

Jagannathan, Murali, Stephens, Clifford P. and Weisbach, S. Michael, 2000, Financial flexibility and the choice between dividends and stock repurchases, Journal of Financial Economics, 57, 355-384.

Jensen, Michael C., 1968, The Performance of Mutual Funds in the Period 1945-1964, Journal of Finance 23, 389-416.

Jensen, Michael, 1986, Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers, 1986, American Economic Review 76, 323-329.

John, K , and J Williams, 1985, Dividends, dilution, and taxes: a signaling equilibrium, Journal of Finance 40, 1053-1070.

Kacperczyk M. T., Sialm C. and Zheng L., 2005, On the Industry Concentration of Actively Managed Equity Mutual Funds, Journal of Finance 60, 1983-2011.

Kacperczyk M. T., Sialm C. and Zheng L., 2008, Unobserved actions of mutual funds, Review of Financial Studies 21, 2379-2416.

Kalcheva, I., Lins, K.V., 2007, International evidence on cash holdings and expected managerial agency problems. Review of Financial Studies 20, 1087-1112.

Kang, Jun-Koo and Rene Stultz, 1997, Why Is There a Home Bias? An Analysis of Foreign Portfolio Equity Ownership in Japan, Journal of Financial Economics 46, 3-28.

Kelly, Bryan T. and Ljungqvist, Alexander, 2012, Testing Asymmetric-Information Asset Pricing Models, Review of Financial Studies 25, 1366-1413.

Koch, Adam S. and Lefanowicz, Craig E. and Robinson, John R., 2013, Regulation FD: A Review and Synthesis of the Academic Literature, Accounting Horizons 27, 619-646.

Kosowski, Robert, Allan Timmermann, Russ Wermers, and Halbert White, 2006, Can Mutual Fund "Stars" Really Pick Stocks? New Evidence from a Bootstrap Analysis, Journal of Finance 61, 2551-2595.

Kumar, Nitish, 2016, Political Interference and Crowding Out in Bank Lending, SSRN Working Paper.

Krishnaswamy, S and Subramaniam, V., 1999, Information asymmetry, valuation and the corporate spin-off decision, Journal of Financial Economics 53, 73-112.

Lane, Philip R., and Milesi-Ferretti, Gian Maria, 2008, The Drivers of Financial Globalization, American Economic Review 98, 327-332.

Leary , Mark T. and Michaely, Roni, 2011, Determinants of Dividend Smoothing: Empirical Evidence, Review of Financial Studies 24, 3197-3249.

Li, K. and Zhao, X., 2008, Asymmetric Information and Dividend Policy, Financial Management 37, 673-694.

Mansi, Sattar, Maxwell, William F. and Miller, Darius P., 2011, Analyst forecast characteristics and the cost of debt, Review of Accounting Studies 16, 116-142.

McCahery, Joseph A. and Sautner, Zacharias and Starks, Laura T., 2015, Behind the Scenes: The Corporate Governance Preferences of Institutional Investors, Journal of Finance, Forthcoming.

Miller, Merton, and Franco Modigliani, 1961, Dividend Policy, Growth and the Valuation of Shares, Journal of Business 34, 411-433.

Miller, M , and K Rock, 1985, Dividend policy under asymmetric information, Journal of Finance 40, 1031-1051.

Myers S and Rajan R G, 1998, The paradox of liquidity. Quarterly Journal of Economics 113, 733-771.

Ofer A., and Thakor A, 1987, A theory of stock price responses to alternative corporate cash disbursement methods: Stock repurchases and dividends, Journal of Finance 42, 365-394.

Ofer A. and D.R. Siegel, 1987, Corporate Financial Policy and Market Expectations: An Empirical Investigation of Dividends, Journal of Finance 42, 889-911.

Patell, James, 1976, Corporate forecasts of earnings per share and stock price behavior: Empirical tests, Journal of Accounting Research, 246-276.

Peyer U. and Vermaelen T., 2005, The many facets of privately negotiated stock repurchases, Journal of Financial Economics 75, 361-395.

Pinkowitz, L., Stulz, R. and Williamson, R., 2006, Does the Contribution of Corporate Cash Holdings and Dividends to Firm Value Depend on Governance? A Cross-country Analysis, The Journal of Finance 61, 2725-2751.

Rajgopal, S., Venkatachalam, Mohan and Jiambalvo, James, 2002, Institutional Ownership and the Extent to which Stock Prices Reflect Future Earnings, Contemporary Accounting Research 19, 177-145.

Rhodes-Kropf, M. and Viswanathan S., 2004, Market Valuation and Merger Waves, Journal of Finance 59, 2685-2718.

Rhodes-Kropf, M., Robinson, D. and Viswanathan, S., 2005, Valuation waves and merger activity: the empirical evidence. Journal of Financial Economics 77, 561-603.

Sias, R., Starks, L., Titman, S., 2006. Changes in institutional ownership and stock returns: Assessment and methodology, Journal of Business 79, 2869-2910.

Shleifer, A. and Vishny, R. W., 1997, A Survey of Corporate Governance. The Journal of Finance 52, 737-783.

Smith M.P., 1996, Shareholder Activism by Institutional Investors: Evidence from CalPERS. The Journal of Finance 51, 227-252.

Stulz, R., 2005, The limits of financial globalization, Journal of Finance 60, 1595-1638.

Titman, Sheridan and Tiu, Cristian Ioan, 2011, Do the Best Hedge Funds Hedge?, Review of Financial Studies 24, 123-168.

Vega, Clara, 2006, Stock Price Reaction to Public and Private Information, Journal of Financial Economics 82, 103-133.

Wahal, S., and McConnell, J., 2000, Do institutional investors exacerbate managerial myopia? Journal of Corporate Finance 6, 307-329.

Wall Street Journal, 2014, U.K. Fund Exits Coal India. Oct 15.

Wu, Wei, 2015, Information Asymmetry and Insider Trading, Fama-Miller Working Paper.

APPENDIX A

FIGURES FOR SECTION 2

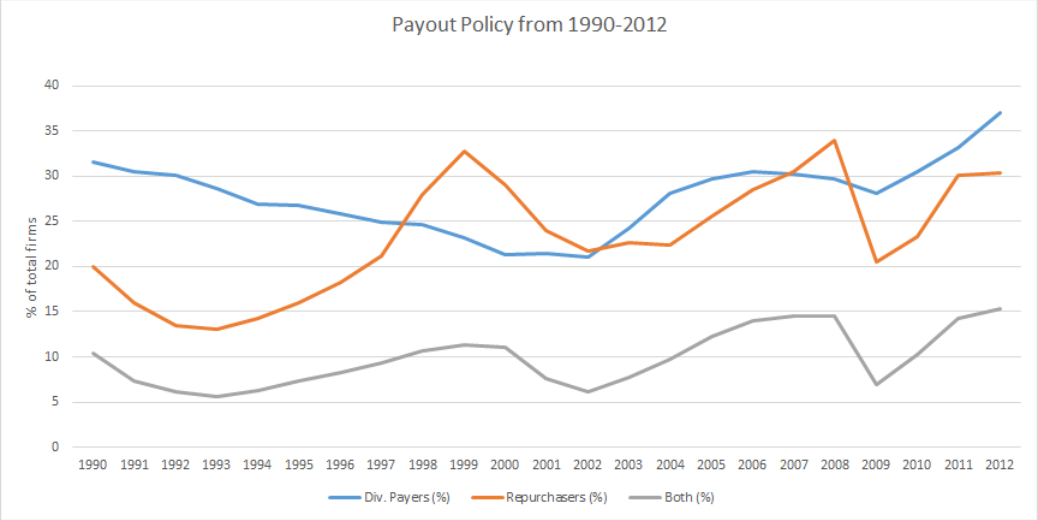

Figure A.1: Trends in payout policy

Time series variation in payout policy for Compustat firms (excluding financials and utilities) from 1990-2012.

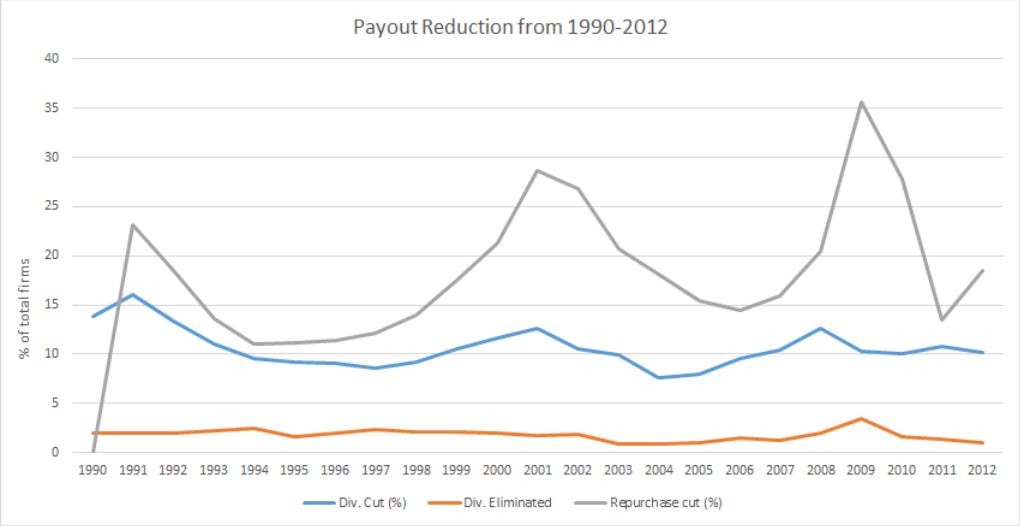

Figure A.2: Payout reductions from 1990-2012

Reduction in firms payout to shareholders (cash dividends and share repurchase) for Compustat firms (excluding financials and utilities) from 1990-2012.

APPENDIX B

TABLES FOR SECTION 2

Table B.1: Time series of payout policy for US firms from 1990-2012

This table presents time series information from 1990-2012 on the percentage of all publicly traded US firms (excluding financials and utilities) paying dividends, repurchasing shares or both for each fiscal year. Cash dividends are obtained from the Compustat annual file (DVC). Firms are classified as *Dividend Payers* for an year if they pay a positive amount of dividends in that year. Share repurchase for any given year is calculated as purchase of common and preferred stock (PRSTKC) minus any reduction in the number of preferred stocks outstanding (PSTKRV). *Share Repurchasers* for a given fiscal year are firms which have a positive value for repurchase activity in that year. If the share repurchase amount is less than 1% of the previous year's market capitalization, it is set to zero. Firms which are both dividend payers and engage in share repurchase in a given year are classified as *Both*.

Year	**Firms**	**Dividend Payers**	%	**Share Repurchasers**	%	**Both**	%
1990	3967	1251	31.54	712	17.95	372	9.38
1991	3986	1218	30.56	559	14.02	246	6.17
1992	4119	1241	30.13	509	12.36	229	5.56
1993	4459	1277	28.64	532	11.93	218	4.89
1994	4764	1283	26.93	633	13.29	273	5.73
1995	4901	1315	26.83	729	14.87	329	6.71
1996	5055	1308	25.88	875	17.31	395	7.81
1997	4956	1238	24.98	995	20.08	434	8.76
1998	4706	1159	24.63	1258	26.73	473	10.05
1999	4475	1038	23.20	1418	31.69	491	10.97
2000	4320	922	21.34	1235	28.59	470	10.88
2001	3885	834	21.47	911	23.45	288	7.41
2002	3598	759	21.10	765	21.26	212	5.89
2003	3333	809	24.27	745	22.35	251	7.53
2004	3276	921	28.11	734	22.41	318	9.71
2005	3233	959	29.66	835	25.83	398	12.31
2006	3200	975	30.47	924	28.88	453	14.16
2007	3163	955	30.19	981	31.01	468	14.80
2008	3061	911	29.76	1072	35.02	457	14.93
2009	2874	809	28.15	612	21.29	208	7.24
2010	2779	849	30.55	672	24.18	294	10.58
2011	2684	889	33.12	840	31.30	401	14.94
2012	2661	987	37.09	846	31.79	428	16.08

Table B.2: Time series of payout reduction for US firms from 1990-2012

This table reports time series data from 1990-2012 on the percentage of firms that reduced dividends, eliminated dividends and reduced share repurchases for a given year. The sample includes all publicly traded Compustat firms, excluding financials (SIC code 6000-6999) and utilities (4900-4949). Firms that reduced their dividend amount relative to the prior year are classified as *Reduced Dividends*. Firms that paid out a positive amount in the previous year but did not pay any cash dividend in the current year are classified as *Eliminated Dividends*. Firms are classified as *Reduced Repurchases* if they decreased share repurchases by more than 5% relative to the average repurchase activity over the previous 2 fiscal years.

Year	**Firms**	**Reduced Dividends**	%	**Eliminated Dividends**	%	**Reduced Repurchases**	%
1990	3967	256	6.45	80	2.02	657	16.56
1991	3986	324	8.13	78	1.96	703	17.64
1992	4119	244	5.92	81	1.97	703	17.07
1993	4459	210	4.71	99	2.22	548	12.29
1994	4764	178	3.74	115	2.41	489	10.26
1995	4901	198	4.04	79	1.61	504	10.28
1996	5055	222	4.39	97	1.92	540	10.68
1997	4956	236	4.76	114	2.30	573	11.56
1998	4706	268	5.69	97	2.06	624	13.26
1999	4475	313	6.99	91	2.03	753	16.83
2000	4320	333	7.71	85	1.97	888	20.56
2001	3885	316	8.13	65	1.67	1090	28.06
2002	3598	207	5.75	67	1.86	948	26.35
2003	3333	159	4.77	27	0.81	677	20.31
2004	3276	95	2.90	27	0.82	580	17.70
2005	3233	100	3.09	33	1.02	489	15.13
2006	3200	146	4.56	47	1.47	451	14.09
2007	3163	189	5.98	39	1.23	493	15.59
2008	3061	246	8.04	59	1.93	609	19.90
2009	2874	290	10.09	97	3.38	1034	35.98
2010	2779	152	5.47	44	1.58	787	28.32
2011	2684	133	4.96	35	1.30	365	13.60
2012	2661	145	5.45	27	1.01	491	18.45

Table B.3: Summary statistics for firm characteristics, 2005-2009

This table reports summary statistics for the sample of firms from 2005-2009 with a positive average payout in the two years prior to 2005. The sample includes all publicly traded US firms excluding financials and utilities. In addition, firms which have missing observations on assets (AT), cash dividends (DVC), purchase of common and preferred stocks shares outstanding (PRSTKC, Item 115), net reduction in preferred shares outstanding (Item 56, PSTKRV), shares outstanding (CSHO) and end of fiscal year share prices (PRCC_F) are also dropped from the sample. *Cash* is cash and short-term investment (CHE) divided by divided by books assets (AT) while *Cash Flow* is defined as operating income before depreciation (OIBDP) divided by lagged total assets (LAT). *Book Leverage* and *Market Leverage* are calculated as book value of total debt, sum of short-term and long-term debt, divided by book value of assets and market value of equity respectively. *Tobin's Q*, a measure of the firm's growth opportunities is computed as market value of equity divided plus book value of assets minus book value of equity divided by book value of assets. *Stock volatility* is calculated as the standard deviation of the market adjusted monthly stock returns for the fiscal year. Earnings volatility is the standard deviation of firms' operating income using past five years data. *Institutional Ownership* is the average fraction of shares outstanding held by institutional investors in a fiscal year and is obtained from the Thomson 13f database. Institutional investor classification (Dedicated, Transient, Quasi-Indexers) is based on Bushee (1998). *Analyst coverage* is the average number of analysts following a firm in a fiscal year while *Analyst forecasts dispersion* is the standard deviation of quarterly earnings forecasts averaged over the year. Both variables are computed using the IBES database. *PIN* is a market microstructure measure of the degree of informed trading in a firm's shares.

