Why do US firms use more long-term debt post activist interventions?

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November 2019

Abstract

We find that US firms increase the use of long-term debt post hedge fund activism. The target firms' median proportion of debt maturing in more than 3 years increases by 19% in three years around the activists' interventions. Firms with a lower level of leverage, research and development expenditure and cash holdings are the ones witnessing an increase in debt maturity profile. Our results indicate that this debt maturity change may not be influenced by bankers' reluctance to provide capital (supply-side constraints) but due to targets' increasing reliance on long-term public debt (demand-side factors). Hedge fund activism increases the propensity to raise long-term public debt in target firms. This indicates that new long-term debtholders believe in 'shared benefits' hypothesis by extending longer-term debt to target firms. The overall increase in debt maturity is more pronounced in target firms associated with governance reforms. Collectively, our findings suggest possible governance substitution from short-term debtholders to activist hedge funds.

Keywords: Debt maturity structure, Hedge fund activism, 13D filings

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1. Introduction

Hedge funds are becoming an influential participant in reducing agency conflicts through different activist initiatives (Kahan & Rock, 2006; Brav *et al.,* 2008; Bebchuk *et al.,* 2015). We analyse target firms' debt maturity structure after interventions from activist hedge funds. The prior literature largely documents a negative impact of hedge fund activism on targets' *existing* bondholders and cost of *new bank loans* - especially when the stated objective is to introduce changes in capital structure of target firms (Li & Xu, 2009; Klein & Zur, 2011 and Sunder *et al.,* 2014). It is also argued that hedge fund activism increases leverage in target firms in order to return capital to shareholders (Bebchuk *et al.,* 2015). Consequently, it has become important to comprehend how the overall debt maturity choices (long-term debt v/s short-term debt) of target firms change after activism by hedge funds. In particular, it needs to be established from where these changes in debt maturity profile of target firms come from? Is it private or public debt? The previous studies document an effective role of short-term debt in monitoring the firm affairs (Guedes & Opler, 1996; Datta *et al.,* 2005; Boubaker *et al.,* 2018). However, it has not been clearly proven as to whether firms substitute their debt maturity governance with the level of monitoring provided by various blockholders especially the hedge funds or not.

The overall trend says that debt maturity profile (debt maturing in more than 3 years) has decreased significantly from 53 percent in 1976 to 6 percent in 2008 for the US smallest firms (Custodio *et al.,* 2013). This decrease has been caused by firms with greater information asymmetry and new public equity issuances in the 1980s and 1990s. The question arises: what happens to debt maturity profile when there is a change in governance environment of a firm? Studies like, Jiraporn and Kitsabunnarat (2007), Harford *et al.* (2008) and Ben-Nasr *et al.* (2015) have recently highlighted the role of corporate governance on debt maturity choices in the wake of attached monitoring benefits. On a similar note, as a mechanism of corporate governance, it is equally insightful to account for the impact of hedge fund activism on targets' debt maturity structure. We show that hedge fund interventions can cause a significant shift in the overall debt maturity profile of target firms.

Specifically, we focus on Schedule 13D[2] filings by hedge funds, and the maturity structure of targets' debt after the interventions. Debt maturity is an important component of a firm's financing decision amidst existence of information asymmetry, credit and liquidity shocks (Custodio *et al.*, 2013). Firms with a greater component of short-term debt are more likely to be susceptible to the latter shocks. Debt maturity structure depends not only on various firm level demand-side factors, but on supply-side factors as well i.e. new debt issuances capturing incremental changes in the debt maturity profile (Guedes & Opler, 1996). As debt maturity is a balance sheet variable that captures historical average changes, so, we also supplement our findings with the incremental effects by specifically focusing on new private and public debt issuances after hedge fund activism. We also relate our debt maturity findings with various hedge fund stated objectives, and target firm characteristics.

Hedge funds have become a critical player in targets' corporate governance environment (Kahan & Rock, 2006), whereas, institutional investors like pension funds, mutual funds, banks, etc., generally prefer 'voting with their feet' as a mark of shareholder activism (Admati & Pfleiderer, 2009). Famous corporate raider of his time in 1980s, Carl Icahn (now running a hedge fund) sent an open letter to Apple's CEO 'Tim Cook' asking for increasing the shareholder value by doing stock repurchases[3] - financed with a mixture of both debt and cash reserves. Carl Icahn even confirmed to retain his stake for a longer period of time thereby mitigating short-termism concerns of other stakeholders. The long-term debt increases dramatically from zero to over US 16000 million dollars during the first year of activism in 2013. In 2002, 'Highfields Capital Management LP' recommended Reader's Digest Association Inc. to issue corporate bonds equivalent to US 250 million dollars in order to unlock the shareholder value. Activist hedge fund investor 'Pershing Square Capital Management LP' launched an activist campaign against 'Procter and Gamble' in 2012, by urging the board to remove the incumbent CEO in the wake of benign stock prices and profit margins[4]. These anecdotal evidences highlight the peculiar involvement of an activist hedge fund investor in a firm's governance as well as operating environment.

Few studies have also looked upon the impact of hedge fund activism on debtholders. There are two possible channels through which debtholders get impacted by hedge fund interventions:

[2] US Securities and Exchange Commission (SEC) requires investors to file Schedule 13D within 10 days after crossing 5% ownership threshold along with their activist agendas.

[3] Available at: https://www.marketwatch.com/story/carl-icahns-2-billion-apple-stake-was-a-prime-example-of-investment-inequality-2016-06-07

[4] Campaign history from SharkRepellent Database.

additional monitoring by hedge funds v/s expropriation of funds by hedge funds i.e. 'wealth transfer' concerns from debtholders to equityholders (Li & Xu, 2009; Klein & Zur, 2011; Sunder *et al.,* 2014; Dahiya *et al.,* 2018). Activist interventions reflect greater monitoring by a specified group of large institutional shareholders. This monitoring may bring benefits to all other stakeholders by mitigating managerial opportunism and incentives. However, these benefits can also stem at the expense of existing debtholders (expropriation effect) by increasing credit and default risk of target firms (Jensen & Meckling, 1976; Wang *et al.,* 2017; etc.). Activism commanding greater shareholder rights can further exacerbate agency-based conflicts between shareholders and debtholders (Warga & Welch, 1993; Dhillon & Johnson, 1994; Maxwell & Rao, 2003; Billett *et al.,* 2004; Klock *et al.,* 2005; Cremers *et al.,* 2007; Chava *et al.,* 2009; and so on). The former has an incentive to indulge in risk-shifting or asset-substitution behaviour while reducing the collateralized value of assets in place for fixed debt obligations (Barnea *et al.,* 1980).

While hedge fund activism can address agency conflicts between shareholders and management (Kahan & Rock, 2006), it can also result in alleviation of agency problems of debt through an increased level of monitoring by hedge funds. Further, hedge fund activism also reduces information asymmetry by improving the quality of financial reports (Cheng *et al.,* 2015). Thus, target firms may substitute debt maturity monitoring - from shorter-term debt – with additional level of monitoring extended by hedge funds. Hedge funds are becoming 'agents of change' in corporate affairs (Boyson & Mooradian, 2011). We examine the relation between target firms' debt maturity choices and hedge fund activism as a proxy for governance mechanism. Debtholders bear a different risk perception for both short-term and long-term debt choices (Myers, 1977). For instance, new information can easily be priced in short-term debt obligations at the time of refinancing (Flannery, 1986). It also provides an opportunity to debtholders to monitor firm affairs on frequent basis (Rajan & Winton, 1995; Datta *et al.,* 2005). Not only debtholders, studies like Morris (1976) have also established the distinctive role of debt maturity structure in driving stock return premiums because maturity profile of debt involves both risk as well as cost elements while attempting to match it with firms' cash flows.

Short-term debt bears two important implications for firms, namely roll-over risk and monitoring role played by the lenders (Mitchell, 1991; Diamond, 1991; Barclay & Smith, 1995; Rajan & Winton, 1995; Berger *et al.,* 2005; etc.). Therefore, we conjecture that if activism attempts to alleviate self-interested behaviour of managers through increased monitoring and

governance by hedge funds, then target firms might increase longer-term component of debt in their overall debt maturity structure. This largely supports our hypothesis that target firms substitute their debt maturity governance with additional level of monitoring provided by hedge funds by having more long-term debt in their debt structure. In other words, new debtholders also support 'shared benefits' hypothesis while extending longer-term debt to target firms. But, there could be several factors accounting for such changes in debt maturity choices. Thus, by studying new debt issuances after hedge fund interventions, we can focus specifically on supply-side factors having an impact on debt maturity profile of target firms. This approach will also help us in ruling out various demand-side factors as well.