Variable	**Mean**	**Std. Dev.**	**N**
Firm Age (Years)	13.66	5.37	6753
Assets ($ Billions)	5.59	2.54	6753
Cash	0.17	0.18	6751
Cash Flows/Lagged Assets	0.13	0.15	6581
Market Leverage	0.62	4.18	6729
Book Leverage	0.21	0.22	6729
Tobin's Q	1.64	0.75	6406
Capital Expenditure/Assets	0.05	0.05	6747
R&D Expenditure/Assets	0.04	0.20	6753
Long-term debt/Assets	0.17	0.21	6730
Short-term debt/Assets	0.03	0.08	6752
Stock Volatility	0.11	0.08	6736
Earnings volatility	0.07	0.20	6539
Institutional Holdings	0.63	0.27	6480
Top five Inst. Holdings	0.27	0.11	6480
No. of Inst. Investors	184	220	6480
Dedicated	0.03	0.06	6743
Transient	0.12	0.09	6743
Quasi-Indexers	0.48	0.23	6743
PIN	0.15	0.10	6247
Analyst coverage	5.20	6.67	6753
Analyst forecasts dispersion	0.19	0.03	3832

Table B.4: Payout cuts and institutional ownership: Univariate analysis

The table presents univariate analysis of the relation between institutional ownership and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts/elimination, reduction in share repurchase and cutback in total payout. *Inst Holdings* is the fraction of a firm's shares held by institutional shareholders and is lagged by 1 year. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.173***	0.176***	0.239***	0.214***	0.291***	0.273***
	(12.45)	(11.74)	(12.09)	(10.77)	(14.71)	(13.61)
Inst. Holdings		0.000		-0.001		-0.019**
		(0.04)		(-0.08)		(-2.47)
Inst. Holdings x Crisis		0.007		0.128***		0.127***
		(0.74)		(9.86)		(8.97)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6712	6282	6645	6282	6645	6282

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.5: Payout cuts and institutional ownership - Institutional holdings

The table presents panel regression estimates of the relation between institutional ownership and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *Inst Holdings* is the average fraction of a firm's shares held by institutional shareholders and is lagged by 1 year. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.104***	0.104***	0.144***	0.142***	0.154***	0.153***
	(6.30)	(6.30)	(6.53)	(6.63)	(6.91)	(7.01)
Inst. Holdings	-0.005	-0.005	0.035***	-0.007	0.028***	-0.012
	(-0.64)	(-0.71)	(4.33)	(-0.75)	(3.65)	(-1.37)
Inst. Holdings x Crisis		0.002		0.123***		0.120***
		(0.17)		(9.59)		(8.63)
Age	0.024***	0.024***	-0.002	-0.002	0.008	0.008
	(3.64)	(3.64)	(-0.32)	(-0.26)	(1.19)	(1.26)
Log(Assets)	0.000	0.000	-0.008	-0.008	-0.020**	-0.020**
	(0.01)	(0.01)	(-0.87)	(-0.90)	(-2.31)	(-2.33)
Losses	-0.002	-0.002	-0.001	0.003	0.002	0.006
	(-0.31)	(-0.30)	(-0.11)	(0.38)	(0.32)	(0.80)
(R&D and Capex)/TA	-0.020***	-0.020***	0.009	0.008	0.005	0.004
	(-3.65)	(-3.65)	(1.19)	(1.06)	(0.61)	(0.49)
Market Leverage	0.006	0.006	-0.004	-0.004	0.010*	0.010**
	(0.91)	(0.91)	(-0.52)	(-0.49)	(1.89)	(2.02)
Cash Flow/TA	-0.031***	-0.031***	-0.023***	-0.021***	-0.034***	-0.032***
	(-5.73)	(-5.71)	(-3.00)	(-2.77)	(-4.14)	(-3.89)
Cash/TA	-0.008	-0.008	-0.013	-0.012	-0.018**	-0.017**
	(-1.29)	(-1.28)	(-1.56)	(-1.47)	(-2.18)	(-2.09)
Tobin's Q	-0.038***	-0.038***	-0.066***	-0.066***	-0.077***	-0.078***
	(-5.94)	(-5.94)	(-7.85)	(-8.04)	(-8.84)	(-9.00)
Firm risk	0.014**	0.014**	0.013*	0.008	0.034***	0.030***
	(2.40)	(2.40)	(1.77)	(1.20)	(4.58)	(4.09)
Total Payout/TA	0.088***	0.088***	0.144***	0.143***	0.156***	0.155***
	(12.30)	(12.29)	(18.65)	(18.62)	(22.43)	(22.13)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5934	5934	5934	5934	5934	5934

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.6: Payout cuts and institutional ownership - Top 5 institutional holdings (%)

The table presents panel regression estimates of the relation between the concentration of institutional ownership, measured by the percentage of shares held by the top five institutional shareholders, and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *Top 5 Holdings* represents the mean cumulative holdings of the top five institutional investors. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.102***	0.102***	0.148***	0.148***	0.156***	0.156***
	(6.20)	(6.21)	(6.71)	(6.73)	(7.02)	(7.03)
Top 5 Holdings.	0.002	-0.004	0.018***	0.006	0.018***	0.004
	(0.33)	(-0.74)	(2.66)	(0.77)	(2.78)	(0.49)
Top 5 Holdings. x Crisis		0.018*		0.034**		0.041***
		(1.74)		(2.58)		(2.80)
Age	0.024***	0.024***	-0.002	-0.003	0.008	0.008
	(3.66)	(3.65)	(-0.37)	(-0.39)	(1.15)	(1.13)
Log(Assets)	-0.003	-0.003	0.009	0.010	-0.007	-0.006
	(-0.42)	(-0.38)	(1.18)	(1.24)	(-0.92)	(-0.84)
Losses	-0.002	-0.002	-0.001	-0.001	0.002	0.002
	(-0.32)	(-0.32)	(-0.21)	(-0.21)	(0.22)	(0.22)
(R&D and Capex)/TA	-0.021***	-0.021***	0.011	0.010	0.006	0.006
	(-3.69)	(-3.71)	(1.35)	(1.33)	(0.73)	(0.70)
Market Leverage	0.006	0.006	-0.005	-0.006	0.009*	0.008
	(0.90)	(0.85)	(-0.64)	(-0.71)	(1.71)	(1.60)
Cash Flow/TA	-0.032***	-0.031***	-0.021***	-0.020***	-0.032***	-0.031***
	(-5.85)	(-5.78)	(-2.67)	(-2.62)	(-3.93)	(-3.86)
Cash/TA	-0.008	-0.008	-0.011	-0.011	-0.017**	-0.016*
	(-1.35)	(-1.29)	(-1.39)	(-1.31)	(-2.06)	(-1.96)
Tobin's Q	-0.038***	-0.038***	-0.064***	-0.064***	-0.075***	-0.076***
	(-5.90)	(-5.93)	(-7.56)	(-7.65)	(-8.59)	(-8.68)
Firm risk	0.014**	0.013**	0.012*	0.011	0.034***	0.032***
	(2.46)	(2.31)	(1.71)	(1.46)	(4.56)	(4.27)
Total Payout/TA	0.088***	0.088***	0.144***	0.144***	0.156***	0.155***
	(12.27)	(12.22)	(18.50)	(18.47)	(22.36)	(22.18)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5934	5934	5934	5934	5934	5934

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.7: Payout cuts and institutional ownership - Number of institutional investors

The table presents panel regression estimates of the relation between institutional ownership and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *InstN* is the mean number of institutional investors and is lagged by 1 year. Crisis is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.104***	0.104***	0.154***	0.150***	0.162***	0.159***
	(6.41)	(6.41)	(7.02)	(7.14)	(7.34)	(7.43)
InstN	-0.045***	-0.046***	-0.002	-0.078***	-0.010	-0.081***
	(-4.02)	(-3.88)	(-0.21)	(-6.29)	(-0.84)	(-6.60)
InstN x Crisis		0.001		0.150***		0.142***
		(0.13)		(12.19)		(11.60)
Age	0.028***	0.028***	-0.003	0.001	0.008	0.011*
	(4.30)	(4.30)	(-0.40)	(0.08)	(1.20)	(1.66)
Log(Assets)	0.034***	0.034***	0.015	0.030**	0.005	0.019
	(2.91)	(2.90)	(1.24)	(2.44)	(0.44)	(1.61)
Losses	-0.002	-0.002	-0.001	0.003	0.002	0.006
	(-0.38)	(-0.37)	(-0.10)	(0.40)	(0.32)	(0.79)
(R&D and Capex)/TA	-0.019***	-0.019***	0.011	0.010	0.007	0.006
	(-3.47)	(-3.47)	(1.42)	(1.29)	(0.83)	(0.70)
Market Leverage	0.004	0.004	-0.004	-0.002	0.009*	0.012**
	(0.60)	(0.60)	(-0.55)	(-0.27)	(1.76)	(2.18)
Cash Flow/TA	-0.032***	-0.032***	-0.020**	-0.019**	-0.031***	-0.030***
	(-5.99)	(-5.99)	(-2.54)	(-2.49)	(-3.82)	(-3.77)
Cash/TA	-0.005	-0.005	-0.010	-0.010	-0.015*	-0.016*
	(-0.90)	(-0.90)	(-1.28)	(-1.30)	(-1.88)	(-1.91)
Tobin's Q	-0.032***	-0.032***	-0.066***	-0.062***	-0.076***	-0.072***
	(-4.82)	(-4.79)	(-7.59)	(-7.28)	(-8.48)	(-8.21)
Firm risk	0.015**	0.015**	0.011	0.012*	0.033***	0.034***
	(2.53)	(2.53)	(1.53)	(1.73)	(4.39)	(4.62)
Total Payout/TA	0.091***	0.091***	0.144***	0.145***	0.156***	0.157***
	(12.59)	(12.59)	(18.43)	(18.53)	(22.47)	(22.62)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5934	5934	5934	5934	5934	5934

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.8: Payout cuts and institutional ownership - The 2001 recession

The table presents panel regression estimates of the relation between institutional ownership and payout policy during the economic recession of 2001. The sample time period is 1999-2003. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *Inst Holdings* is the fraction of a firm's shares held by institutional shareholders and is lagged by 1 year. *Bubble* is a dummy variable which takes the value 1 for the recession year - 2001. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Bubble	0.095***	0.080***	0.175***	0.096***	0.189***	0.113***
	(7.22)	(4.12)	(8.80)	(3.07)	(9.37)	(3.53)
Inst. Holdings	-0.023	-0.034	0.106**	0.050	0.136***	0.082*
	(-0.68)	(-0.97)	(2.51)	(1.09)	(3.18)	(1.75)
Inst. Holdings x Bubble		0.032		0.174***		0.166***
		(0.94)		(3.17)		(2.94)
Age	0.009***	0.009***	0.005**	0.005*	0.010***	0.010***
	(4.59)	(4.56)	(2.06)	(1.96)	(3.84)	(3.74)
Log(Assets)	0.010*	0.010*	-0.015**	-0.015**	-0.019***	-0.019***
	(1.85)	(1.84)	(-2.44)	(-2.47)	(-2.97)	(-3.00)
Losses	-0.015***	-0.016***	-0.023***	-0.024***	-0.015**	-0.016**
	(-3.16)	(-3.20)	(-3.22)	(-3.34)	(-2.04)	(-2.14)
(R&D and Capex)/TA	-0.089	-0.089	0.170*	0.170*	0.030	0.031
	(-1.41)	(-1.41)	(1.68)	(1.68)	(0.29)	(0.30)
Market Leverage	-0.001	-0.001	0.002	0.002	0.009**	0.010**
	(-0.45)	(-0.43)	(0.54)	(0.62)	(2.11)	(2.21)
Cash Flow/TA	-0.283***	-0.284***	-0.060	-0.067	-0.167***	-0.173***
	(-7.79)	(-7.80)	(-1.04)	(-1.14)	(-2.82)	(-2.91)
Cash/TA	-0.026	-0.025	-0.063	-0.060	-0.162***	-0.159***
	(-0.69)	(-0.68)	(-1.28)	(-1.22)	(-3.22)	(-3.17)
Tobin's Q	-0.056***	-0.056***	-0.075***	-0.076***	-0.092***	-0.093***
	(-6.63)	(-6.64)	(-6.69)	(-6.76)	(-8.03)	(-8.09)
Stock Volatility	-0.187***	-0.188***	-0.265***	-0.272***	-0.147*	-0.154*
	(-3.28)	(-3.30)	(-3.07)	(-3.18)	(-1.65)	(-1.75)
Total Payout/TA	1.707***	1.704***	2.998***	2.983***	2.863***	2.848***
	(9.04)	(9.01)	(17.15)	(17.12)	(17.43)	(17.37)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	4066	4066	4066	4066	4066	4066

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.9: Payout cuts and institutional ownership type

The table presents panel regression estimates of the relation between the Institutional ownership (IO) Type and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. IO Type is classified into three groups - Dedicated (DED), Transient (TRA) and Quasi-Indexers (QIX). The classification is based on the institutional investor's portfolio horizon Bushee (1998) and is obtained from Brian Bushee's website. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. Control variables are the same as used in previous regressions, including industry and year fixed effects. All independent variables have been standardized. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1) Div. cut/elim.	(2) Div. cut/elim.	(3) Repurchase cut	(4) Repurchase cut	(5) Total payout cut	(6) Total payout cut
Dedicated (DED)						
Crisis	0.090***	0.091***	0.150***	0.151***	0.156***	0.158***
	(5.70)	(5.72)	(6.97)	(7.03)	(7.18)	(7.25)
DED	-0.005	-0.007	-0.014***	-0.019***	-0.009	-0.015**
	(-1.14)	(-1.41)	(-2.69)	(-3.14)	(-1.63)	(-2.37)
DED x Crisis		0.006		0.015		0.019
		(0.58)		(1.14)		(1.34)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6165	6165	6165	6165	6165	6165
Transient (TRA)						
Crisis	0.094***	0.095***	0.142***	0.142***	0.151***	0.150***
	(5.84)	(5.87)	(6.57)	(6.56)	(6.87)	(6.86)
TRA	-0.008	0.002	0.024***	0.016*	0.017**	0.010
	(-1.45)	(0.31)	(3.70)	(1.93)	(2.58)	(1.18)
TRA x Crisis		-0.022**		0.018		0.016
		(-2.54)		(1.42)		(1.15)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6165	6165	6165	6165	6165	6165
Quasi-Indexers (QIX)						
Crisis	0.090***	0.089***	0.143***	0.134***	0.150***	0.142***
	(5.63)	(5.60)	(6.62)	(6.36)	(6.87)	(6.60)
QIX	0.005	0.002	0.041***	-0.003	0.034***	-0.008
	(0.69)	(0.28)	(5.12)	(-0.31)	(4.38)	(-0.87)
QIX x Crisis		0.009		0.123***		0.119***
		(0.84)		(9.44)		(8.48)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6165	6165	6165	6165	6165	6165

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.10: Payout cuts and analyst coverage

The table presents panel regression estimates on the relation between analyst coverage and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *Analyst* is the average analysts coverage for a firm and is lagged by 1 year. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. Industry fixed effects are based on the Fama-French 48-industry definitions. All independent variables have also been standardized. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.092***	0.092***	0.152***	0.154***	0.158***	0.159***
	(5.80)	(5.79)	(7.06)	(7.30)	(7.26)	(7.47)
Analyst	-0.017**	-0.014*	-0.001	-0.029***	-0.000	-0.027***
	(-2.33)	(-1.90)	(-0.13)	(-3.56)	(-0.03)	(-3.31)
Analyst x Crisis		-0.011		0.087***		0.082***
		(-1.11)		(6.59)		(6.23)
Age	0.023***	0.023***	-0.003	-0.001	0.009	0.010
	(3.55)	(3.53)	(-0.39)	(-0.17)	(1.30)	(1.51)
Log(Assets)	0.008	0.008	0.014	0.013	-0.001	-0.002
	(0.92)	(0.93)	(1.61)	(1.53)	(-0.15)	(-0.23)
Losses	-0.003	-0.003	-0.005	-0.003	0.001	0.002
	(-0.54)	(-0.57)	(-0.67)	(-0.47)	(0.08)	(0.28)
(R&D and Capex)/TA	-0.018***	-0.017***	0.011	0.009	0.006	0.004
	(-3.04)	(-3.00)	(1.34)	(1.12)	(0.67)	(0.47)
Market Leverage	0.008	0.008	-0.003	-0.002	0.012**	0.012**
	(1.09)	(1.08)	(-0.37)	(-0.29)	(2.09)	(2.20)
Cash Flow/TA	-0.033***	-0.033***	-0.023***	-0.023***	-0.034***	-0.034***
	(-5.96)	(-5.97)	(-2.96)	(-2.96)	(-4.17)	(-4.17)
Cash/TA	-0.008	-0.008	-0.009	-0.009	-0.015*	-0.015*
	(-1.43)	(-1.43)	(-1.13)	(-1.13)	(-1.89)	(-1.88)
Tobin's Q	-0.035***	-0.036***	-0.068***	-0.066***	-0.079***	-0.077***
	(-5.55)	(-5.58)	(-8.13)	(-8.04)	(-9.08)	(-8.97)
Firm risk	0.016***	0.016***	0.011	0.011	0.034***	0.035***
	(2.70)	(2.70)	(1.50)	(1.53)	(4.60)	(4.65)
Total Payout/TA	0.089***	0.089***	0.142***	0.139***	0.152***	0.150***
	(12.67)	(12.72)	(19.15)	(18.76)	(22.73)	(22.29)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	6165	6165	6165	6165	6165	6165

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.11: Payout cuts and dispersion in analysts' forecasts

The table presents panel regression estimates of the relation between dispersion in analysts' earnings forecasts and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. *Forecast Disp.* is the standard deviation of analysts' forecasts for a firm's earnings and is lagged by 1 year. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry definitions. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.077***	0.077***	0.270***	0.270***	0.253***	0.252***
	(3.61)	(3.59)	(9.23)	(9.23)	(8.65)	(8.64)
Forecast Disp.	0.020**	0.011	0.001	0.003	0.024**	0.020
	(2.26)	(1.10)	(0.12)	(0.24)	(2.14)	(1.31)
Forecast Disp. x Crisis		0.015		-0.003		0.008
		(1.27)		(-0.19)		(0.57)
Age	0.020**	0.020**	0.012	0.012	0.015*	0.015*
	(2.39)	(2.38)	(1.34)	(1.34)	(1.77)	(1.76)
Log(Assets)	-0.012	-0.012	0.003	0.003	-0.009	-0.009
	(-1.07)	(-1.07)	(0.21)	(0.20)	(-0.77)	(-0.77)
Losses	0.005	0.004	-0.010	-0.010	0.005	0.005
	(0.49)	(0.48)	(-0.81)	(-0.81)	(0.44)	(0.44)
(R&D and Capex)/TA	-0.028***	-0.027***	0.010	0.010	0.004	0.004
	(-3.27)	(-3.23)	(0.91)	(0.90)	(0.30)	(0.32)
Market Leverage	0.004	0.004	0.001	0.001	0.008	0.008
	(0.66)	(0.64)	(0.08)	(0.08)	(1.37)	(1.36)
Cash Flow/TA	-0.040***	-0.039***	-0.023*	-0.023*	-0.034**	-0.034**
	(-4.26)	(-4.24)	(-1.70)	(-1.70)	(-2.42)	(-2.41)
Cash/TA	-0.019**	-0.019**	-0.001	-0.001	-0.012	-0.012
	(-2.12)	(-2.10)	(-0.05)	(-0.05)	(-1.08)	(-1.07)
Tobin's Q	-0.022**	-0.023***	-0.065***	-0.065***	-0.065***	-0.066***
	(-2.49)	(-2.60)	(-5.70)	(-5.67)	(-5.33)	(-5.34)
Firm risk	0.023**	0.023**	0.007	0.007	0.036***	0.036***
	(2.47)	(2.46)	(0.56)	(0.56)	(3.03)	(3.03)
Total Payout/TA	0.075***	0.075***	0.139***	0.139***	0.146***	0.146***
	(8.29)	(8.32)	(15.86)	(15.82)	(17.54)	(17.51)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	3470	3470	3470	3470	3470	3470

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table B.12: Payout cuts and probability of informed trading (PIN)

The table presents panel regression estimates of the relation between the probability of informed trading (PIN) and payout policy during the financial crisis of 2008-2009. The sample time period is 2005-2009. The dependent variable is a binary variable which takes the value 1 for a fiscal year if the firm engages in one of the three modes of payout reduction - dividend cuts or elimination, reduction in share repurchase and cutback in total payout. The sample includes all publicly traded US firms, excluding financials and utilities, with a positive average payout in the previous two years. *PIN* is a market microstructure based measure of the degree of information asymmetry computed using the Venter and DeJong model and is lagged by 1 year. *Crisis* is a dummy variable which takes the value 1 for the crisis years - 2008 and 2009. All independent variables are lagged except *Cash Flow/Lag TA* and *Tobin's Q* which are contemporaneous. All independent variables have also been standardized. Industry fixed effects are based on the Fama-French 48-industry classifications. Standard errors are heteroskedasticity-robust and clustered by firm. T-statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Div. cut/elim.	Div. cut/elim.	Repurchase cut	Repurchase cut	Total payout cut	Total payout cut
Crisis	0.084***	0.083***	0.158***	0.145***	0.165***	0.152***
	(4.44)	(4.42)	(6.41)	(6.05)	(6.68)	(6.33)
PIN	0.012	0.012	-0.015	0.024**	-0.004	0.035***
	(1.32)	(1.35)	(-1.59)	(2.30)	(-0.37)	(3.25)
PIN x Crisis		-0.002		-0.131***		-0.130***
		(-0.14)		(-8.94)		(-8.62)
Age	0.023***	0.023***	0.001	0.002	0.010	0.011
	(3.56)	(3.56)	(0.08)	(0.23)	(1.43)	(1.58)
Log(Assets)	0.008	0.008	-0.010	-0.008	-0.015	-0.013
	(0.77)	(0.77)	(-0.90)	(-0.74)	(-1.40)	(-1.26)
Losses	-0.003	-0.003	0.002	0.007	0.004	0.009
	(-0.60)	(-0.59)	(0.26)	(0.94)	(0.56)	(1.23)
(R&D and Capex)/TA	-0.015***	-0.015***	0.008	0.006	0.005	0.003
	(-2.71)	(-2.72)	(1.03)	(0.76)	(0.56)	(0.30)
Market Leverage	0.013	0.013	0.002	0.003	0.018***	0.019***
	(1.27)	(1.27)	(0.31)	(0.54)	(2.68)	(2.73)
Cash Flow/TA	-0.030***	-0.030***	-0.021***	-0.021***	-0.032***	-0.032***
	(-5.42)	(-5.42)	(-2.70)	(-2.77)	(-3.80)	(-3.89)
Cash/TA	-0.009	-0.009	-0.013	-0.013	-0.019**	-0.019**
	(-1.56)	(-1.56)	(-1.58)	(-1.58)	(-2.25)	(-2.26)
Tobin's Q	-0.036***	-0.036***	-0.070***	-0.068***	-0.079***	-0.077***
	(-5.44)	(-5.43)	(-8.21)	(-8.13)	(-8.80)	(-8.74)
Firm risk	0.018***	0.018***	0.013*	0.013*	0.037***	0.038***
	(2.99)	(2.99)	(1.67)	(1.81)	(4.67)	(4.88)
Total Payout/TA	0.086***	0.086***	0.143***	0.141***	0.152***	0.150***
	(11.87)	(11.87)	(18.87)	(18.62)	(21.66)	(21.28)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
N	5744	5744	5744	5744	5744	5744

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

APPENDIX C

VARIABLE DEFINITIONS FOR SECTION 3

Assets	Log of total assets (Compustat Global Database item AT).
BSE500	Dummy that equals 1 if the firm is a constituent of the S&P BSE 500 Index.
Capex Ratio	Capital expenditure (Compustat Global item CAPX) divided by total assets (AT).
Cash Ratio	Cash and short-term investments (Compustat Global item CHE) divided by total assets (AT).
Cashflow	Operating income before depreciation (Compustat Global item OIBDP) divided by total assets (AT).
Dividend Payer	Dummy that equals 1 if the cash dividend amount in a given fiscal year (Compustat Global item DVC) is positive.
EBITDA Ratio	Earnings before taxes, depreciation and amortization (Compustat Global item EBITDA) divided by total assets (AT).
Firm Age	Current fiscal year minus year of first appearance in the Compustat Global Database.

FII Ownership	Percentage of firm's total shares outstanding held by Institutional Investors domiciled outside of India.
Leverage	Sum of long term debt (Compustat Global item DLTT) and short term liabilities (DLC) divided by total assets (AT).
Market equity	Share price at fiscal year end date (Compustat Global Security Daily item PRCCD) times Shares Outstanding (Compustat Global Security Daily item CSHOC) times an adjustment factor (Compustat Global Security Daily item TRFD).
Market-to-Book	Market Value of equity dividend by book value of equity (Compustat Global item CEQ).
Promoter Ownership	Percentage of firm's total shares outstanding held by firm founders and their associates.
R&D Ratio	Research and Development expenditures (Compustat Global item XRD) divided by total assets (AT). If XRD is missing, we set it to 0.
ROA	Return on assets is calculated as Net income (Compustat Global item NICON) divided by lagged total assets (lagged AT).
Sales Growth	Percentage change in firm sales (Compustat Global item SALE)

	over previous fiscal year.
Tobin's Q	Market equity plus total debt plus value of redeemable preferred stock (Compustat Global item PSTKR), if not missing minus deferred taxes (TXDB) divided by total assets (AT).

APPENDIX D

FIGURES FOR SECTION 3

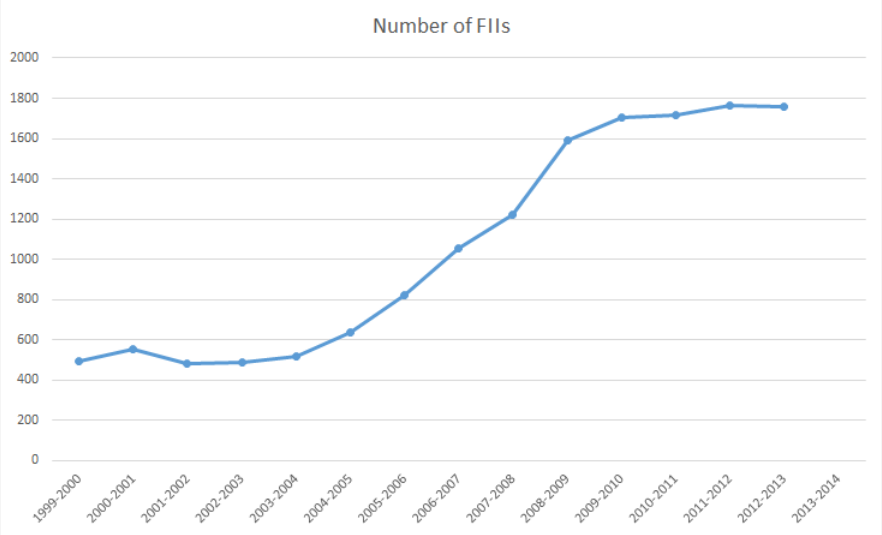

Figure D.1: FII participation in the Indian capital market

The figure shows the number of foreign institutional investors (FII) participating in the Indian financial markets from 2000-2014. *Source: Securities Exchange Board of India (SEBI) website.*

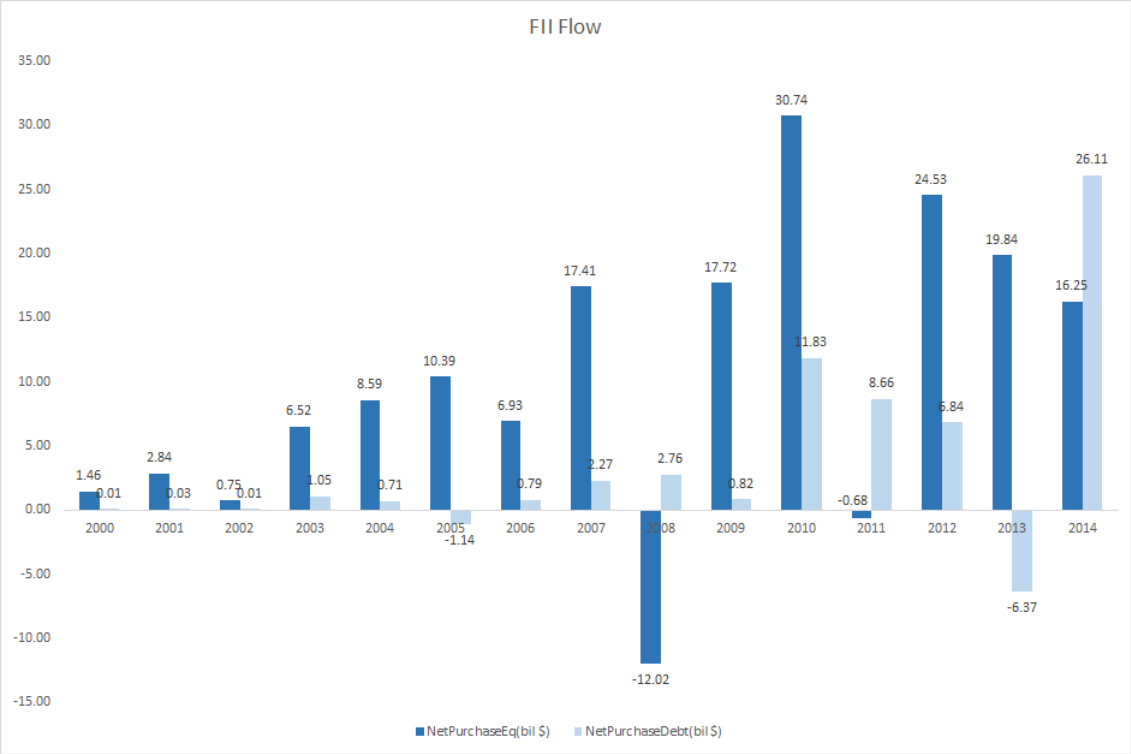

Figure D.2: Net foreign investment flows to India

The figure reports the net foreign investment flows into the Indian debt and equity markets from 2000-2014 in billion USD. *Source: Securities Exchange Board of India (SEBI) website.*