Both public and private debt have separate risk as well as cost elements attached for target firms (Hadlock & James, 2002; Rajan, 1992; Boubaker *et al.,* 2018). Private debt or bank loans are found to be consistent with 'closer monitoring' hypothesis through frequent renegotiations by private debtholders (Barclay & Smith, 1995). Firms with information asymmetry or operating under an informationally sensitive environment rely more on private debt. Thus, banks are more privately informed about their borrowers than public debtholders in the wake of closer monitoring and lower adverse selection issues (Boubaker *et al.,* 2018). However, an alternative view is that monitoring by hedge funds could even substitute stricter monitoring provided by banks - after a target firm weighing various cost and benefits of the same. By virtue of alignment of shareholders – managers' interest, hedge fund activism increases target firms' reliance on more long-term debt. Private debt is relatively of shorter maturity than public debt. So, in return, it increases longer-term component of debt in targets' overall debt maturity structure.

As hedge fund activism is not a random event, we adopt the regression framework with control group of firms in order to address potential endogeneity concerns. The control firms are selected from the same activism year and same 2-digit SIC industry code and having a closest propensity score with target firms. Our findings support 'monitoring' hypothesis whereby debt maturity profile i.e. proportion of debt getting due in more than 3 years increases further by around 4 percent after hedge fund interventions in target firms. These findings are robust even after controlling for a bunch of control variables that are commonly used as one of the major determinants of debt maturity choices. To further investigate the monitoring role of hedge funds, we study the relationship between debt maturity and various stated objectives of activism. The activist investors are expected to file the purpose of their activism initiatives at the time of filing Schedule 13D with the regulator. Hedge funds stating corporate governance

reforms, changes in capital structure and value maximization objectives are found to be the ones supporting an increasing debt maturity profile of target firms. Specifically, target firms with a lower level of leverage, higher level of tangibility of assets and capital expenditures and lower level of cash holdings witness an increasing debt maturity profile in cross-sectional terms.

These findings are further corroborated by new debt issuances. New private debt (bank loans) principally depicts a negative response to activism objectives like changes in capital structure. Particularly, targets' hostile resistance to activism marks a significant reduction in the maturity of new bank loans. Otherwise, we do not see any impact on new loan maturity post hedge fund activism. In case of public debt, 67 target firms issue public debt in their capacity of being a first-timer. More than 40 percent of these bond observations are recorded in the first five years of activism. Both increasing component of long-term debt and reducing new loan amount suggest an augmenting role of public debt in target firms. Hedge fund activism also increases the propensity to issue public debt by target firms. Public debt relatively is of longer maturity as compared to bank loans. With increasing longer-term debt issuances, targets' debt maturity profile increases relative to control group of firms. We also look at 'return of capital to shareholders' hypothesis by looking at dividend payments and expenses incurred on share repurchases by target firms in order to understand the overall outlay of funds after hedge fund interventions. Our findings show a significant increase in expenses incurred on account of share repurchases by target firms. It is consistent with the earlier studies that have also asserted an increase in shareholder payout after 13D filings by hedge funds (for e.g. Bebchuk *et al.*, 2015).

Our study contributes to the existing literature in three ways. Firstly, we extend the literature that focuses on various determinants of debt maturity structure including studies relating to corporate taxes, liquidity risk factors, credit risk factors, asymmetric information, agency cost of debt and signalling hypothesis (Barnea *et al.*, 1980; Grossman & Hart, 1982; Flannery, 1986; Diamond, 1991; Rajan & Winton, 1995; Guedes & Opler, 1996; Stohs & Mauer, 1996; Datta *et al.*, 2005; Brockman *et al.* 2010) by incorporating specifically the role of hedge fund activism in determining debt maturity choices of target firms. We further attempt to relate demand-side story of debt maturity choices with the supply-side by focusing exclusively on new bank loans and bond issuances after 13D filings by hedge funds.

Secondly, we add to the growing literature that attempts to understand the impact of hedge fund activism on various debtholders of target firms (Li & Xu, 2009; Klein & Zur, 2011 and Sunder

et al., 2014; Dahiya *et al.,* 2018; etc.). The earlier studies have documented a negative response of debtholders after hedge fund activism. For instance, cost of new loan increases after hedge fund intervention (Li & Xu, 2009) and existing bondholders also exhibit a negative response to hedge fund activism (Klein & Zur, 2011). The bondholders' wealth reduces by 3.9 percent around the initial 13D filings by hedge funds. These studies have analyzed either new bank loans or impact of hedge fund activism on the existing bondholders. Whereas, we examine the impact of hedge fund activism on overall debt maturity choices of target firms followed by new debt issuances. Our findings support that target firms increase their reliance on public debt post hedge fund interventions. This means that hedge fund activism acts as a certification mechanism for these new public debtholders.

Lastly, we contribute to the recent literature that focuses on governance substitution between internal and external monitoring mechanisms (Demsetz & Lehn, 1985; Bharath & Hertzel, 2018; Boubaker *et al.,* 2018). Based on closer monitoring by banks, earlier studies have documented a greater reliance on private debt for firms that operate in a fairly informationally-opaque environment (Hadlock & James, 2002). Firms also substitute their monitoring mechanism on account of greater product market competition (Boubaker *et al.,* 2018) and market for corporate control (Bharath & Hertzel, 2018). Demsetz and Lehn (1985) argue that firms determine their governance mechanism through an endogenous set of choices in response to different external shocks. This is also consistent with 'too much' governance argument making firms to substitute from one mechanism to another (Hermalin & Weisbach, 2012; Bharath & Hertzel, 2018). In this regard, we identify that target firms substitute their debt maturity governance i.e. short-term debt with an increased level of monitoring by hedge funds and rely more on long-term debt.

The remainder of the paper is organized as follows. Section 2 reviews related literature and hypotheses development. Section 3 describes our sample along with descriptive statistics. Section 4 reports our research design and main empirical findings. Section 5 concludes the paper.

2. Related Literature and Hypotheses Development

The debate over engagement of institutional investors in influencing the corporate affairs demarcates shareholder activism into two groups: one initiated by relatively passive investors (pension funds, index funds, insurance companies, etc.), and other initiated by active investors (like hedge funds). Consequently, there might be an element of conflict of interest on account

of various heterogeneity concerns pertaining to their unique trading style, clientele effect, investment horizon, accountability and legal environment (Gillan & Starks, 2007). Thus, there is no consensus among the researchers regarding benefits arising out of hedge fund intervention. For instance, Bebchuk *et al.* (2015) and Brav *et al.* (2018) relate hedge fund activism to a positive long-run operating performance countervailing the concerns mounting over the myopic approach of hedge funds. Bebchuk *et al.* (2015) did not find any evidence of return reversals in the long-run. Brav *et al.* (2018) support a positive impact of hedge fund activism on the efficiency of corporate innovations in target firms. Whereas, studies like Krehmeyer *et al.* (2006), Fox and Lorsch (2012) and George and Lorsch (2014) support short-termism over long-run implications of hedge fund activism. Under the latter argument, opponents of hedge fund activism allege activism by hedge funds as a mere 'myopic' strategy to increase stock prices in the short-run at the cost of long-term benefits.

There is scant literature that has tried accounting for the impact of hedge fund activism on debtholders. For instance, Li and Xu (2009) discuss the impact of hedge fund activism on incremental bank loan contracts. The authors argue that with the announcement of an intervention, private debt becomes costlier for target firms. The private lenders charge higher spreads, ask for greater collateral requirements and extend shorter maturity loans to target firms. Hedge fund activism also reduces creditworthiness of rated target firms (Byrd *et al.*, 2007; Derrien *et al.*, 2016). Consistent with wealth expropriation concerns, Klein and Zur (2011) document a negative impact of hedge fund activism on target firm's existing bondholders. The activist interventions erode bondholders' wealth by around 3.9 percent at the announcement of Schedule 13D filings. These findings are consistent with the view that hedge fund interventions increase credit risk of target firms.

Sunder *et al.* (2014) report that bank lenders respond negatively to hedge fund activism in the form of increased cost of bank loans particularly when the main purpose of activism is to make changes in capital structure of target firms. However, the response becomes favourable in the form of reduced cost of bank loans when the activism addresses managerial entrenchment in particular. On a similar note, Dahiya *et al.* (2018) argue the adverse impact of hedge fund activism on target firms' cost of bank loans. This finding also highlights the wealth transfer concerns raised by debtholders after the activist interventions by hedge funds. In particular, the response of debtholders is limited to only those target firms witnessing stronger cumulative abnormal stock returns (CAR) after the announcement of Schedule 13D filings by hedge funds. Amidst all these findings, it is equally important to understand the overall debt maturity choices

of target firms after the interventions by hedge funds. The maturity profile of new debt issuances will further help us in comprehending the supply-side response of debtholders (Custodio *et al.*, 2013).