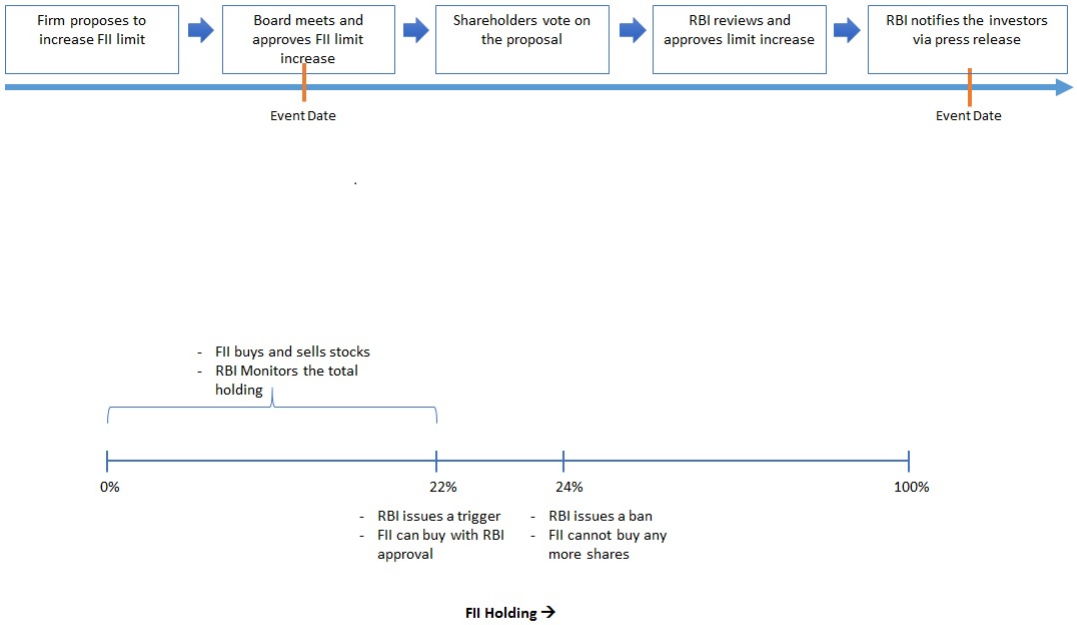

Figure D.3: Time-line of FII limit increase

The top panel of the figure shows the key steps involved in the raising of a firm's aggregate FII limit. By default, each firm has a FII limit of 24% (20% for banks). The bottom panel explains how the RBI regulates the FII limit for individual firms. When aggregate FII shareholding in a firm get within 2% of the existing limit, the RBI requires prior approval before further purchases of shares by FIIs("Trigger"). If the limit is exceeded, then a prohibition on any further buying of shares is imposed ("Ban").

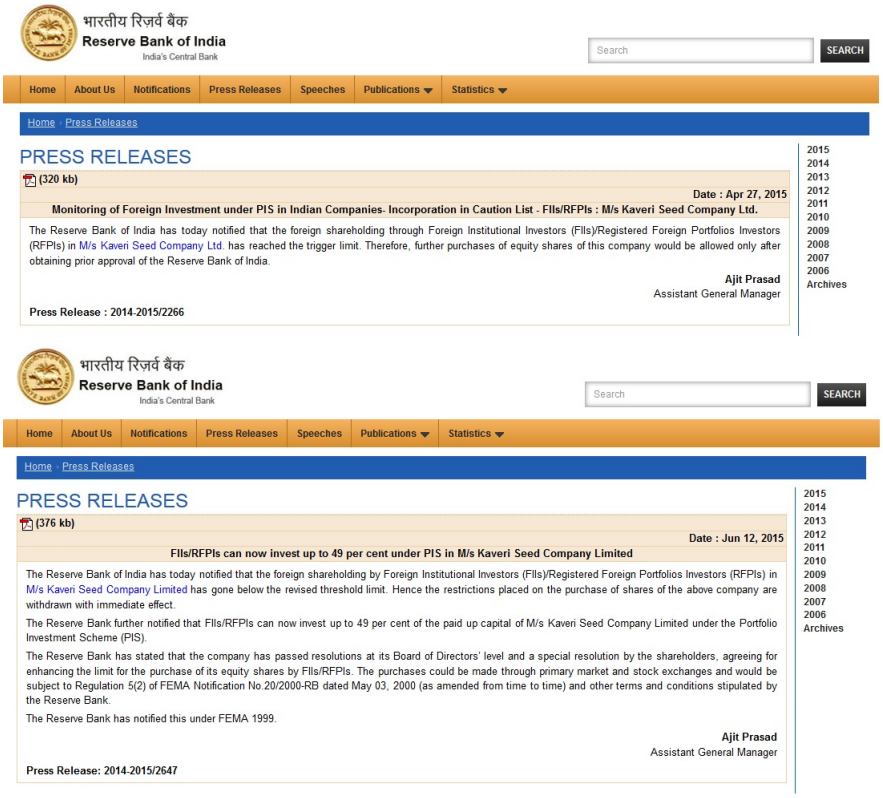

Figure D.4: Snapshot of a press release issued by the RBI regarding FII investments

The top panel in the figure provides an example of a restriction imposed ("Trigger") imposed as a result of aggregate FII shareholding in a firm reaching within 2% of the existing limit. The bottom panel then shows the press notification lifting the restriction after the FII limit in the firm was increased.

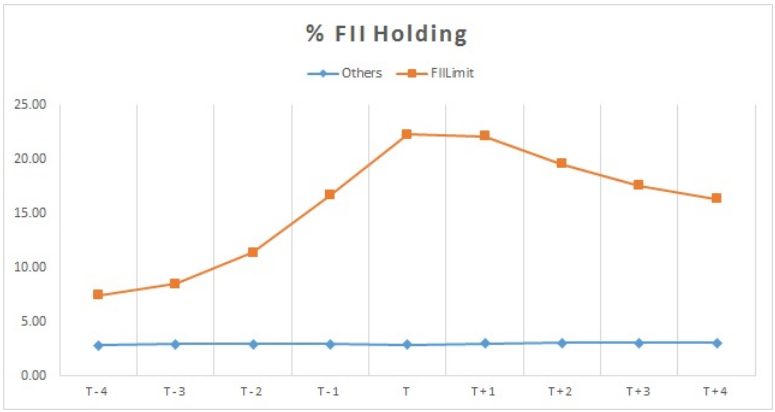

Figure D.5: Trend in aggregate FII shareholding: pre and post FII limit increase

The graph depicts the trend in mean FII shareholding for publicly listed Indian companies with respect to the event (time T) that results in an increase in the aggregate FII limit at the firm level. Mean aggregate FII ownership for each firm is plotted from 4 years prior to the limit increase (T-4) to up to 4 year after (T+4). FIILimit represents the subset of firms that raised their FII limit (orange) in a given fiscal year while Others represents the remaining firms (blue).

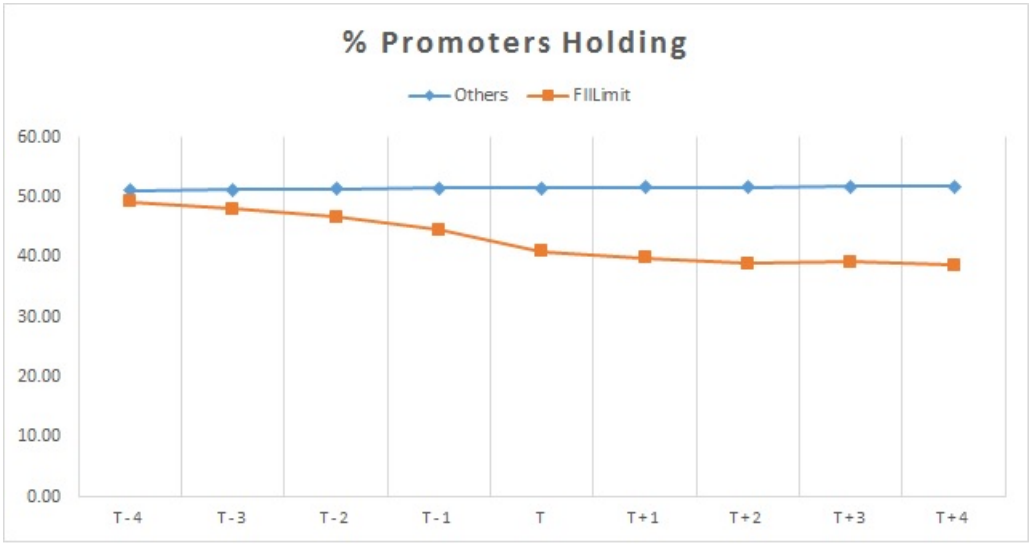

Figure D.6: Trend in promoter shareholding: pre and post FII limit increases

The graph depicts the trend in mean Promoter shareholding for publicly listed Indian companies with respect to the event (time T) that results in an increase in the aggregate FII limit at the firm level. Mean aggregate Promoter ownership for each firm is plotted from 4 years prior to the limit increase (T-4) to up to 4 year after (T+4). FIILimit represents the subset of firms that raised their FII limit (orange) in a given fiscal year while Others represents the remaining firms (blue).

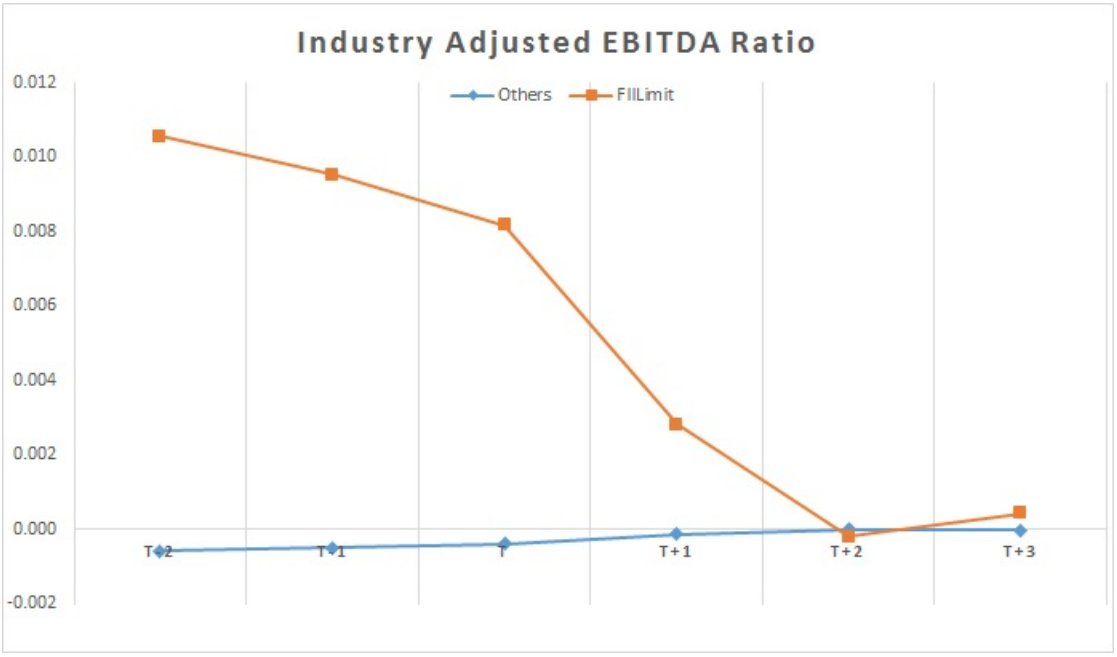

Figure D.7: Trend in industry adjusted EBITDA ratio around FII limit increases

The graph depicts industry-adjusted EBITDA for companies that raised their FII limit (FIILimit) with respect to firms that didn't (Others). Adj EBITDA Ratio is the ratio of EBITDA over assets that is adjusted by the average EBITDA ratio of all firms (excluding the firm itself) in the same Fama-French 48 industry during the same fiscal year. The trend in industry-adjusted EBITDA is plotted from 2 years prior to the limit increase (T-2) to up to 4 year after (T+2). The plot for FIILimit firms is shown in orange while that for Other firms is shown in blue.

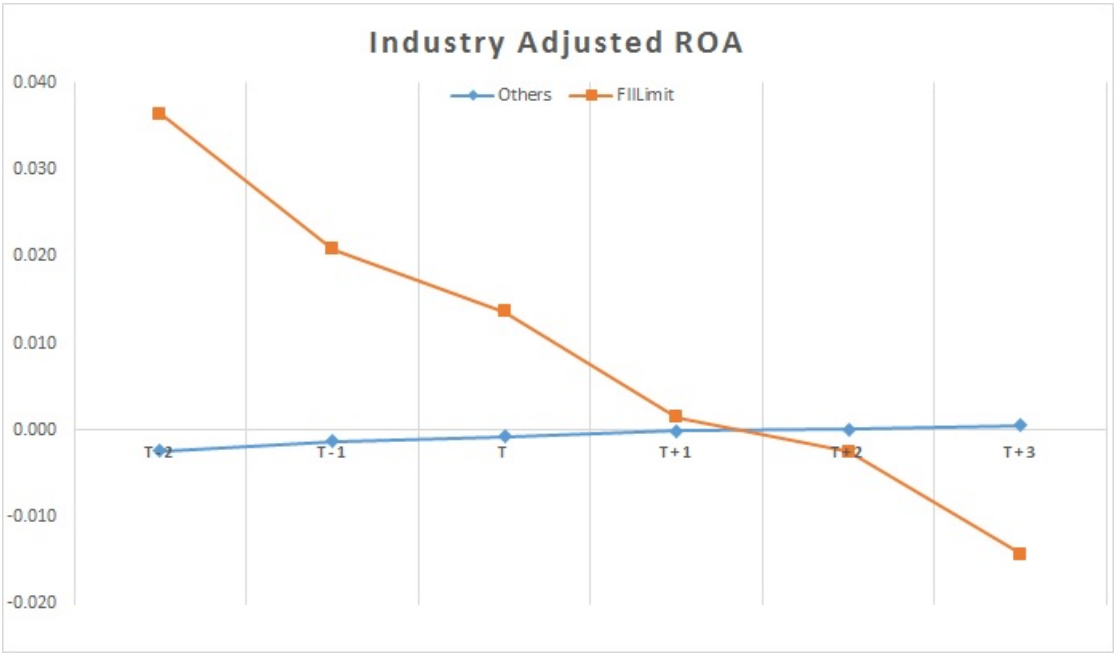

Figure D.8: Trend in industry adjusted ROA around FII limit increases

The graph depicts industry-adjusted ROA for companies that raised their FII limit (FIILimit) with respect to firms that didn't (Others). Adj ROA is the ratio of net income over lagged assets that is adjusted by the average ROA of all firms (excluding the firm itself) in the same Fama-French 48 industry during the same fiscal year. The trend in industry-adjusted ROA is plotted from 2 years prior to the limit increase (T-2) to up to 4 year after (T+2). The plot for FIILimit firms is shown in orange while that for Other firms is shown in blue.

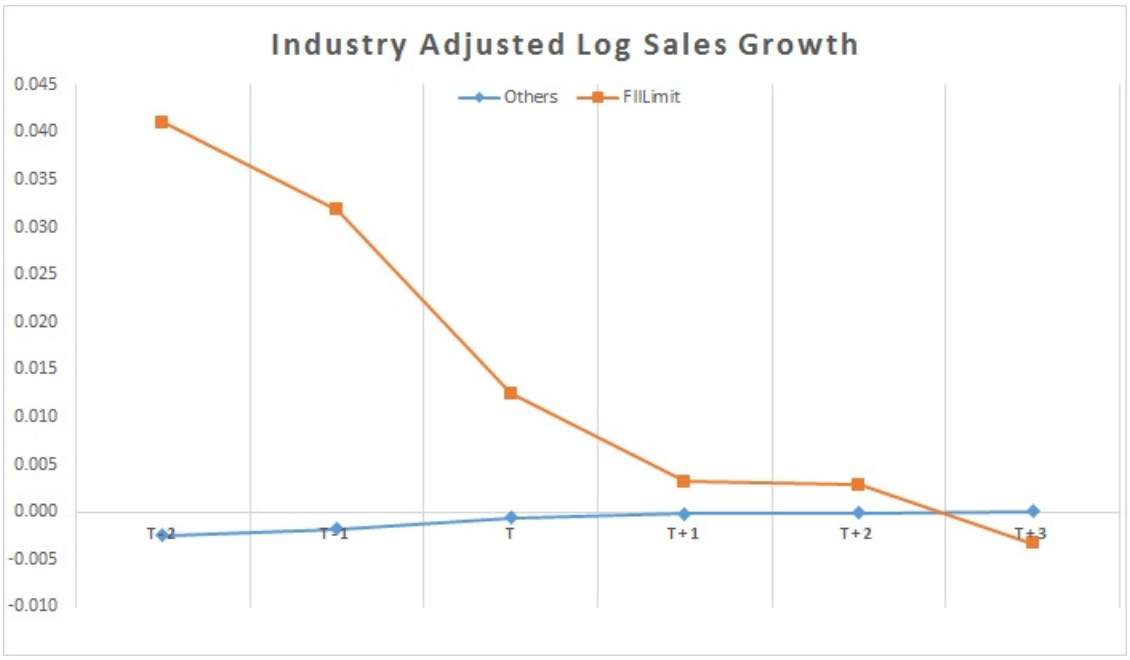

Figure D.9: Trend in industry adjusted log sales growth around FII limit increases

The graph depicts industry-adjusted log sales growth for companies that raised their FII limit (FIILimit) with respect to firms that didn't (Others). Adj log sales growth is the log of sales growth of a firm over the previous year's values, adjusted by the average log sales growth of all companies (excluding the firm itself) in the same Fama-French 48 industry during the same fiscal year. The trend in industry-adjusted log sales growth is plotted from 2 years prior to the limit increase (T-2) to up to 4 year after (T+2). The plot for FIILimit firm is shown in orange while that for Other firms is shown in blue.

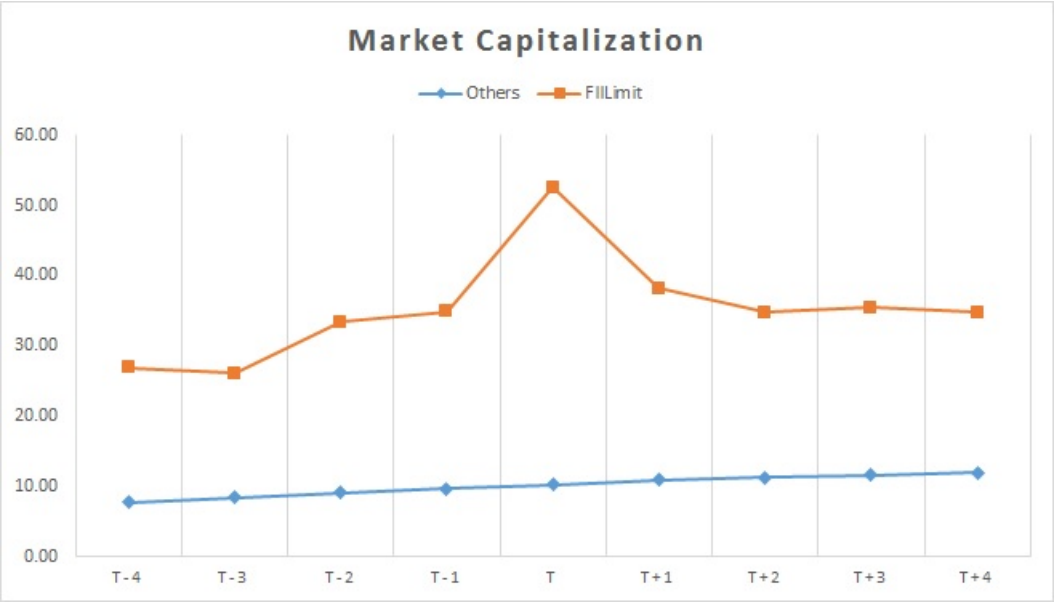

Figure D.10: Trend in market capitalization around FII limit increases

The graph depicts market capitalization (market cap) for companies that raised their FII limit (FIILimit) with respect to firms that didn't (Others). The trend in market cap is plotted from 4 years prior to the limit increase (T-4) to up to 4 year after (T+4). The plot for FIILimit firm is shown in orange while that for Other firms is shown in blue.

APPENDIX E

TABLES FOR SECTION 3

Table E.1: Foreign Institutional Investors (FII) in India

This table shows the list of foreign institutional investors (FII) who are permitted to buy/sell shares of Indian companies through the portfolio investment route (Panel A). The Securities and Exchange Board of India (SEBI) has the authority to register FIIs and monitors investments by them along with the Reserve Bank of India (RBI). FIIs are permitted to trade securities issued by Indian firms, listed and unlisted, in the primary as well as secondary markets. Panel B provides a partial list of India related FIIs which are sponsored by or affiliated to CALPERS, the largest public pension fund in the United States.

Panel A: Classification of Foreign institutional investors (FII)
Pension Funds
Mutual Funds
Investment Trusts
Banks
Insurance Companies / Reinsurance Company
Foreign Central Banks
Foreign Governmental Agencies
Sovereign Wealth Funds
International/ Multilateral organization/ agency
University Funds (Serving public interests)
Endowments (Serving public interests)
Foundations (Serving public interests)
Charitable Trusts / Charitable Societies (Serving public interests)

Panel B: FIIs funds sponsored by or affiliated to CALPERS
CALPERS
CALPERS, self managed 1-15
CALPERS, managed by TOBAM
CALPERS, managed by ARROWSTREET CAP L.P
CALPERS, managed by ASHMORE EQUITIES
CALPERS, managed by BAILLIE GIFFORD OVERSEAS
CALPERS, managed by GENESIS ASSET MANAGERS
CALPERS, managed by LAZARD ASSET MANAGEMENT
CALPERS, managed by NOMURA ASSET MANAGEMENT
CALPERS, managed by WASATCH ADVISORS, INC

Table E.2: Distribution of FII limit increases

This table presents statistics on the frequency and distribution of FII limit increases by Indian companies from 1998-2014. Panel A shows the total frequency of such events in each year. Panel B shows the distribution of the same by SIC 2 digit industry classification.

Panel A: FII limit increases by year		
Year	Frequency	Percent
1998	7	1.75
1999	7	1.75
2000	7	1.75
2001	7	1.75
2002	6	1.50
2004	28	6.98
2005	30	7.48
2006	66	16.46
2007	55	13.72
2008	33	8.23
2009	21	5.24
2010	18	4.49
2011	18	4.49
2012	18	4.49
2013	27	6.73
2014	37	9.23
Total	385	100.00

Table E.2 continued

Panel B: Industry distribution of FII limit increases

Industry	2-Digit SIC	Frequency	Percent
Agricultural Production - Crops	1	3	1.40
Metal, Mining	10	2	0.93
Oil & Gas Extraction	13	2	0.93
General Building Contractors	15	2	0.93
Heavy Construction, Except Building	16	10	4.67
Food & Kindred Products	20	15	7.01
Textile Mill Products	22	4	1.87
Apparel & Other Textile Products	23	4	1.87
Paper & Allied Products	26	1	0.47
Chemical & Allied Products	28	20	9.35
Rubber & Miscellaneous Plastics Products	30	4	1.87
Leather & Leather Products	31	1	0.47
Stone, Clay, & Glass Products	32	3	1.40
Primary Metal Industries	33	15	7.01
Fabricated Metal Products	34	7	3.27
Industrial Machinery & Equipment	35	7	3.27
Electronic & Other Electric Equipment	36	8	3.74
Transportation Equipment	37	12	5.61
Instruments & Related Products	38	2	0.93
Miscellaneous Manufacturing Industries	39	6	2.80
Water Transportation	44	3	1.40
Transportation Services	47	4	1.87
Communications	48	10	4.67
Electric, Gas & Sanitary Services	49	7	3.27
Wholesale Trade - Durable Goods	50	3	1.40
Wholesale Trade - Nondurable Goods	51	1	0.47
General Merchandise Stores	53	1	0.47
Eating & Drinking Places	58	2	0.93
Miscellaneous Retail	59	1	0.47
Real Estate	65	1	0.47
Hotels & Other Lodging Places	70	1	0.47
Business Services	73	32	14.95
Motion Pictures	78	6	2.80
Health Services	80	1	0.47
Educational Services	82	5	2.34
Engineering & Management Services	87	4	1.87
Non-Classifiable Establishments	99	4	1.87

Table E.3: Summary statistics

This table presents summary statistics for Indian companies from 1998-2014, excluding financials and state owned enterprises. Panel A reports statistics on firm characteristics for the sample of firms which increase the limit on aggregate FII shareholding (FIILimit firms). Data on firm variables is constructed from the annual files of the Compustat Global database, Datastream, Worldscope and Prowess. *Market Equity* and *Assets* are in Billions of Indian Rupees (INR). Capital Expenditures (*Capex Ratio*), R&D Expenses (*R&D Ratio*), Cash and short term investments (*Cash Ratio*), Book Leverage (*Leverage*) and firm's Earnings before interest, tax and depreciation (*EBITDA Ratio*) are all scaled by total assets (*AT*). Information on firm's shareholding pattern, expressed in percentage of total shares outstanding, comes from the respective stock exchanges where the firms are listed. *Promoter ownership* is the total of the firm's promoters holdings, domestic and foreign. *FII ownership* and *DII ownership* are the percentage of shares held by foreign institutional investors (FIIs) and domestic institutional investors, respectively. *Inst. Ownership* comprises of FIIs, domestic mutual funds/UTI, banks, insurance companies and financial institutions. Panel B presents summary statistics for all Indian firms for the corresponding time period. The sample excludes any firm firm-year observation with missing total assets. All variables are winsorized at the 1 and 99 percentile.

Panel A: Summary statistics for firms increasing their aggregate FII limit between 1998-2014

Variable	**Mean**	**Std. Dev.**	**Median**	**N**
Firm Age	23.98	17.51	19	237
Market Equity	47.71	106.38	12.95	237
Assets	35.1	78.66	10.75	241
Capex Ratio	0.11	0.1	0.08	233
R&D Ratio	0	0.01	0	241
Cash Ratio	0.14	0.14	0.08	241
Leverage	0.27	0.19	0.27	240
EBITDA Ratio	0.14	0.09	0.13	241
ROA	0.17	0.63	0.1	227
MB	3.49	3.59	2.7	237
Tobin's Q	1.91	1.74	1.45	236
Dividend Payer (%)	78	42	100	241
BSE500 Member (%)	59	49	100	241
Promoter Ownership (%)	44.52	15.54	44.5	215
DII Ownership (%)	7.62	7.69	5.98	215
FII Ownership (%)	16.46	11.01	17.45	215
Inst. Ownership (%)	24.08	13.48	24.44	215
#FII	65.98	108.02	22	133
#DII	44.33	73.45	18	133

Table E.3 continued

Panel B: Summary statistics for all Indian firms from 1998-2014

Variable	Mean	Std. Dev.	Median	N
Firm Age	26.58	19.17	21	31,055
Market Equity	10.85	51.49	0.51	27,826
Assets	11.69	53.39	1.38	32,660
Capex Ratio	0.07	0.08	0.04	30,234
R&D Ratio	0	0.01	0	32,660
Cash Ratio	0.07	0.1	0.03	32,660
Leverage	0.31	0.2	0.31	32,641
EBITDA Ratio	0.11	0.09	0.1	32,589
ROA	0.06	0.2	0.04	26,668
MB	1.6	2.71	0.79	27,826
Tobin's Q	0.98	1.14	0.68	27,739
Dividend Payer (%)	49	50	0	32,660
BSE500 Member (%)	13	34	0	32,660
Promoter Ownership (%)	52.08	18.17	52.94	23,130
DII Ownership (%)	4.42	7.13	0.85	22,176
FII Ownership (%)	3.15	6.82	0	22,102
Inst. Ownership (%)	7.59	10.87	2.34	22,240
#FII	17.77	68.55	1	15,355
#DII	18.9	53.17	4	15,355

Table E.4: Cross-sectional determinants of FII limit increases

This table presents coefficient estimates from a linear probability model for increases in the aggregate FII limit at the firm level. The sample consists of Indian firms, excluding financials and state owned enterprises, from 1998-2014 in the Compustat Global database with non negative data on assets, book equity and sales . The dependent variable is a binary variable which takes the value 1 for firm-years in which an FII limit increase occurs. All firm-specific variables are from the fiscal year prior to the year in which the firm raises the FII limit. Promoter and FII ownership variables are from the previous quarter. Standard errors are clustered by firm and the t statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
Firm Age	-0.000***	-0.000***	-0.001
	(-4.39)	(-3.92)	(-0.87)
Log Assets	-0.001	-0.001	-0.009***
	(-1.45)	(-1.39)	(-3.28)
Dividend Payer	0.003**	0.003**	0.005**
	(2.12)	(2.13)	(1.97)
Capex Ratio	0.020*	0.020	0.007
	(1.69)	(1.64)	(0.56)
Cash Ratio	0.021*	0.018*	0.033*
	(1.91)	(1.65)	(1.73)
Leverage	0.005	0.006	0.000
	(1.08)	(1.27)	(0.01)
Log MB	0.002***	0.002***	0.005***
	(2.65)	(2.59)	(3.84)
ROA	0.001	0.001	-0.002
	(0.26)	(0.40)	(-0.85)
FII ownership	0.003***	0.003***	0.001***
	(9.91)	(9.53)	(2.58)
Promoter Ownership	-0.000***	-0.000**	0.000
	(-2.73)	(-2.45)	(0.75)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	No	Yes	No
Firm Fixed Effects	No	No	Yes
N	17,626	17,565	17,626