Debt maturity structure is irrelevant as per the Modigliani and Miller's (1958) framework. However, in actual practice both agency-based conflicts and information asymmetry influence firms' investment as well as financing decisions (Jensen & Meckling, 1976; Myers & Majluf, 1984; etc.). The importance of leverage and debt maturity structure in combating agency-based conflicts between debtholders-shareholders and shareholders-managers is well documented in the capital structure literature (Barnea *et al.*, 1980; Grossman & Hart, 1982; Rajan & Winton, 1995; Guedes & Opler, 1996; Datta *et al.*, 2005; Brockman *et al.* 2010; etc.). For instance, Myers (1977) highlights a significant role of shorter maturity debt in alleviating concerns relating to underinvestment problem. Studies like, Jiraporn and Kitsabunnarat (2007), Harford *et al.* (2008) and Ben-Nasr *et al.* (2015) have recently highlighted the role of corporate governance and ownership structure (large shareholders) on debt maturity choices in the wake of attached monitoring benefits and as a possible solution to reduce agency costs of debt. On a similar note, as a mechanism of corporate governance, it is equally insightful to account for the impact of hedge fund activism on targets' debt maturity structure.

Hedge fund activism may influence corporate debt maturity decisions on account of several factors. Hedge funds act as a credible source of governance mechanism for target firms relative to other institutional investors (Gillan & Starks, 2007; Brav *et al.*, 2008; etc.). This has led to a new wave of activism by hedge funds – achieving much more significant benefits than the traditional institutional investors. Keeping in view the growing discussion on governance substitution, our study attempts to understand the inter-play between hedge fund activism and debt maturity choices. As hedge funds are becoming a critical player in firms' corporate governance environment, so an increased level of monitoring by them could make target firms to substitute their shorter-term debt governance with additional level of monitoring provided by hedge funds.

While analysing the debt choices between private and public debt, Bharath and Hertzel (2018) examine how an external governance mechanism has an impact on firms' overall debt financing structure. The authors conclude that firms substitute their governance mechanism by taking into view the alternative external governance frameworks. Debt acts as a disciplinary device in discouraging managers to indulge in sub-optimal investments and self-opportunism (Stulz,

1990). In a similar fashion, interventions by activist investors may exhort target firms to substitute their governance mechanism from shorter-term debt to monitoring provided by hedge funds i.e. reducing their demand for short-term creditor monitoring as a strategic choice (Kahan & Rock, 2006; Brav *et al.*, 2008 Coffee & Palia, 2016; Boubaker *et al.*, 2018; etc.). Similarly, Boubaker *et al.* (2018) also examine product market competition and its impact on firms' debt choices between bank and public debt. The authors also support governance substitution from bankers to market competitive forces aftermath of the external governance pressures. Keeping in view the above discussion, our main hypothesis is:

H1: *Target firms increase long-term debt component of their total debt after hedge fund activism*

As a consequence to changes in balance sheet variables - capturing debt maturity structure - it is quite reasonable to expect changes in new debt issuances as well. For this, we expect a greater reliance on public debt than on private debt by target firms. Bank loans generally have a shorter maturity as compared to public debt (Johnson, 1997). Further, short-term debt helps lenders in effective monitoring of borrowers through frequent debt renegotiations and closer monitoring by them (Barclay & Smith, 1995). However, our conjecture is that with hedge funds' monitoring in view, target firms increase their reliance on long-term debt. This is also consistent with the argument pertaining to 'too much' governance whereby firms substitute one governance mechanism with another (Hermalin & Weisbach, 2012; Bharath & Hertzel, 2018). Seemingly, we expect target firms to increase their reliance on public debt aftermath of the hedge fund activism because private debt is comparatively of shorter maturity than public debt. Moreover, public debt also includes a lesser degree of closer monitoring by debtholders (Rajan, 1992).

H2: *Target firms increase their reliance on public debt after hedge fund activism*

Earlier studies have documented a negative response emanating from private debtholders under the impression that hedge fund activism is going to 'expropriate' funds at the expense of lenders (Li & Xu, 2009; Klein & Zur, 2011). Private Debtholders reduce the maturity of new loan issuances for target firms. So, whilst target firms witness a reduction in new loan maturity, hedge fund activism inevitably makes them explore more for public debt opportunities (supply-side argument). Whereas, the demand-side argument pertains target firms to increase their reliance on long-term debt post activist interventions by hedge funds (governance substitution hypothesis). Typically, the arm's length public debt comes at a relatively lesser cost (lower

bargaining power) than the more informed private debt (Rajan, 1992). Firms are also more susceptible to adverse selection issues in public debt market because of the concerns relating to information asymmetry and agency conflicts (Denis & Mihov, 2003). In this case, hedge fund activism acts as a certification mechanism for target firms in approaching public debt market thereby increasing their debt maturity profile.

3. Data and Sample overview

3.1 Data Sources

3.1.1 Hedge Fund Activism

Data relating to activism campaigns come from SharkRepellent database - a corporate governance arm operated by FactSet[5]. The latter database provides campaign-wise history of hedge fund interventions along with various tactics employed by hedge funds/target firms, management responses, dates original 13D's were filed and campaign outcomes. The sample period ranges from 2000 to 2017. We restrict our sample to only first-time hedge fund activism events i.e. for those target firms where hedge funds knock the doors for the first time in their capacity of being an activist investor. The categorization for stated objectives and targets' management resistance to activism has been done manually after going through each campaign.

3.1.2 Debt Maturity and other variables

Data relating to debt maturity and other variables have been gathered from the Compustat Industrial Annual database. The sample period ranges from 1995 to 2017 excluding financial firms. For our incremental analysis, the sample consists of bank loans raised by target firms from Loan Pricing Corporation's (LPC) Dealscan (loan facilities) database with matching firm identifiers[6]. Our data for new bond issuances come from Thomson Reuters EIKON's platform for the sample years. We measure debt maturity in terms of proportion of debt maturing in more than 3 years to total debt as our main dependent variable – consistently used by Barclay and Smith (1995) and Custodio *et al.* (2013). For Dealscan, 'amount' and 'maturity' of new loans (in years) are considered for the purpose of our overall analysis. Primarily, data relating to our bunch of control variables come from the Compustat Industrial Annual database and

[5] The database also covers publicly announced shareholder activism campaigns having ownership stake of less than 5 percent.

[6] We thank Michael Roberts for generously making available the matching algorithm between Dealscan and Compustat, as in Chava and Roberts (2008).

Centre for Research in Security Prices (CRSP). Appendix provides a detailed description of all the variables relating to various firm characteristics.

3.2 Control Variables

Following the literature, we control for various demand-side factors of debt maturity like size, square of size, leverage, market-to-book ratio, abnormal earnings, asset maturity, asset volatility, tangibility, firm age, term spread and recession dummy. These firm characteristics control for various existing theories on debt maturity structure including agency cost, information asymmetry, liquidity risk and signalling hypothesis. Firm size bears a positive relationship with debt maturity (Barclay & Smith, 1995) whereas firm size square controls for non-linearity between a large firm size and short-term debt choices (Diamond, 1991). We expect a positive relation between leverage-asset maturity and debt maturity choices (Johnson, 2003). With an increase in leverage and asset maturity structure, debt maturity profile also increases. However, for leverage the argument can go the other way around as well i.e. it reduces debt maturity structure of firms in the wake of agency problems of debt (Barclay & Smith, 1995).

Market-to-book ratio proxies for investment opportunities with a negative predicted sign on account of underinvestment concerns (Custodio *et al.*, 2013). Abnormal earnings reflect quality of firm projects with a negative predicted sign as supported by signalling hypothesis (Flannery, 1986). In other words, firms with good quality of projects signal by resorting more to short-term debt component. Term spread - as a macroeconomic factor - accounts for the borrowing cost across different maturity patterns with no clear-cut consensus on its directional impact on debt maturity profile (Brick & Ravid, 1985). The probability of default increases with the increase in asset volatility and so forth it engenders higher the component of shorter-term debt in firms' total debt structure. We also append 'fixed effects' into the regression frameworks in order to control for unobserved heterogeneity across years, industries and firms respectively.

3.3 Sample Overview

We focus specifically on campaigns launched by hedge funds. US Securities and Exchange Commission (SEC) requires investors to file Schedule 13D within 10 days after crossing 5% ownership threshold along with their activist agendas. Filing of 13D is a first instance because this entails public dissemination of activism related initiatives. The Schedule 13D requires filers to disclose their identity i.e. hedge funds, mutual funds or any other type of investor,

percentage stake held by them and most importantly, the purpose of activism. Following Brav *et al.* (2008) and Boyson and Pichler (2018), campaigns relating to bankruptcy, business reorganization, merger risk-arbitrage opportunities and financial firms are excluded from the sample. This is because of their unique capital structure requirements. In total, we have unique 1263 hedge fund activism campaigns. Table 1 reports the number of hedge fund activism events across the sample years from 2000 to 2017 along with their stated objectives.