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.5: Trends in shareholding pattern around FII limit increases

This table shows time-series and cross-sectional variation in firm ownership structure surrounding an FII limit increase. Figures are reported for the three major class of investors - Controlling Shareholders (*Promoters*), Foreign Institutional Investors (*FII*) and Domestic Institutional Investors (*DII*). Panel A shows mean ownership (as % of total shares outstanding) for the event quarter, *Current*, while *Pre* and *Post* show the same for quarter(s) prior and post event respectively. *Difference* shows the changes in the ownership for each of the investor groups. Panel B presents a multivariate regression analysis of changes in shareholding pattern for firms that raise their FII limit (FIILimit firms) with respect to those that don't. The dependent variable is the changes in the percentage of shares owned by each class of investor - Promoters, FIIs and DIIs. The key independent variable is a dummy variable, *FIILimit*, which takes the value 1 for a firm-year when a FII limit increase occurs. For each class of investors, the first column presents coefficient estimates for univariate regressions while in the second column, firm specific controls are added. Standard errors are clustered by firm and the t statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

Panel A: Time series variation in shareholding pattern					
	N	**Pre**	**Current**	**Post**	**Difference**
Shareholding pattern pre and post FII increase: 1 quarter					
Promoters	316	41.82	40.77	40.60	-1.22(-4.28)
FII	316	20.30	22.59	23.23	2.93(6.94)
DII	316	6.96	6.80	6.94	-0.02(-0.09)
Shareholding pattern pre and post FII increase: 2 quarter					
Promoters	297	42.79	40.47	40.06	-2.73(-6.07)
FII	296	17.48	22.61	23.39	5.90(10.37)
DII	296	7.23	6.92	7.19	-0.04(-0.17)
Shareholding pattern pre and post FII increase: 4 quarter					
Promoters	269	44.84	40.73	40.05	-4.79(-8.05)
FII	267	13.81	22.40	22.75	8.94(12.48)
DII	267	7.45	6.83	7.23	-0.22(-0.62)

Table E.5 continued

	(1) Δ FII	(2) Δ FII	(3) Δ Promoter	(4) Δ Promoter	(5) Δ DII	(6) Δ DII
FIILimit	6.029***	4.829***	-3.687***	-2.683***	-0.127	-0.385
	(6.90)	(5.47)	(-5.49)	(-3.95)	(-0.25)	(-0.73)
Firm Age		0.011		0.004		-0.055
		(0.10)		(0.01)		(-0.52)
Log Assets		-1.329***		-0.206		-0.204*
		(-7.82)		(-0.75)		(-1.69)
Capex Ratio		1.347*		0.740		0.818
		(1.79)		(0.51)		(1.32)
Cash Ratio		2.167**		-0.412		-1.175*
		(2.41)		(-0.36)		(-1.67)
Leverage		0.309		-1.627		-0.397
		(0.55)		(-1.62)		(-0.87)
ROA		0.849***		0.484		-0.072
		(3.85)		(1.53)		(-0.42)
Log MB		0.758***		-0.841***		0.296***
		(7.80)		(-4.80)		(3.81)
Promoter Ownership		0.018**		-0.032**		0.013
		(2.37)		(-2.37)		(1.50)
Dividend Payer		0.347**		0.267		0.085
		(2.05)		(0.92)		(0.68)
Constant	0.283***	-0.175	0.395***	2.433	-0.554***	0.725
	(9.20)	(-0.05)	(5.13)	(0.25)	(-16.24)	(0.22)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	No	Yes	No	Yes	No
Firm Fixed Effects	No	Yes	No	Yes	No	Yes
N	19,021	16,518	20,038	17,128	19088	16,553

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.6: Announcement effect for FII limit increases

This table reports short-run cumulative abnormal returns (CARs), using the market model, for FII limit increases across several event windows, ranging from [-2,2] to [0,5]. The estimation window for calculating firm's market beta is [-250,-10]. The CARs for the event dates are calculated by first subtracting beta times the market index returns from the firm's daily returns and then summing up the market adjusted returns (AR). To test if the mean CAR is statistically different from 0, we report the Patell's z test. For robustness, we also calculate several other statistics (unreported), including the cross-sectional t-stats and the Boehmer's statistics. Panel A shows CAR results for the event windows centered around the Central Bank's (RBI) approval of firm level FII limit increases. The event dates are obtained from press releases published on the RBI website. Panel B reports mean CAR results for the board approvals of FII limit increases. The event dates for these are collected from searches for corporate press releases for the same on the Factiva database.

Panel A: Short-run CAR for RBI approvals of FII limit increases

Win	N	CAR	T-test for mean=0
$[-2,2]$	229	1.20	2.58
$[-1,1]$	229	1.17	3.16
$[0,1]$	229	1.34	4.54
$[0,2]$	229	1.38	3.81
$[0,5]$	229	1.14	2.29

Panel B: Short-run CAR for board approvals of FII limit increases

Win	N	CAR	T-test for mean=0
$[-2,2]$	75	1.47	1.95
$[-1,1]$	75	1.65	2.57
$[0,1]$	75	1.00	2.04
$[0,2]$	75	0.73	1.12
$[0,5]$	75	0.73	1.12

Table E.7: Buy and hold abnormal returns (BHAR) for FII limit increases

The table presents results for long run buy and hold returns (BHARs) for the group of companies that increase their aggregate FII limit. The event windows range from 24 months before the event to up to 36 months after it. Panel A shows long run returns adjusted by the market index returns while in Panel B we use Fama-French 12 industry adjusted returns. The corresponding cross-sectional t-statistics are also shown below.

Panel A: Buy and hold returns (BHAR) adjusting for market returns			
Win	N	BHAR	T-test for mean=0
$[-24,0]$	195	468.50	2.87
$[-12,0]$	195	171.70	1.64
$[0,6]$	205	4.23	1.32
$[0,12]$	205	-3.90	-0.75
$[0,24]$	209	-20.13	-3.01
$[0,36]$	213	-39.43	-5.87

Panel B: Buy and hold returns (BHAR) adjusting for industry returns			
Win	N	CAR	T-test for mean=0
$[-24,0]$	195	335.10	2.07
$[-12,0]$	195	124.60	1.19
$[0,6]$	205	-15.39	-4.13
$[0,12]$	205	-45.18	-7.05
$[0,24]$	209	-112.10	-10.67
$[0,36]$	213	-221.10	-13.25

Table E.8: Trends in real firm outcomes around FII limit increases

This table compares operating performance for firms that raised their FII limit (*FIILimit*) and those that don't (*Others*). Panels A-E compares annual mean and median values for a set of firm characteristics from two years prior to the event to 2 years post. *Adj EBITDA Ratio* is the ratio of EBITDA over assets which is adjusted by the mean EBITDA ratio for all companies (excluding the firm itself) in the same Fama-French 48 industry and the same fiscal year. Similarly, *Adj ROA* is the ratio of net income over lagged assets and *Adj Log sales growth* is the log of sales growth, both adjusted accordingly. The panels report the mean and median values along with with the p-values for a test of whether the means and medians are statistically different than zero (in parentheses). The last column presents the Satterthwaite t-statistics and Wilcoxon z-statistics (with p-values in parentheses) for the difference in mean and median tests respectively.

Panel A: Operating Performance two years prior

Financial Metric	**Others**	**FIILimit**	**Difference**
Adj. EBITDA Ratio			
Mean	-0.001 (0.446)	0.011 (0.000)	-4.12 (0.000)
Median	-0.000 (0.000)	0.000 (0.936)	-4.89 (0.000)
Adj. ROA			
Mean	-0.002 (0.048)	0.036 (0.012)	-2.68 (0.008)
Median	-0.010 (0.000)	-0.010 (0.009)	-4.79 (0.000)
Adj. Log Sales Growth			
Mean	-0.002 (0.394)	0.041 (0.000)	-4.28 (0.000)
Median	-0.020 (0.000)	0.030 (0.000)	-7.02 (0.000)

Panel B: Operating Performance one year prior

Financial Metric	**Others**	**FIILimit**	**Difference**
Adj. EBITDA Ratio			
Mean	-0.000 (0.495)	0.010 (0.000)	-3.88 (0.000)
Median	-0.000 (0.000)	-0.000 (0.670)	-4.33 (0.000)
Adj. ROA			
Mean	-0.001 (0.323)	0.021 (0.023)	-2.39 (.0171)
Median	-0.010 (0.000)	-0.010 (0.001)	-3.56 (0.000)
Adj. Log Sales Growth			
Mean	-0.002 (0.515)	0.032 (0.001)	-3.28 (0.002)
Median	-0.010 (0.000)	0.040 (0.000)	-5.98 (0.000)

Table E.8 continued

Panel C: Operating Performance in the treatment year

Financial Metric	**Others**	**FIILimit**	**Difference**
Adj. EBITDA Ratio			
Mean	-0.000 (0.566)	0.008 (0.001)	-3.35 (0.001)
Median	-0.000 (0.000)	-0.000 (0.673)	-3.69 (0.000)
Adj. ROA			
Mean	-0.001 (0.512)	0.014 (0.126)	-1.60 (0.109)
Median	-0.010 (0.000)	-0.010 (0.000)	-2.03 (0.0426)
Adj. Log Sales Growth			
Mean	-0.001 (0.808)	0.013 (0.207)	-1.28 (0.200)
Median	-0.000 (0.406)	0.030 (0.000)	-4.27 (0.000)

Panel D: Operating Performance one year post

Financial Metric	**Others**	**FIILimit**	**Difference**
Adj. EBITDA Ratio			
Mean	-0.000 (0.869)	0.003 (0.280)	-1.09 (0.278)
Median	-0.000 (0.000)	-0.010 (0.018)	-1.14 (0.255)
Adj. ROA			
Mean	-0.000 (0.942)	0.001 (0.829)	-0.22 (0.823)
Median	-0.010 (0.000)	-0.010 (0.000)	0.22 (0.825)
Adj. Log Sales Growth			
Mean	-0.000 (0.956)	0.003 (0.756)	-0.32 (0.753)
Median	0.010 (0.000)	0.040 (0.000)	-3.06 (0.002)

Panel E: Operating Performance two years post

Financial Metric	**Others**	**FIILimit**	**Difference**
Adj. EBITDA Ratio			
Mean	0.000 (0.992)	0.000 (0.944)	0.07 (0.944)
Median	-0.000 (0.000)	-0.010 (0.004)	0.03 (0.973)
Adj. ROA			
Mean	0.000 (0.929)	-0.002 (0.758)	0.32 (0.751)
Median	-0.010 (0.000)	-0.010 (0.000)	1.87 (0.0612)
Adj. Log Sales Growth			
Mean	-0.000 (0.964)	0.003 (0.800)	-0.26 (0.800)
Median	0.010 (0.000)	0.030 (0.000)	-2.08 (0.036)

Table E.9: FII limit increases and acquisitions

This table presents panel regression estimates of the association between mergers and acquisitions activity (M&A) and increases in aggregate FII limit. The dependent variable is a binary variable that takes the value 1 for a firm-year if the firm makes an acquisition in the given fiscal year. Column 1 reports estimates for all M&As, column 2 for M&As where the target and acquirer belong to the same parent group and column 3 for outside group acquisitions. The key independent variable is a dummy variable, *FIILimit*. It takes the value 1 for the year in which a firm raised its FII limit one year prior to making an acquisition i.e. the acquisition was announced at least 30 days before the increase in FII limit and at most 365 days after. Firm-specific control variables which may affect the decision to undertake acquisitions are also included and are lagged by a fiscal year. Year and firm fixed effects are included in all regression specifications. Standard errors are clustered by firm and the t statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	All	Within Group	Outside Group
FIILimit	0.134***	0.063**	0.098***
	(4.21)	(2.53)	(3.38)
Firm Age	-0.000	0.000	-0.000**
	(-0.51)	(0.90)	(-2.14)
Log Assets	0.028***	0.020***	0.014***
	(15.91)	(14.87)	(10.03)
Leverage	-0.025**	-0.028***	-0.000
	(-1.97)	(-3.26)	(-0.01)
Capex Ratio	0.020	-0.038**	0.033
	(0.72)	(-1.99)	(1.51)
Cash Ratio	-0.009	-0.042**	0.027
	(-0.34)	(-2.57)	(1.21)
ROA	0.038*	0.024	0.032*
	(1.94)	(1.64)	(1.92)
Log MB	0.017***	0.009***	0.011***
	(7.21)	(5.74)	(5.83)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
N	19,476	19,476	19,476

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.10: Announcement returns for acquisitions

This table presents univariate and multivariate analysis of M&A announcement day returns for firms that increase their FII limit and subsequently engage in acquisitions. Columns 1 and 2 report results for all M&As, columns 3 and 4 for M&As where target and acquirer both belonged to the same parent company and columns 5 and 6 for outside group acquisitions. The key independent variable is a dummy variable, *FIILimit*. It takes the value 1 for the year in which a firm raised its FII limit one year prior to making an acquisition i.e. the acquisition was announced at least 30 days before the increase in FII limit and at most 365 days after. Firm level control variables are included in multivariate analysis and are lagged by a fiscal year. Standard errors are robust and the t statistics are reported in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	Within Group	Within Group	Outside Group	Outside Group
FIILimit	-0.034***	-0.040***	-0.024***	-0.027***	-0.033*	-0.035*
	(-2.78)	(-2.99)	(-2.61)	(-2.71)	(-1.91)	(-1.89)
Log Assets		-0.000		-0.000		-0.000**
		(-0.81)		(-0.35)		(-2.34)
Log MB		-0.001		-0.000		-0.002
		(-1.48)		(-0.29)		(-1.21)
Leverage		-0.038**		-0.022		-0.063**
		(-2.10)		(-1.50)		(-2.29)
Cash Ratio		-0.027		-0.065**		-0.022
		(-1.36)		(-2.20)		(-0.90)
Capex Ratio		0.105***		0.005		0.149***
		(2.67)		(0.14)		(2.70)
FII Holding		0.001**		0.000		0.001**
		(2.09)		(0.33)		(2.40)
R&D Ratio		-0.250		0.187		-0.375*
		(-1.56)		(1.06)		(-1.88)
Promoter Holding		0.000**		-0.000		0.001***
		(2.13)		(-0.55)		(3.20)
Constant	0.010***	-0.005	0.008***	0.026	0.012***	-0.027**
	(4.52)	(-0.50)	(3.19)	(1.50)	(3.51)	(-2.23)
Observations	1,233	1,096	620	554	727	643
R^2	0.007	0.031	0.006	0.022	0.006	0.059

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table E.11: FII limit increase and board structure

This table reports multivariate panel analysis of changes in board structure following increases in the FII limit. The dependent variable in the column 1 is the change in board size (Δ *Total Dir.*), in column 2 is the change in the fraction of independent directors (Δ *Ind. Dir.*) and in the last column is change in CEO-Chairman duality (Δ *Dual*). The key independent variable is a dummy variable, *FIILimit*. It takes the value 1 for a firm-year in which an FII limit increase occurred. Firm specific variables which may be related to board structure and composition are included as controls and are lagged by a fiscal year. Year and Industry fixed effects are included in all the regressions. Standard errors are clustered by firm and the t statistics are in parentheses. ***,**, or * indicates that the coefficient estimate is significant at the 1%, 5%, or 10% level, respectively.