A considerable number of our sample events fall into the pre-financial crisis period. Corporate governance is one of the most stated objectives of activism campaigns followed by business strategies, value maximization, sale of target firms and changes in capital structure. Brav *et al.* (2008) provide a full exhaustive list of stated objectives of activism campaigns. Under the corporate governance, the focus revolves primarily around removing takeover defences, removal of CEOs or other officers, executive compensation packages, or disclosure of more information. Operational efficiency, involvement in mergers and acquisitions or other growth oriented strategies principally fall into the category of business strategies. Changes in capital structure generally covers the distribution of free cash flows to shareholders or employment of leverage in targets' capital structure. The maximization of shareholder value covers a broader objective of increasing the shareholders' wealth through adequate measures. Lastly, sale of target firms mean when hedge funds categorically ask for selling the company or some of the main assets of target firms. Hedge funds can target more than one issue in a particular campaign, so objectives are not mutually exclusive. We exclude some of the campaigns that were vague in terms of their stated objectives like restricting specifically to 'value maximization' objective with no adequate measures suggested for the same. Table 2 provides industry wise distribution of activism events. Top three sectors attracting activism campaigns include electronic technology, technology services and health technology. These industry sectors are defined as per the Factset's industrial classification list.

Further, table 3 provides various stated objectives along with the campaign characteristics ranging from adoption of poison pill, campaign settlement, hedge fund board representation, 13G to 13D switch and cumulative abnormal returns. Around 4 percent of the events involving corporate governance reforms led to hostile adoption of a poison pill[7] by target firms. Similarly, 24 percent (approximately) of the campaigns focusing on corporate governance got settled

[7] A poison pill is a defence tactic making takeover or raiding attempts more difficult by granting additional number of shares at discounted values to the existing shareholders.

down with the hedge funds and offered with at least one board seat in 32 percent of our sample events. In some of the cases, hedge funds switch from 13G to 13D filings in order to file their activist agendas. Investors who hold economic ownership of more than 5% but less than 20% are eligible to file Schedule 13G subject to the condition that they do not have intentions to influence control or policies in investee firms i.e. a passive investment in firms. Switching from 13G to 13D explicitly highlights the active stance of hedge funds to influence control in target firms.

Lastly, table 3 also reports cumulative abnormal stock returns (CAR) across different windows for hedge fund activism campaigns and their stated objectives. The abnormal returns are determined through Fama-French plus momentum factors. Overall, the campaigns focusing on sale of target firms and change in capital structure are the ones witnessing 5 and 4 percent of cumulative abnormal returns, respectively. To note, these return differences across the stated objectives are not statistically significant, as reported by t-statistic values. So, a mere announcement of hedge fund activism is enough to register abnormal returns for the investors in their anticipation for a prospective improvement in target firms. Figure 1 displays cumulative abnormal return patterns after Schedule 13D filings by hedge funds. It also exhibits a substantial shift in abnormal returns after hedge fund interventions.

Our main analyses are performed on target firms and a pool of control group of firms matched on the basis of propensity scores. Matched control firms are referred from the same target event year, same 2-digit SIC industry code, and with the closest propensity score. Propensity scores are estimated by using a logistic regression taking some of the main determinants of activism like log firm size, market-to-book ratio, return on assets measured at time t-1, leverage measured at time t-1 and the change in ROA between t-3 to t-1 (Brav *et al.*, 2018). Table 4 reports summary statistics for target and control firms for the year before hedge fund activism. In total, we manage to gather data for 830 target firms. The differences between control and target firms are reported by computing both t-statistics as well as Wilcoxon test statistics. For a variable to be significant, both test statistics should be significant at 10 percent level and at least one of them should be significant at 5 percent level (Brav *et al.,* 2008). All the variable are winsorized at 1 and 99 percent levels.

Table 4 presents mean (average) values, standard deviation and main percentile values across important firm level characteristics for both target and control firms. Target and control firms are indistinguishable from each other in terms of differences between their mean values and

test statistics. Firm level characteristics spread across several dimensions including firm assets, market capitalization in US million dollars, return on assets (ROA), research and development (R&D), leverage, market-to-book ratio (MB), sales growth, debt maturing in more than 3 years, total debt in US million dollars, capital expenditure (CAPEX), abnormal earnings, cash holdings and asset maturity. Target firms on an average basis have 35 percent of their total debt maturing in more than 3 years. Both target and control firms have similar leverage, ROA, R&D and CAPEX ratios. Target firms are the ones with positive abnormal earnings i.e. with good quality projects, decent return on assets and cash holdings, and with a lower proportion of investment in research and development sector. Further, part (A) of figure 2 displays an average distribution of debt maturing in more than 3 years - before and after 3 years of 13D filings by hedge funds. There is a clear demarcation between target and control firms' movement with respect to debt maturing in more than 3 years after the intervention (year=0). Part (B) of figure 2 also shows median distribution of debt maturing in more than 3 years for target and control firms. On a similar note, debt maturity increases for target firms relative to control group of firms. The median percentage of debt maturing in more than 3 years increases from 3 percent to 22 percent from one year before to three years after the hedge fund activism.

4. Research Design and Empirical Findings

4.1 Model Specification

Targeting a firm is certainly not a random event. It is endogenously determined by various factors taken into consideration by hedge fund managers. There are two potential endogenous concerns relating to our identification strategy. One pertaining to omitted variable biases and other relates to reverse causality. Omitted variable biases are handled by appending adequate fixed effects in the regression specifications and other control variables. In order to control for reverse causality, we model our regression estimation with a set of control group of firms. Following Brav *et al.* (2018), we adopt the following standard regression framework:

$$DebtMaturity_{it} = \alpha_i + \alpha_t + \beta_1.(Target_i) \times (Post_{it}) + \beta_2.(Post_{it}) + \gamma.Control_{it} + \varepsilon_{it} \quad (1)$$

In equation (1), *i* and *t* are subscripts representing firm and year observations, respectively, and α_i and α_t represent firm and year fixed effects capturing unobserved heterogeneity across firms and years and ε_{it} is the error term. $Target_i$ is a dummy variable equal to one for a target firm *i* and $Post_{it}$ is a dummy variable equal to one for the firm-year (*it*) observations after the intervention year i.e. the year in which Schedule 13D was filed by a hedge fund followed by 3

years. These post-event years are taken as pseudo-event years for control firms. $Control_{it}$ is a vector of control variables. The key coefficient of interest is (β_1) indicating a differential change in targets' debt maturity structure post hedge fund interventions as compared to those for control firms. The coefficient (β_2) would ensure as to whether the changing trend has anything to do with the time variations or not.

In order to confirm that the results are not determined by some pre-event trend existing already between target and control firms, we estimate dynamics of debt maturity from three years prior to three and five years post intervention year i.e. Schedule 13D filing. The following is the regression specification (Brav *et al.*, 2018):

$$DebtMaturity_{it} = \alpha_i + \alpha_t + \sum_{-3}^{+5} \beta_k \{d[t+k]_{it} \times (Target_i)\} + \sum_{-3}^{+5} \lambda_k \, d[t+k]_{it} + \gamma . Control_{it} + \varepsilon_{it} \quad (2)$$

Here, the dummy variables $d[t-3]_{it} \ldots d[t+5]_{it}$ captures firm-year observations from three years before to five years after the intervention year – equal to one and zero otherwise. This specification would help in satisfying the parallel trends' assumption for our regression specification. Furthermore, we also confirm the robustness of our findings with a battery of different regression specifications.

4.2 Results

Our initial estimates throw a light on the dynamics of debt maturity structure after hedge fund activism for target and control firms. This will further help in establishing the pre-intervention parallel trends' assumption between target and control firms. The sample ranges from 1995 to 2017 comprising target and matched control firms. Table 5 reports results relating to dynamics of our dependent variable i.e. debt maturing in more than 3 years around the hedge fund activism. We control for a bunch of variables expecting to capture the demand-side story of debt maturity choices of firms along with firm and year fixed effects (Custodio *et al.*, 2013). The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. The total firm-year observations are 22,019. Column (1) presents findings relating to three years prior to three years after the hedge fund activism. The findings satisfy pre-intervention parallel trends' assumption with none of the coefficients statistically significant. However, after 13D filings by hedge funds, there is a significant increase in debt maturity structure of target firms relative to control group of firms.

The coefficients associated with target*t+1 and target*t+2 are found to be positive and statistically significant showing that debt maturity increases by around 5 percent in the first

and second year after 13D filings by hedge funds, respectively. Column (2) extends the time period to five years post 13D filings by hedge funds. The fourth year marks a mean reversion process whereby debt maturity reduces significantly relative to control group of firms. This 'mean' reversion process is not statistically significant considering the inclusive outcome in terms of t+4 plus target*t+4. So, a more interesting phenomenon comes out that debt maturity increases after 13D filings by hedge funds. Hence, this finding supports our hypothesis that target firms substitute their short-term debt governance with additional monitoring provided by hedge funds. The coefficients relating to our control variables are also consistent with the literature like size increases debt maturity structure, asset volatility reduces maturity profile of a firm's debt, tangibility also increases longer-term component of debt in a firm's debt maturity profile. Likewise, recession phases increase the shorter-term component of debt.

Seemingly, we restrict our analysis to three years after the 13D filings in order to have a clear understanding of debt maturity dynamics in a better way. Table 6 provides panel regression of debt maturing in more than 3 years (our dependent variable) for target and control firms. Control variables are included along with the firm and year fixed effects. Column (1) reports standard regression results by including only firm size and age as our control variables, column (2) reports regression results by including all the control variables, column (3) includes trend component along with the other covariates, column (4) includes industry and year dummies in the regression framework, and column (5) also includes Herfindahl-Hircshman Index (HHI) along with the other covariates. It could be possible that debt maturity follows some kind of a trend. So, in order to control for that we specifically include trend as one of our control variables. Similarly, the literature has also established 'product market competition' as one of the governance mechanisms having an impact on debt choices of firms (Boubaker *et al.,* 2018). So, we also include HHI as one of our control variables in specification (5). Under all these settings, debt maturity increases after 13D filings by hedge funds relative to control group of firms. The coefficient supports a 4 percent increase in debt maturity profile of target firms. This basically implies that longer-term component of debt increases in targets' total debt structure after 13D filings by hedge funds. In order to further confirm our debt maturity findings, we run a battery of robustness checks. In our un-tabulated findings, our results remain qualitatively similar even after including managerial ownership as a control variable in the regression framework (Datta *et al.,* 2005).

4.3 Robustness

Table 7 provides robustness of our debt maturity finding across different dimensions. Since leverage is used as one of our control variables, yet it is also endogenous with debt maturity structure of a firm. So, column (1) presents regression results using a three-stage least square (3SLS) in a joint endogenous framework. For that, we exclude tangibility and ROA from debt maturity equation, and asset maturity, size square and term spread from leverage equation (Johnson, 2003). We include year and industry fixed effects in order to control for time-invariant unobserved industry effects and time-varying unobserved year effects across our sample period. The results are qualitatively similar like the ones reported earlier in table 6. Debt maturity increases by 4 percent after 13D filings by hedge funds. Now, because debt maturing in more than 3 years is a 'limited' dependent variable, so we also resort to Tobit regression as part of our alternative regression specification. Column (2) reports Tobit model results with debt maturing in more than 3 years as a dependent variable: limiting between 0 and 1. The industry and year fixed effects are also appended into the regression specification. Again, the findings support statistically significant coefficient of target*post, capturing differences across target and control firms for 3 years post Schedule 13D filings. In both the earlier regression specifications, debt maturity increases after 13D filings by hedge funds.

Column (3) includes long-term debt component as a proportion of total debt as an alternative measure of debt maturity. We must remember that long-term debt component is a very broad definition of debt maturity structure per se. But still, our findings support that long-term debt component increases relative to control group of firms after 13D filings by hedge funds. One argument that could be made with respect to this change can be as to whether changes in debt maturity choices are voluntary in nature irrespective of any interference from hedge funds or hedge funds have some specific stock selection skills only. In order to control for this scenario, we look specifically into the cases where hedge funds switch from 13G to 13D filings. This switch is an explicit active stance of hedge funds in unlocking the value in target firms. Column (4) again supports an increasing maturity structure for target firms when hedge funds explicitly change their positions from passive to more active ones. Lastly, column (5) considers a separate set of control group of firms within the same 2-digit SIC industry code, activism year and firms having the closest proportion of debt maturing in more than 3 years. Similarly, our results are qualitatively analogous even after controlling for firm and year fixed effects.

In our un-tabulated findings, the results sustain even after considering the cohort-based fixed effects in our regression framework i.e. firm-by-cohort and year-by-cohort fixed effects (Gormley & Matsa, 2011). For each activism year, we construct a cohort of target and control firms using all the firm-year observations. This helps in controlling various changes occurring simultaneously across the target and control firms around the activism years. We have also considered the absolute values of debt maturing in more than 3 years (log (1 + (DLTT[8]-(DD2+DD3)))) as our dependent variable. After 13D filings by hedge funds, there is a significant increase in absolute values of debt maturing in more than 3 years in the first year after hedge fund activism. Moreover, our findings do not support any statistically significant impact on overall leverage (total debt to total asset ratio) of target firms. It again corroborates with our governance substitution hypothesis on account of increasing proportion of debt getting due in more than 3 years in targets' total debt structure. Interestingly, target firms with activist hedge funds falling into 'SharkWatch50' category of the SharkRepellent database are the ones witnessing an increasing debt maturity profile post hedge fund activism[9]. The latter category connotes the active involvement of hedge funds in unlocking the value in target firms[10].

4.4 Additional analysis

In this sub-section, we report additional analyses of debt maturity structure relating specifically to target firms. At the time of filing Schedule 13D, hedge funds are expected to report the purpose of their activism in target firms. In table 8, we resort to stated objectives of hedge fund activism as part of our overall understanding of debt maturity structure. The analyses focus only on target firms with a sample split across various stated objectives. Hedge funds stating corporate governance reforms, changes in capital structure and value maximization objectives are found to be the ones supporting an increasing debt maturity profile in target firms. Intuitively, this is quite reasonable because both the business strategies and sale of target firms are not expected to command a long term influence on debt maturity profile of target firms. This is because both of these objectives commonly involve a strategic turnover or sale of some

[8] DLTT is long-term debt (total), DD2 is debt getting due in 2 years, and DD3 is debt getting due in 3 years. The data is collected from Compustat database.

[9]SharkWatch50 is a category of significant activist hedge funds based on several factors like number of publicly disclosed campaigns, size of targeted companies, severity of the tactics employed, campaigns' success rate, percentage of stakes, frequency of Schedule 13D filings and size of the fund.

[10] In un-reported univariate findings, we do not see any impact of activism campaigns launched by pension funds, mutual fund managers and other institutions on debt maturity structure of target firms.

of the main assets. Both year and firm fixed effects are also included in order to control for unobserved heterogeneity across firms and years.

Table 9 provides panel regression of debt maturing in more than 3 years across various campaign characteristics including settled v/s non-settled, campaigns seeking reimbursement v/s non-reimbursement of expenses incurred on activism and campaigns resulting in hedge fund board representations v/s non-board representations. The latter characteristics basically consider different specifications causing a conflict of interest between hedge funds and debtholders. The analyses focus only on target firms with a sample split across various campaign characteristics. Interestingly, our findings relating to increasing debt maturity are confined to campaigns which are not settled, do not ask for reimbursement of expenses incurred by hedge funds and hedge funds without a board representation. Basically, campaigns with a lower potential to cause conflicts of interest increase debt maturity profile of target firms. These findings are consistent with Coffee's (2017) assertion that activist hedge funds often resort to private settlements with target firms, which in a way augment 'agency costs' associated with private benefits in the form of reimbursement of activism expenses and information leakage (hedge fund employees joining targets' board). The control variables as well as year and firm fixed effects are also appended into the regression models.

We also relate our debt maturity findings to various target firm characteristics panning one year before the intervention i.e. 13D filings. This will help us in understanding which target firms witness an increasing component of debt maturity profile after 13D filings by hedge funds in cross-sectional terms. Table 10 provides panel regression of debt maturing in more than 3 years across various target firm characteristics. Low and high groups are determined by dividing the firms into three different categories (low, medium and high) based on the respective characteristics in the year prior to 13D filings. Our results support an increasing long-term component of debt for those target firms who had relatively a higher level of abnormal earnings. This is not consistent with Flannery's (1986) prediction that firms with greater amount of abnormal earnings tend to signal (to market) by resorting more to short-term debt component.

Agency cost of debt is expected to be lower for target firms with a lower level of leverage. Based on this argument, our findings suggest an increasing debt maturity profile for those target firms who fall primarily into the 'lowest' group of leverage category. This implies that long-term debt increases principally for those target firms who had lower level of leverage during one year before the intervention. Target firms with more tangible assets and capital

expenditures are those witnessing an increasing debt maturity profile. This is also consistent with the fact that more tangible assets reflect a better credit risk profile of the borrowing firms (Boubaker *et al.,* 2018). Lastly, target firms with a lower level of investment in research and development observe an increasing component of long-term debt in their total debt structure after 13D filings by hedge funds. Higher level of research and development expenditures generally reflect an asymmetric information environment for the stakeholders. So, our findings are consistent for those target firms who had a lower degree of information asymmetry (Custodio *et al.,* 2013).

Finally, we focus on cash holdings of target firms in the year prior to activism. The findings support that target firms with a lower level of cash holdings are found to be those witnessing an increasing maturity of debt after 13D filings by hedge funds. Intuitively, this should be the case because if target firms are already rich in cash holdings, then they are not expected to employ more debt in their books owing to pecking order preferences. Similarly, we also look at the proportion of shares held by institutional investors in target firms – as a proxy of monitoring mechanism. Our un-tabulated findings suggest an increasing debt component for only those target firms having a lower percentage of shares held by institutional investors in the year prior to intervention. This implies that activism by hedge funds drive an external shock to the governance environment of target firms whereby the latter firms are put up under an influential monitoring by hedge funds. We divide target firms into two groups - above and below the median as those with a higher and lower group of institutional ownership, respectively[11].