	(1)	(2)	(3)
	Δ Total Dir.	Δ Ind. Dir.	Δ Dual
FIILimit	-0.003	0.020	0.020
	(-0.24)	(1.58)	(1.21)
Firm Age	0.000	0.000	0.000
	(0.07)	(0.22)	(0.35)
Log Assets	-0.002	-0.001	-0.001
	(-1.50)	(-1.54)	(-0.88)
Leverage	-0.012	-0.003	0.019**
	(-1.56)	(-0.60)	(2.33)
Capex Ratio	0.046**	-0.024*	0.004
	(2.52)	(-1.67)	(0.19)
Log MB	0.001	-0.002	-0.001
	(0.31)	(-1.34)	(-0.53)
FII ownership	0.000	0.000	-0.000
	(0.73)	(1.05)	(-0.45)
Insider Ownership	0.000	0.000***	0.000
	(1.38)	(3.00)	(0.03)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
N	16,041	16,041	16,041

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

APPENDIX F

FIGURES FOR SECTION 3

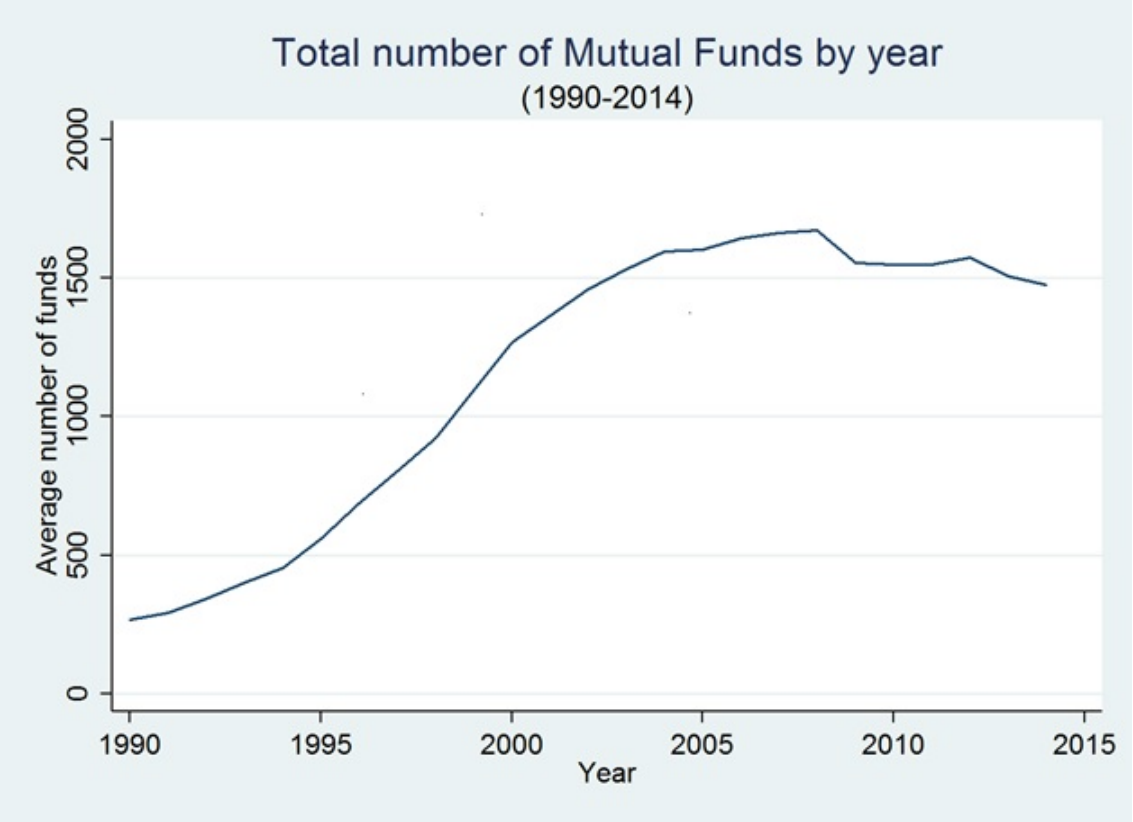

Figure F.1: Mutual fund participation from 1990-2014

The figure shows the number of actively managed, domestic mutual funds in the sample from 1990-2014.

APPENDIX G

TABLES FOR SECTION 4

Table G.1: Summary statistics

This table presents sample details for the cross-section of mutual funds and hedge funds used in the study. The mutual fund sample comprises actively managed domestic, equity-oriented funds from the CRSP Mutual Fund Database. The sample period is 1988-2014. The sample of long only, equity hedge funds is obtained from TASS and runs from 1994-2013. Panel A reports summary statistics for mutual funds while Panel B presents the same for the sample of hedge funds. The methodology for screening funds for inclusion in the analysis is described in the data section. The fund's R^2 and α values in month t are estimated from a time series regression of the fund's excess return, from the previous 24 months, on the Carhart factor returns. Key variables for the mutual fund sample are defined as follows: *TNA* is the total net assets managed by the mutual fund in millions of dollars. *Fund Age* is the mutual fund's age in years, calculated by subtracting the fund's first date of appearance in the CRSP Mutual fund database from the current date. *Tenure* is the fund manager's tenure in a particular fund. *Expenses* is expense ratio of the fund as a percentage of net assets while *Turnover* is the fund's portfolio turnover ratio. Similarly, for the hedge fund sample: /textitAUM is the total assets managed by the hedge fund. *Fund Age* is the age of the hedge fund while *Lockup* is the minimum amount of time before any withdrawals are allowed. *Management Fee* is fees charged by the hedge fund as percentage of fund's assets. *High Water Mark* is a dummy variable which tales the value 1 for hedge funds in the sample which have a high water mark provision. *Leveraged* is a binary variable which takes the value 1 for levered hedge funds. Panel C and Panel D report cross-correlations for the mutual fund and hedge fund characteristics, respectively.

Panel A: Summary statistics for the mutual fund sample

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
TNA	1127.434	4357.332	15	202305.8	345834
Fund Age	11.726	9.852	0	85	345834
Tenure	5.406	4.757	0	47	329213
Expenses	1.243	0.434	-23.2	13.868	338128
Turnover	85.401	87.356	-4843	3882	329830
R^2	0.916	0.071	0.187	0.998	345834
Alpha (% annualized)	-0.684	5.723	-55.89	89.905	345834

Panel B: Summary statistics for the hedge fund sample					
Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Total Net assets (TNA in millions)	544.676	9418.094	0	463000	137918
Fund Age	9.960	4.92	0.667	29.667	217185
Lockup	3.64	6.644	0	60	217185
Management Fee	1.353	0.539	0	22	216724
High Water Mark	0.703	0.457	0	1	216724
Leveraged	0.575	0.494	0	1	217185
R^2	0.449	0.226	0.008	0.972	217185
Alpha (% annualized)	3.358	12.091	-99.542	117.099	217185

Panel C: Cross-sectional correlation for mutual funds								
Variables	TNA	Age	Expense	Turnover	Tenure	R^2	*Alpha*	Ret
TNA	1.000							
Age	0.246	1.000						
Expenses	-0.136	-0.133	1.000					
Turnover	-0.069	-0.059	0.215	1.000				
Tenure	0.217	0.278	-0.094	-0.160	1.000			
R^2	0.044	0.088	-0.201	-0.139	0.042	1.000		
Alpha	0.037	-0.037	-0.045	-0.054	0.004	-0.139	1.000	
Ret	-0.006	0.011	-0.005	-0.008	0.012	0.035	-0.037	1.000

Panel D: Cross-sectional correlation for hedge funds									
Variables	AUM	Age	Lockup	Fee	HWM	Leveraged	R^2	*Alpha*	Ret
AUM	1.000								
Age	0.027	1.000							
Lockup	-0.007	0.089	1.000						
Fee	0.021	-0.124	-0.092	1.000					
HWM	-0.029	-0.052	0.202	0.079	1.000				
Leveraged	0.015	0.057	-0.007	0.031	0.096	1.000			
R^2	-0.028	0.171	0.100	-0.133	-0.017	0.010	1.000		
Alpha	0.007	0.029	0.063	-0.019	0.026	0.042	-0.129	1.000	
Ret	-0.005	0.044	0.020	-0.014	0.005	0.013	0.020	0.052	1.000

Table G.2: Times series *alpha* for mutual funds sorted on past R^2 and *alpha* for the full sample

This table presents annualized time series *alpha* values for the cross-section of mutual funds sorted on past R^2 and *alpha*. Fund R^2 and *alpha* in month (t-1) are estimated by regressing the fund's monthly excess returns on the FFC (Fama French 3 factors, 1993 and the Carhart Momentum factor, 1997) over a 24 month period. Individual funds are sorted first into R^2 quintiles and within each R^2 quintile, into quintiles based on their estimated *alpha*. Thus, we have 25 (5 by 5) portfolios of mutual funds. Then for the following month (t), we calculate portfolio equal-weighted monthly returns by averaging the returns of the fund in each of the 25 portfolios. This process is repeated by moving the estimation window forward by one month. Finally, for each of the 25 portfolios, the portfolio's mean excess returns are regressed on the FFC factor returns to estimate the portfolio *alpha*. The sample period for the test months is Jan1990-Dec2014.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-1.89	-1.63	-2.17	-2.29	-2.21	-2.09	0.32
	(-1.89)	(-1.90)	(-2.93)	(-3.51)	(-4.49)	(-2.97)	(0.36)
2	-0.63	-1.39	-0.97	-1.25	-1.64	-1.16	1.01
	(-0.71)	(-1.84)	(-1.61)	(-2.51)	(-4.11)	(-2.35)	(1.21)
3	-0.94	-0.94	-0.22	-1.20	-1.33	-0.96	0.39
$Alpha_{t-1}$	(-1.18)	(-1.39)	(-0.38)	(-2.63)	(-3.79)	(-2.20)	(0.50)
4	1.07	-0.30	-0.83	-1.31	-1.29	-0.75	2.36
	(1.38)	(-0.49)	(-1.35)	(-2.49)	(-3.26)	(-1.63)	(2.93)
High	**2.51**	0.25	-0.75	-1.40	-0.90	0.22	**3.41**
	(2.56)	(0.32)	(-1.00)	(-1.61)	(-1.23)	(0.32)	**(2.88)**
All	0.02	-0.80	-0.99	-1.49	-1.48	-0.95	**1.49**
	(0.02)	(-1.34)	(-1.89)	(-3.14)	(-3.79)	(-2.03)	**(2.01)**
H-L	4.41	1.87	1.42	0.90	1.32	2.31	
	(3.92)	(1.90)	(1.54)	(0.97)	(1.93)	(2.73)	

Table G.3: Times series *alpha* for mutual funds sorted on past R^2 and *alpha* for the pre reg FD period

This table presents annualized time series *alpha* values for mutual funds sorted on past R^2 and *alpha* for the pre regulation FD period (1990-2001). The implementation of reg FD restricted access of non public, material corporate information to certain market participants, including institutional investors and analysts. Accordingly, we split the full sample into pre and post reg FD subsamples.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-0.70	-1.20	-2.41	-2.58	-2.51	-1.93	1.81
	(-0.43)	(-0.82)	(-1.73)	(-2.02)	(-2.73)	(-1.56)	(1.28)
2	0.18	-1.74	-0.94	-0.95	-1.18	-1.09	1.36
	(0.13)	(-1.33)	(-0.91)	(-0.97)	(-1.67)	(-1.27)	(1.09)
3	-0.91	-1.13	-0.32	-0.73	-1.09	-0.61	0.18
$Alpha_{t-1}$	(-0.81)	(-1.06)	(-0.32)	(-0.85)	(-1.89)	(-0.81)	(0.17)
4	1.93	0.25	-1.28	-1.13	-0.93	-0.62	2.86
	(1.56)	(0.29)	(-1.17)	(-1.17)	(-1.34)	(-0.82)	(2.33)
High	**4.83**	0.39	-0.37	-1.54	0.33	1.08	**4.49**
	(2.99)	(0.28)	(-0.26)	(-0.87)	(0.22)	(0.91)	**(2.11)**
All	1.04	-0.69	-1.07	-1.39	-1.08	-0.63	**2.12**
	(0.98)	(-0.72)	(-1.15)	(-1.47)	(-1.49)	(-0.79)	**(2.01)**
H-L	5.53	1.59	2.03	1.05	2.84	3.01	
	(2.62)	(0.91)	(1.13)	(0.57)	(2.17)	(1.93)	

Table G.4: Times series *alpha* for mutual funds sorted on past R^2 and *alpha* for the post reg FD period

This table presents annualized time series *alpha* values for mutual funds sorted on past R^2 and *alpha* in the post regulation FD period (2002-2014). The implementation of reg FD restricted access of non public, material corporate information to certain market participants, including institutional investors and analysts. Accordingly, we split the full sample into pre and post reg FD subsamples.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-3.17	-2.63	-2.13	-2.23	-1.93	-2.50	-1.24
	(-2.98)	(-3.23)	(-3.23)	(-3.79)	(-3.80)	(-3.65)	(-1.17)
2	-1.76	-1.48	-1.20	-1.71	-1.89	-1.42	0.13
	(-1.87)	(-2.33)	(-2.22)	(-3.94)	(-5.19)	(-3.26)	(0.14)
3	-1.49	-1.32	-0.61	-1.42	-1.40	-1.40	-0.09
$Alpha_{t-1}$	(-1.73)	(-2.08)	(-1.25)	(-3.30)	(-3.81)	(-3.48)	(-0.10)
4	0.03	-1.01	-0.32	-1.33	-1.25	-0.92	1.28
	(0.03)	(-1.44)	(-0.53)	(-2.55)	(-2.90)	(-1.88)	(1.37)
High	**0.03**	-0.30	-1.03	-1.15	-1.76	-0.65	**1.79**
	(0.03)	(-0.37)	(-1.32)	(-1.64)	(-2.95)	(-0.87)	**(1.52)**
All	-1.27	-1.35	-1.06	-1.57	-1.65	-1.38	**0.38**
	(-1.51)	(-2.17)	(-2.03)	(-3.53)	(-4.28)	(-2.90)	**(0.42)**
H-L	3.20	2.32	1.10	1.08	0.17	1.85	
	(3.03)	(2.75)	(1.36)	(1.37)	(0.28)	(2.31)	

Table G.5: Mutual fund *alpha* sorted on past R^2 and *alpha* prior to implementation of reg FD: 1999-2001