Further, table 11 reports the respective changes in dividend payout[12], share repurchase expenses[13], capital expenditure and research and development expenditures after 13D filings by hedge funds in order to have a preliminary understanding about the outlay of these funds. The changes are restricted from three years before [-3] to three years after [+3] the interventions by hedge funds, and across various stated objectives of activism by hedge funds. On an interesting note, there is a significant increase in share repurchase expenses after hedge fund

[11] Our un-reported findings state that target firms who were having a greater proportion of 'long-term debt getting due in one year' (Compustat item: DD1) in their total debt during the year of hedge fund intervention witness an increase in debt maturity profile post hedge fund activism. Activism is expected to have a noteworthy impact on such target firms against the backdrop of possible debt refinancing getting due in next year.

[12] Dividend payouts are expressed as total dividends (Compustat item: DVT) divided by market capitalization.

[13] Share repurchases are expressed as share repurchase expenses (Compustat item: PRSTKC) divided by market capitalization.

activism except for the stated objective of selling the target firms. However, we could not find the same for dividend payout in statistical terms. This corroborates our earlier assertion that target firms do indulge (significantly) in returning a part of their capital to shareholders in the form of share repurchases. In the process, the target firms substitute their long-term equity capital with long-term debt. We also find a positive and statistically significant coefficient of 'share repurchases' as one of our control variables in the baseline debt maturity regression equation (in un-tabulated findings). This implies that with more share repurchases, debt maturity profile increases in the sense that a new form of long-term capital (debt financing) comes into the books of target firms or simply debt-financed repurchases (Lei & Zhang, 2016). Moreover, there is a significant decrease in expenses incurred on capital expenditures by target firms after 13D filings by hedge funds - but with no statistical evidence for research and development expenditures[14]. This is consistent with all those studies that criticize hedge fund activism amounting to reduction in capital expenditures in target firms (see for instance, Bebchuk *et al.*, 2015).

We further restrict our sample to only those target firms who respond to activism stated governance reforms by making adequate amendments in their corporate governance practices. These governance related enhancements are in the form of amendments in staggered board structure, poison pills, board size, independent directors or in the overall board structure[15]. This will help in clearly disentangling the role of hedge fund activism as a corporate governance mechanism in target firms. Table 12 reports our findings relating to debt maturity structure and activism initiated governance reforms. The sample contains only target firms split across governance v/s non-governance responses when one of the purposes of Schedule 13D filing was to bring corporate governance reforms in target firms. The findings suggest that the positive impact is restricted to only those target firms who respond to governance related activism initiatives by making adequate amendments in their corporate governance practices. We also include expenses incurred on share repurchases as one of our control variables in the regression specification. The variables 'share repurchases' and its interaction with 'post 3

[14] In un-reported findings, acquisition expenses (Compustat item: AQC) as a proportion of total assets also decrease post schedule 13D filings by hedge funds.

[15] Around 76 percent of target firms respond by making changes in their board size such as by inducting more independent directors, followed by 9 percent by CEO related changes such as removal of incumbent CEOs, changes in compensation structure or by separating the role of CEO and chairman, 12 percent by making changes in the shareholder rights plan such as removal of poison pills, and 19 percent by making shareholder friendly (enhancing shareholder rights) changes in the bylaws and charters of the firms such as declassification of the board.

years' dummy, would ascertain as to whether debt maturity is increasing because of the replacement of one form of long-term capital with another only or it has anything to do with governance mechanism. The coefficient of 'share repurchases*post' is not statistically significant when target firms respond by making adequate amendments in their governance practices, whereas, the coefficient of 'post 3 years' is significantly positive implying an increased use of long-term debt after hedge fund interventions. This gives an impetus to our earlier assertion that hedge fund activism acts as a corporate governance mechanism in increasing debt maturity structure of target firms. However, when target firms do not respond by making adequate amendments in their governance practices, then we see a significant shift in debt maturity profile coming from share repurchases only. In other words, such firms indulge in returning a part capital to the shareholders in the form of share repurchases i.e. debt-financed share repurchases because target firms with a lower level of leverage are the ones witnessing an increased use of long-term debt (Lei & Zhang, 2016). But again, it supports our conjecture that hedge fund activism acts as a certification mechanism for target firms in approaching new debt[16].

To support our earlier conjecture that changes in debt maturity are not a voluntary reform undertaken by target firms, we even resort to resistance by target firms as one of the explicit indications highlighting the response of target firms toward activism initiatives. Following Boyson and Pichler (2018), we divide management responses into three different categories: hostile resistance, moderate resistance and no resistance. Hostile resistance involves hostile actions of target firms in the form of filing lawsuits against hedge funds, adoption of classified board structures, amendment of golden parachutes, limiting ability of shareholders to call special meetings, etc. Moderate resistance pertains to adjournment of meetings, amending advance notice requirements, doing something against the wishes of hedge funds, etc. No resistance category basically includes all other campaigns where target firms respond irrespective of any hostile or moderate resistance. This could be the case, for instance, if target firms simply resort to increasing their share repurchase programme or hire a strategic investment banker to assist in their business operations. For our findings to be consistent, we

[16] It is also possible that debt maturity increases in order to dissuade takeover attempts in future. However, we conjecture that an attempt to increase debt maturity profile primarily highlights governance substitution and certification argument. This is because firms are susceptible to adverse selection issues in long-term debt market, and in this case hedge fund activism acts as a certification mechanism for target firms (Denis & Mihov, 2003). Moreover, we do not see a positive impact on debt maturity if there is a tension (resistance against activism initiatives) between activist hedge funds and target firms.

expect our coefficients to be either negative or at least statistically insignificant for those target firms who end up in some kind of resistance i.e. hostile or moderate.

Table 13 reports findings relating to debt maturity and target firms' resistance to hedge fund activism. The sample remains limited to only those target firms who end up in some kind of response to hedge fund activism. We should not expect our findings for those target firms who depict a hostile resistance to hedge fund activism because this simply reflects managerial entrenchment in general (Boyson & Pichler, 2018). As expected, the coefficients hostile*post and moderate*post are not found to be statistically significant thereby supporting our earlier conjecture that debt maturity structure changes for only those target firms who stimulate no resistance to activism initiatives. The findings are robust even with the inclusion of a trend variable (column 2) and industry and year fixed effects (column 3). So, these changes in debt maturity choices are not voluntary in nature, rather hedge funds become a driving force for them to occur at the most. Under the voluntary argument, all the target firms could have witnessed an increased proportion of debt getting due in more than 3 years after activism. But our findings support this relationship only for the ones showing no resistance to hedge fund activism.

Finally, table 14 also reports findings for only those target firms who adopted a poison pill aftermath of the Schedule 13D filings by hedge funds. On an expected note, we do not find any statistically significant impact on debt maturity structure of these target firms, whereas on the other hand, debt maturity profile increases for those who do not adopt a poison pill after hedge fund activism. This also addresses our earlier concern relating to voluntary reforms undertaken by target firms irrespective of any hedge fund intervention.

4.5 New Debt Issuances

The previous discussion on debt maturity structure primarily controls for demand-side factors having an impact on debt maturity choices of firms. However, it is equally important to understand the supply-side factors as well. So, in this section, we discuss our results relating to new debt issuances. New debt issuances control for supply-side factors because under an equilibrium it implicitly controls for the factors leading to demand for the same. Table 15 provides findings relating to new loan issuances after 13D filings by hedge funds. Table 15 is further divided into three parts: part (A) captures propensity to raise bank loans for target and control group of firms, part (B) covers new loan maturity specifically for target firms with new

loans issued between -5 to +5 years of activism i.e. 13D filings by hedge funds, and part (C) further covers new loan amount specifically for target firms between -5 to +5 years of activism.

Part (A) captures propensity to raise bank loans for target and control group of firms. Data relating to new private debt come from Dealscan for both target and control firms[17]. Logistic regression is employed with year dummies in order to examine the likelihood of getting new loans for both target and control firms. It also includes a 'target dummy' accounting for firms getting targeted by a hedge fund in year *t*. The dependent variable carries a value of one, when new loans are raised by our sample firms and zero otherwise. Firm size, market-to-book ratio, leverage, abnormal earnings, tangibility, asset volatility, term spread and recession dummy are some of the main control variables included in the regression. The coefficient shows an average marginal effect of activism on propensity to raise new private debt. Though positive, the coefficient relating to target dummy is statistically insignificant. This implies that hedge fund activism does not make target firms to either increase or decrease their propensity to raise new loans from private debtholders. However, in that case, it is equally important to understand as to how loan maturity dynamics pan out for all the target firms after getting targeted by hedge funds.