This table presents annualized time series *alpha* values for mutual funds sorted on past R^2 and *alpha* in the two years prior to the implementation of regulation FD. The sample period is 1999-2001.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	6.73	3.25	-1.49	-6.52	-4.22	0.28	10.95
	(2.20)	(0.87)	(-0.53)	(-2.27)	(-2.09)	(0.10)	(3.52)
2	7.23	3.57	-1.49	0.30	-1.03	0.99	8.26
	(2.26)	(1.29)	(-0.69)	(0.13)	(-0.60)	(0.50)	(2.41)
3	4.97	5.11	0.80	-1.74	-1.31	1.05	6.28
$Alpha_{t-1}$	(2.05)	(2.28)	(0.29)	(-0.75)	(-0.87)	(0.63)	(2.58)
4	11.32	2.26	0.13	-0.45	-0.57	0.93	11.89
	(3.12)	(1.23)	(0.05)	(-0.16)	(-0.33)	(0.53)	(3.19)
High	**19.63**	5.07	-2.37	-5.02	-1.92	5.17	**21.56**
	(4.73)	(1.36)	(-0.57)	(-0.99)	(-0.52)	(1.58)	**(3.81)**
All	9.96	3.84	-0.89	-2.68	-1.81	1.69	**11.77**
	(3.78)	(1.76)	(-0.39)	(-1.02)	(-0.99)	(1.90)	**(3.94)**
H-L	12.90	1.82	-0.86	1.51	2.29	4.89	
	(3.13)	(0.38)	(-0.21)	(0.37)	0.72)	(1.38)	

Table G.6: Mutual fund *alpha* sorted on past R^2 and *alpha* immediately after implementation of reg FD: 2002-2004

This table presents annualized time series *alpha* values for mutual funds sorted on past R^2 and *alpha* in the two years after the implementation of regulation FD. The sample period is 2002-2004.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-6.01	-5.72	-5.48	-3.60	-2.83	-5.13	-3.18
	(-2.42)	(-2.95)	(-2.87)	(-2.00)	(-3.46)	(-2.65)	(-1.58)
2	-3.38	-3.58	-3.53	-3.86	-2.79	-3.09	-0.59
	(-1.55)	(-2.31)	(-3.05)	(-3.25)	(-4.53)	(-3.20)	(-0.25)
3	-2.80	-3.13	-2.88	-4.15	-2.43	-2.84	-0.38
$Alpha_{t-1}$	(-2.27)	(-2.93)	(-3.09)	(-4.15)	(-5.09)	(-4.98)	(-0.27)
4	-1.20	-2.01	-3.30	-3.90	-1.65	-2.95	0.45
	(-1.01)	(-2.08)	(-2.69)	(-2.69)	(-2.80)	(-4.24)	(0.29)
High	**-0.35**	-3.71	-4.20	-4.48	-3.59	-2.90	**3.25**
	(-0.31)	(-2.84)	(-2.53)	(-3.55)	(-3.07)	(-2.97)	**(1.71)**
All	-2.74	-3.63	-3.88	-3.99	-2.66	-3.38	**-0.08**
	(-2.10)	(-3.16)	(-3.12)	(-3.52)	(-4.37)	(-3.81)	**(-0.06)**
H-L	5.66	2.01	1.28	-0.88	-0.77	2.23	
	(2.28)	(1.20)	(0.92)	(-0.50)	(-0.67)	(1.27)	

Table G.7: Fama-Macbeth regression estimation: Mutual funds

This table presents coefficient estimates from a Fama-Macbeth regression of mutual fund monthly *alpha* on the fund's past R^2 and lagged fund characteristics that may be related to the fund's ability to outperform its benchmark. The month t *alpha* is calculated as the fund's actual returns minus it's month t expected return based on the estimated loadings from the times series regression. The expected returns for month t are computed by multiplying the estimated fund factor loadings at time (t-1) from the time series regression with the respective factor monthly returns and then adding them up.

	(1)	(2)	(3)
	1990-2014	1990-2001	2002-2014
R square (t-1)	-6.388**	-9.963***	-2.547
	(-2.06)	(-3.00)	(-0.50)
Expenses	-0.722***	-0.789**	-0.637**
	(-3.23)	(-2.25)	(-2.23)
LogTNA	0.253	0.285	0.213
	(0.79)	(0.44)	(1.12)
LogTNA2	-0.017	-0.021	-0.013
	(-0.58)	(-0.35)	(-0.79)
LogAge	0.084	-0.065	0.219
	(0.70)	(-0.32)	(1.61)
LogTenure	-0.166	-0.294	-0.041
	(-1.54)	(-1.43)	(-0.48)
Alpha (t-1)	0.292***	0.316***	0.268***
	(6.42)	(4.54)	(4.46)
Constant	5.168*	9.078***	1.065
	(1.69)	(2.84)	(0.21)
Nobs	293722	80611	211915

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

Table G.8: Portfolio characteristics of mutual funds sorted by their R^2 values

This table presents the time series average of portfolio stock characteristics for mutual funds sorted on their past estimated R^2 values. The sample period is Jan 1990-Sep 2010. For each quarter, the fund's monthly excess returns are regressed on the FF-Carhart factor returns over the past 24 months to estimate its R^2. Mutual funds are then sorted into quintiles according to their estimated R^2 values. Within each quintile, the portfolio characteristics of individual mutual fund is averaged and then the cross-sectional average is averaged over the sample time period. The column labeled *Low* shows mean stock characteristics for mutual funds in the lowest R^2 quintile while the column labeled High presents the same for the funds in the highest R^2 quintile. The last column presents differences in the stock characteristics between the Low and the High quintiles along with the corresponding t-statistics. Information on stocks in mutual funds' portfolio is obtained from their quarterly filings which is available in the 13f Thomson database. Stock return related variables are constructed from the CRSP daily and monthly files. Fundamental stock characteristics are calculated using Compustat. Analysts coverage related information is obtained from IBES.

Variable	Low	(2)	(3)	(4)	High	High-Low
Number of Stocks	61.86	80.81	94.10	109.17	150.21	88.34
						(34.73)
Market Equity	17.59	20.28	23.80	30.59	41.83	24.24
						(16.43)
Book-Market	0.53	0.48	0.47	0.46	0.45	0.07
						(8.49)
Stock Volatility(%)	40.49	39.95	38.92	38.00	35.90	4.60
						(5.91)
Past 12 months return (%)	33.87	33.27	30.58	29.50	26.38	7.49
						(3.78)
Monthly Volume	540.09	583.29	644.86	787.18	1016.08	475.99
						(8.75)
Average stake in stock (%)	2.16	0.99	0.97	0.58	0.42	1.29
						(4.57)
# Inst Investors	292.52	319.09	348.10	396.44	474.80	182.28
						(17.58)
Institutional holdings (%)	63.72	64.88	65.24	64.76	63.76	0.04
						(0.08)
Number of Analysts	13.59	14.54	15.48	16.68	18.48	4.90
						(23.67)
R square (%)	79.71	88.71	91.83	94.11	96.53	16.82
						(17.50)
Annualized Alpha (%)	0.10	-0.50	-0.38	-0.59	-0.84	0.94
						(2.32)
N	420	420	420	420	420	

Table G.9: Portfolio characteristics of mutual funds sorted by past R^2 and *alpha* values

This table presents the time series average of portfolio stock characteristics for mutual funds sorted on R^2 and *alpha* from Jan 1990-Sep 2010. Fund R^2 and *alpha* at time (t-1) are estimated by regressing monthly excess returns on the on the FFC (Fama French 3 factors, 1993 and the Carhart Momentum factor, 1997) over a 24 month period. Column (1) presents mean stock characteristics for mutual funds in the lowest R^2 quintile and highest *alpha* quintile. Column (2) presents the same for the remaining group of funds. Finally, column (3) shows differences for the two groups along with the corresponding t-stats. Information on stocks in mutual fund's portfolio are obtained from their quarterly filings which is available in the 13F Thomson database. Stock return related variables are constructed from the CRSP daily and monthly files. Fundamental stock characteristics are calculated using Compustat. Analysts coverage related information is computed using IBES.

Variable	Low R2 High Alpha	Rest	Diff
Number of Stocks	57.88	100.29	42.41
			(26.81)
Market Equity	13.46	27.34	13.83
			(12.80)
Book-Market ratio	0.52	0.48	0.04
			(4.39)
Stock Volatility(%)	43.22	38.52	4.71
			(9.99)
Past 12 months return (%)	44.95	30.11	14.85
			(4.76)
Monthly Volume	453.51	717.31	263.79
			(8.22)
Average stake in stock	2.53	0.96	1.57
			(2.08)
# Inst Investors	251.66	369.83	118.17
			(18.76)
Institutional holdings (%)	63.31	64.35	1.04
			(4.67)
Number of Analysts	12.40	15.90	3.50
			(14.99)
R square (%)	78.59	90.60	12.59
			(27.69)
Annualized Alpha (%)	10.20	-0.84	11.04
			(26.97)
N	84	2016	

Table G.10: Times series *alpha* for hedge funds sorted on past R^2 and *alpha* for the full sample

This table presents time series *alpha* values for the cross-section of long only hedge funds sorted on past R^2 and *alpha*. Fund R^2 and *alpha* in month (t-1) are estimated by regressing the fund's monthly excess returns on the FFC (Fama French 3 factors, 1993 and the Carhart Momentum factor, 1997) over a 24 month period. Individual funds are sorted first into R^2 quintiles and within each R^2 quintile, into quintiles based on their estimated *alpha*. Thus, we have 25 (5 by 5) portfolios of hedge funds. Then for the following month (t), we calculate portfolio equal-weighted monthly returns by averaging the returns of the fund in each of the 25 portfolios. This process is repeated by moving the estimation window forward by one month. Finally, for each of the 25 portfolios, the portfolio's mean excess returns are regressed on the FFC factor returns to estimate the portfolio *alpha*. The sample period for the test months is Jan1996-Dec2013.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-0.70	-0.59	0.82	-0.60	-1.83	-0.73	1.13
	(-0.45)	(-0.37)	(0.45)	(-0.34)	(-1.13)	(-0.55)	(0.56)
2	2.07	1.71	3.58	2.40	-0.45	2.34	2.52
	(2.17)	(1.42)	(2.70)	(1.73)	(-0.37)	(2.94)	(1.95)
3	3.55	4.01	4.20	3.08	1.07	2.94	2.48
$Alpha_{t-1}$	(3.61)	(3.90)	(3.76)	(2.42)	(0.89)	(3.40)	(1.79)
4	5.16	5.60	5.78	3.89	2.63	4.35	2.53
	(5.58)	(5.11)	(4.99)	(2.94)	(2.58)	(5.31)	(2.07)
High	**8.18**	9.36	9.38	8.17	3.90	8.00	**4.28**
	(5.49)	(5.65)	(5.62)	(5.28)	(2.58)	(6.45)	**(2.43)**
All	3.65	4.05	4.76	3.43	1.09	3.37	**2.56**
	(4.40)	(4.11)	(4.32)	(3.08)	(1.09)	(3.78)	**(2.66)**
H-L	8.88	9.95	8.56	8.77	5.73	8.73	
	(4.86)	(5.15)	(4.17)	(4.23)	(2.82)	(6.09)	

Table G.11: Times series *alpha* for hedge funds sorted on past R^2 and *alpha* in the pre reg FD period

This table presents time series *alpha* values for hedge funds sorted on past R^2 and *alpha* in the pre regulation FD period (1996-2001). The implementation of reg FD restricted the ability of portfolio managers to trade on private information.

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	2.64	-0.37	5.12	-2.58	-2.46	0.02	6.22
	(0.66)	(-0.11)	(1.38)	(-2.02)	(-0.74)	(0.01)	(1.25)
2	3.77	6.12	8.04	5.26	-0.94	4.82	4.71
	(1.82)	(2.40)	(2.60)	(1.82)	(-0.38)	(2.45)	(1.52)
3	6.46	5.83	6.80	4.14	-3.31	4.46	9.77
$Alpha_{t-1}$	(2.50)	(2.56)	(2.84))	(1.62)	(-1.69)	(2.95)	(3.06)
4	6.99	9.66	10.65	6.53	2.09	6.35	4.90
	(3.04)	(3.59)	(3.90)	(2.39)	(1.00)	(3.83)	(1.69)
High	**11.52**	17.02	13.68	12.33	1.93	11.75	**9.60**
	(3.31)	(5.01)	(4.96)	(4.26)	(0.71)	(5.19)	**(2.40)**
All	6.30	7.68	8.83	5.27	-0.71	5.44	**7.01**
	(3.43)	(4.48)	(4.38)	(3.03)	(-0.50)	(3.86)	**(3.58)**
H-L	8.88	17.38	8.56	14.79	5.50	11.72	
	(1.87)	(3.59)	(1.97)	(3.25)	(1.24)	(3.78)	

Table G.12: Times series *alpha* for hedge funds sorted on past R^2 and *alpha* in the post reg FD

This table presents time series *alpha* values for hedge funds sorted on past R^2 and *alpha* in the post regulation FD period (2002-2013).

	R^2_{t-1}						
	Low	2	3	4	High	All	L-H
Low	-2.27	-1.38	-1.66	-0.76	-2.19	-1.77	-0.07
	(-1.76)	(-0.86)	(-0.85)	(-0.40)	(-1.34)	(-1.18)	(-0.05)
2	1.04	-0.61	1.02	0.47	-0.70	0.63	1.74
	(1.17)	(-0.53)	(0.81)	(0.33)	(-0.53)	(0.58)	(1.47)
3	2.07	2.81	2.72	1.92	2.49	1.89	-0.41
$Alpha_{t-1}$	(2.51)	(2.82)	(2.37)	(1.54)	(1.93)	(1.98)	(-0.37)
4	4.19	3.65	3.52	2.25	2.88	3.31	1.32
	(4.93)	(3.62)	(3.12)	(1.67)	(2.73)	(3.69)	(1.23)
High	**6.22**	5.56	7.40	6.36	4.93	6.28	**1.29**
	(4.25)	(3.24)	(3.54)	(3.86)	(3.21)	(4.32)	**(0.88)**
All	2.25	2.05	2.63	2.06	1.50	2.07	**0.75**
	(2.72)	(1.89)	(2.07)	(1.58)	(1.25)	(1.95)	**(0.82)**
H-L	3.20	2.32	1.10	1.08	0.17	8.06	
	(3.03)	(2.75)	(1.36)	(1.37)	(0.28)	(5.98)	

Table G.13: Fama-Macbeth regression estimation: Hedge funds

This table presents coefficient estimates from a Fama-Macbeth regression of hedge fund monthly *alpha* on the fund's past R^2 and *alpha* along with lagged fund characteristics that may be related to the fund's ability to outperform. The month t *alpha* is calculated as the fund's actual returns minus it's month t expected return based on the estimated loadings from the times series regression.

	(1)	(2)	(3)
	1996-2013	1996-2001	2002-2013
R square (t-1)	-3.581**	-5.047	-2.640
	(-2.00)	(-1.23)	(-1.50)
LogAUM	1.281	5.073	-0.538
	(0.70)	(1.00)	(-0.50)
LogAUM2	-0.058	-0.190	0.007
	(-1.11)	(-1.31)	(0.21)
LogAge	2.772***	3.959***	2.135***
	(4.89)	(2.89)	(4.19)
ManagementFee	0.507	0.434	0.551
	(0.83)	(0.28)	(1.02)
HighWaterMark	1.879***	3.369***	1.153***
	(4.03)	(3.00)	(2.77)
Leveraged	1.081**	1.149	1.033**
	(2.12)	(0.92)	(2.25)
AvgLeverage	-0.007*	-0.012	-0.004
	(-1.79)	(-1.22)	(-1.31)
Alpha (t-1)	0.300***	0.385***	0.257***
	(5.82)	(3.63)	(4.52)
Constant	-17.206	-47.892	-2.554
	(-1.08)	(-1.09)	(-0.26)
Nobs	115200	20847	93825

t statistics in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$