Part (B) reports findings relating to new loan maturity for target firms. The sample contains only those target firms who have got private debt between -5 to +5 of 13D filings i.e. both 5 years before and 5 years after 13D filings. Our dependent variable 'logarithm of maturity' (in years) basically captures supply-side response of private debtholders while extending credit to target firms after hedge fund activism (Custodio *et al.*, 2013). Column (1) includes industry, year, loan type and loan purpose dummies without activism stated objectives, column (2) includes industry, year, loan type and loan purpose dummies with activism stated objectives and column (3) includes year, loan type, loan purpose and firm fixed effects in the regression framework. Similarly, firm size, market-to-book ratio, leverage, abnormal earnings, tangibility, asset volatility, loan amount, term spread and recession dummy are included as control variables in the regression equations. On an incremental basis (Column (2)), the findings support a negative reaction of private debtholders, whereby target firms with a hostile resistance witness a substantial reduction in maturity profile of new bank loans after two years of 13D filings.

[17] We manage to gather data relating to private debt for 650 firms out of 830 from Dealscan database. Out of 650, only 21 target firms raise private debt for the first time after the activist interventions by hedge funds.

Surprisingly, similar is the case for target firms where hedge funds mention corporate governance reforms as one of their objectives while filing Schedule 13D with the regulator. New loan maturity decreases even for those target firms where the stated objective is to bring changes in the capital structure of target firms. Apart from these incremental effects, we do not see any significant impact on aggregative basis i.e. for three years after 13D filings by hedge funds (Column (1)). In fact, in part (C) of table 15, we do find a significant decrease in new loan amount raised after hedge fund activism (around 12 to 17 percent). The latter finding is robust even after considering the firm fixed effects. This phenomenon further supports our argument that it is not the supply-side constraints causing target firms to rely more on public debt[18]. The earlier studies like Li and Xu (2009), Sunder *et al.* (2014) and Dahiya *et al.* (2018) have primarily documented an increasing cost of new bank loans coupled with a decrease in maturity profile of the same. Considering both these results in view: on the one hand, hedge fund activism does not affect the likelihood of raising new private debt. On the other hand, it does reduce the new loan amount raised by target firms. So, interestingly, from where this long-term debt comes into the books of target firms? This phenomenon requires an understanding of public debt market dynamics as well.

Table 16 discusses target firms and corporate bond issuances by them. It is divided into two parts: part (A) covers propensity to issue public debt for target and control firms and part (B) provides details relating to target firms and corporate bond issuances by them. Data relating to new public debt have been taken from Thomson Reuters' EIKON platform for both target and control firms. Logistic regression is employed with year dummies in order to examine the likelihood of issuing new public debt for both target and control firms (part (A)). It also includes a 'target dummy' accounting for firms getting targeted by a hedge fund in year *t*. The coefficient shows an average marginal effect of activism on propensity to issue new public debt. It is positive and statistically significant thereby implying an increasing likelihood of issuing public debt after getting targeted by hedge funds. Part (B) further deliberates target firms' bond issuances - comprising number of target firms with bond issuances, total number of bond observations and bond maturity in years, amount (proceeds) raised in million dollars and types of issues i.e. investment graded or high yield corporate bonds. In total, we manage

[18] Similarly, if we incorporate governance v/s non-governance responses of target firms when one of the stated objectives of hedge funds is to bring corporate governance reforms, then negative impact of hedge fund activism (on new loan maturity) is restricted to only those firms who do not undertake governance reforms even after being raised by hedge funds in particular. For target firms with corporate governance enhancements (after hedge fund activism), the coefficient of post '3 years' is positive but statistically insignificant, along with a significant evidence on decrease in new loan amount.

to gather data for 348 target firms. Panel (A) of part (B) reports total number of firms with 'existing' outstanding bonds during 13D filings by hedge funds. The total number of target firms having outstanding bonds at the time of 13D filings are 208 with 779 bond observations. The average maturity and proceeds raised from these bond issuances are approximately 17 years and US 310 million dollars, respectively. Out of these bond observations, 514 are marked as investment graded and 257 of them are of high yield corporate bond category. High yield bonds have relatively lower credit rating than investment graded bonds.

Panel (B) of part (B) provides information relating to first-time bond issuances by target firms after 13D filings by hedge funds. There are 67 target firms that issue public debt for the first-time after hedge fund activism. The total number of bond observations are 121 with an average maturity of 8 years and proceeds raised equivalent to US 507 million dollars. A substantial portion of these bonds (95) has been marked as in 'high yield' category at the time of its issuance. Now, it could be because of target firms' first-timer status in the public debt market. Interestingly, more than 40 percent of these new bond observations fall into the first five years of 13D filings with an average maturity and proceeds varying across the coming five years. Lastly, panel (C) of part (B) provides target firms with both pre- and post-activism bond issuances during 10 years before and 10 years after the 13D filings [-10 to +10]. There are in total 94 target firms that have 656 bond observations issued both before and after the 13D filings by hedge funds. The average maturity and proceeds are 10 years and US 508 million dollars, respectively.

Out of these, 332 bond observations belong to investment graded category and 322 to high yield corporate bond category. The logarithm differences from pre- [-10] to post [+10] 13D filings indicate that target firms raise an increased amount of funds from public debt market after hedge fund activism. We could not find this impact on maturity profile of corporate bonds. However, a significant increase in bond 'proceeds' is an interesting phenomenon capturing an increasing reliance on public debt by target firms. In un-tabulated findings, we also examine the impact of hedge fund activism on debt maturity structure by segregating the target firms into two groups: firms with public debt issuances and firms with no public debt issuances (as per our data). The findings support a significant increase in debt maturity profile for both the latter categories. So, target firms with no public debt issuances also witness an increase in proportion of debt maturing in more than 3 years post hedge fund activism. This could be on account of other types of long-term debt sources employed by target firms (after activism) like a non-syndicated private debt. For target firms with public debt issuances, median proportion

of debt maturing in more than 3 years increases by 33 percent from one year before to three years after the activists' interventions. Whereas, it increases by 11 percent for target firms with no public debt issuances for the same period.

To further substantiate our findings, we also look at long-term debt issuances[19] before and after 3 years of activism for target and control firms. Panel (A) of table 17 reports a statistically significant increase in long-term debt issuance by target firms after 13D filings especially for those where the stated objective is to implement corporate governance reforms, changes in capital structure and review of business strategies. Panel (B) of table 17 further reports these changes in a multivariate regression framework by accounting for control group of firms as well. The sample ranges from three years before to three years after 13D filings by hedge funds for target and control firms. The dummy 'pre-activism' captures three years before the 13D filings and 'post-activism' considers three years after the 13D filings by hedge funds for treated group of firms. Firm and year fixed effects are also included in order to control for unobserved heterogeneity. Our results report a positive impact on long-term debt issuances by target firms after hedge fund activism. This implies that long-term debt issuance increases after 13D filings by hedge funds.

To summarize, long-term debt issuances support our earlier findings that target firms substitute their governance from short-term debt to activist hedge funds by relying more on long-term debt. Our findings relating to new bank loans do not record a negative response of private debtholders toward activism initiatives by hedge funds (in general). Target firms shift to public debt market on account of their decreasing reliance on bank loans (gathered via new loan amount) and an increasing reliance on longer-term debt. As we know that public debt is relatively of longer maturity than the private debt (Barclay & Smith, 1995), so target firms' overall debt maturity profile increases after 13D filings by hedge funds.

5. Concluding Remarks

In this study, we analyse the relationship between hedge fund activism and debt maturity structure of target firms by corroborating the same with new debt issuances. We find that the proportion of debt maturing in more than 3 years increases after 13D filings by hedge funds.

[19] Long-term debt issuance is a cash flow statement variable available from Compustat database (item code: DLTIS). It has been expressed as a ratio to total assets (Compustat item: AT), and captures new long-term debt issuances by firms in the form of proceeds from bonds, notes and debentures and various other long-term debt obligations.

This finding is robust to a battery of alternative specifications. The target firms' median proportion of long-term debt increases by 19% in three years around the activists' interventions. Firms with a lower level of leverage, research and development expenditures and cash holdings are the ones who witness an increasing debt maturity profile after activist initiatives by hedge funds. This implies that the latter type of firms suffer lesser from agency cost of debt, agency cost of free cash flows and information asymmetry, respectively during one year before the 13D filings. The stated objectives like corporate governance reforms, changes in capital structure and value maximization cause a significant increase in debt maturity profile of target firms. The positive (increasing) impact is restricted to only those activism campaigns where hedge funds do not ask for reimbursement of expenses, are non-settled and hedge funds with no board representations. Intuitively, it makes sense for hedge funds to operate without joining corporate boards because this act of joining a board could also enhance agency conflicts between activist hedge funds and debtholders (Coffee, 2017).

The findings support our conjecture that target firms substitute their debt maturity governance by relying lesser on short-term debt when monitoring is provided by hedge funds. Private Debtholders extend a negative response to hedge fund activism when the stated objective is to bring changes in capital structure or when target firms exert a hostile resistance to activism. Target firms reduce their reliance on bank loans as evidenced from new loan amount. Otherwise, we do not see any impact of hedge fund activism on new loan maturity in general. So, it is not the supply-side constraints that cause target firms to switch from private to public debt. Our analysis on new bond issuances supports the existence of first-time bond issuers after Schedule 13D filings by hedge funds. Besides, target firms with both pre- and post-activism bond issuances also increase the amount of proceeds that they raise from public debt market. Overall, our findings support a greater reliance on long-term debt after hedge fund activism by target firms. Increase in debt maturity is more pronounced in target firms associated with the corporate governance reforms. Activism by hedge funds acts as a certification instrument for target firms while approaching the public debt market. With hedge funds in play, lesser monitoring is expected from private debtholders in mitigating agency conflicts. In the process, target firms substitute their shorter-term debt governance (by private debtholders) with additional level of monitoring provided by hedge funds, and by going more for long-term arm's length public debt (demand-side response). In turn, it is quite reasonable to expect that new public debtholders support 'shared benefits' hypothesis while extending long-term debt to

target firms. These findings are consistent with the growing literature on hedge fund activism and their role in corporate governance.

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Appendix

Total debt: Debt in current liabilities (DLC) plus long-term debt (DLTT)

Debt maturity (3 years): Long-term debt (DLTT) minus debt maturing in 2 and 3 years (DD2+DD3) to total debt

Firm size: Log of Market Capitalization - (CSHO) times stock price at the fiscal year-end (PRCC_F)

Market value of equity (MV): Number of shares outstanding (CSHO) times stock price at the fiscal year-end (PRCC_F)

Market-to-book ratio: Market value of assets (AT+CSHO×PRCC_F—CEQ) to total assets (AT)

Sales Growth: Growth rate of sales relative to prior year

Abnormal earnings: Difference between income before extraordinary items, adjusted for common or ordinary stock (capital) equivalents (IBADJ) for time t and t−1 over market value of equity used to calculate earnings per share (PRCC_F×CSHPRI)

Assets maturity: Property, plant and equipment (PPEGT) over depreciation and amortization (DP) times the proportion of property, plant, and equipment in total assets (PPEGT/AT), plus current assets (ACT) over the cost of goods sold (COGS) times the proportion of current assets in total assets (ACT/AT)

Assets volatility: Standard deviation of stock returns during the fiscal year times market value of equity divided by market value of assets

Leverage: Total debt to total assets (AT)

R&D: Research and development expenditures (XRD) to total assets (AT)

CAPEX: Capital expenditures (CAPX) to total assets (AT)

Tangibility: Property, plant and equipment (PPENT) to total assets (AT)

Institutional ownership: Number of shares held by institutions divided by the number of shares outstanding (Thomson CDA/Spectrum 13F Holdings)

Return on assets: Earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets (AT)

Cash holdings: Cash and short-term investments (CHE) to total assets (AT)

Firm age: Number of years between data availability and recorded year

Recession dummy: Recession years' dummy by NBER

Term spread: Difference between the yield on 10-year government bonds and the yield on 1-year government bonds (Federal Reserve)

Table 1: Hedge Fund Activism: Number of Events

The table provides number of hedge fund activism events across the sample period i.e. 2000 to 2017. Various stated objectives of hedge funds and number of events are provided in separate columns. Activism events pertaining to bankruptcy, business reorganizations, merger risk-arbitrage opportunities and financial firms are excluded from the sample because of their unique capital structure requirements (Brav *et al.*, 2008).

Year	Activism Events	Sample %	Value Maximize	Sample %	Corporate Governance	Sample %	Capital Structure	Sample %	Business Strategies	Sample %	Sale of Target	Sample %
2000	17	1.35	8	0.63	11	0.87	4	0.32	8	0.63	10	0.79
2001	22	1.74	13	1.03	11	0.87	5	0.40	6	0.48	6	0.48
2002	31	2.45	11	0.87	21	1.66	7	0.55	8	0.63	11	0.87
2003	24	1.9	7	0.55	17	1.35	5	0.40	7	0.55	10	0.79
2004	37	2.93	18	1.43	21	1.66	10	0.79	16	1.27	12	0.95
2005	69	5.46	31	2.45	44	3.48	20	1.58	26	2.06	24	1.90
2006	128	10.13	59	4.67	82	6.49	34	2.69	73	5.78	46	3.64
2007	137	10.85	68	5.38	77	6.10	41	3.25	85	6.73	56	4.43
2008	108	8.55	53	4.20	64	5.07	26	2.06	68	5.38	47	3.72
2009	42	3.33	14	1.11	28	2.22	14	1.11	22	1.74	9	0.71
2010	61	4.83	23	1.82	39	3.09	14	1.11	27	2.14	16	1.27
2011	64	5.07	23	1.82	42	3.33	17	1.35	31	2.45	22	1.74
2012	76	6.02	27	2.14	58	4.59	12	0.95	44	3.48	30	2.38
2013	84	6.65	23	1.82	64	5.07	32	2.53	45	3.56	19	1.50
2014	110	8.71	49	3.88	72	5.70	34	2.69	68	5.38	25	1.98
2015	106	8.39	31	2.45	81	6.41	35	2.77	70	5.54	22	1.74
2016	80	6.33	46	3.64	58	4.59	22	1.74	53	4.20	11	0.87
2017	67	5.3	39	3.09	41	3.25	9	0.71	43	3.40	17	1.35
Total	1263		543		831		341		700		393	

Table 2: Industry wise hedge fund activism events

The table provides industry wise distribution of hedge fund activism events across the sample period i.e. 2000 to 2017. Financial sector firms are excluded from the sample on account of their unique capital structure requirements.

Industry	Frequency	Sample %
Commercial Services	117	9.26
Communications	28	2.22
Consumer Durables	36	2.85
Consumer Non-Durables	49	3.88
Consumer Services	126	9.98
Distribution Services	47	3.72
Electronic Technology	158	12.51
Energy Minerals	58	4.59
Health Services	33	2.61
Health Technology	136	10.77
Industrial Services	30	2.38
Miscellaneous	10	0.79
Non-Energy Minerals	21	1.66
Process Industries	50	3.96
Producer Manufacturing	71	5.62
Retail Trade	104	8.23
Technology Services	152	12.03
Transportation	25	1.98
Utilities	12	0.95
Total	1263	

Table 3: Stated objectives and various campaign characteristics

The table provides campaign characteristics across five major stated objectives of activism by hedge funds at the time of filing Schedule 13D with the regulator. The total number of events, and percentage of overall sample are reported for different campaign characteristics. CAR is average cumulated abnormal returns computed across various windows - after 13D filing date.

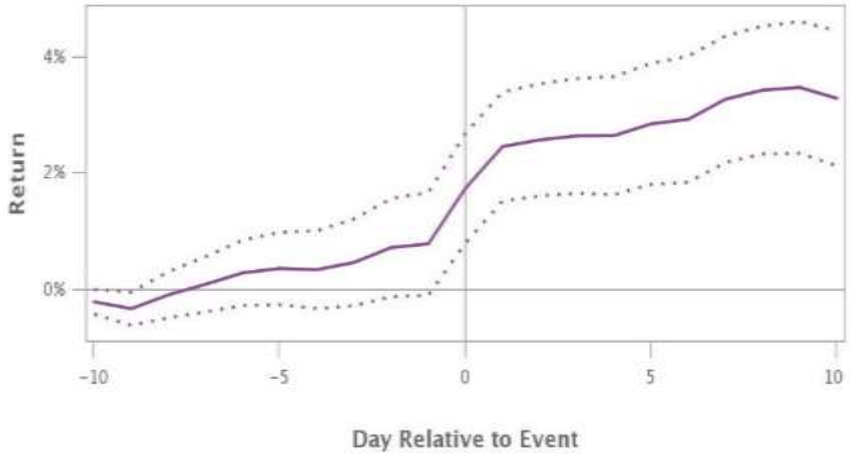
	Stated Objectives				
	Value Maximization	**Corporate Governance**	**Capital Structure**	**Business Strategies**	**Sale of Target**
Features					
Total campaigns	543	831	341	700	393
Sample %	42.99	65.79	27.00	55.42	31.12
Adopted Poison Pill	24	53	19	44	41
Sample %	1.90	4.19	1.50	3.48	3.25
Settled	22	301	65	164	67
Sample %	1.74	23.83	5.15	12.98	5.30
Got Board Seats	22	406	85	213	86
Sample %	1.74	32.14	6.73	16.86	6.81
13G to 13D	39	61	22	49	18
Sample %	3.08	4.82	1.74	3.88	1.43
CAR [-1 to +1]	2%	2%	2%	2%	3%
CAR [-3 to +3]	2%	2%	2%	3%	4%
CAR [-5 to +5]	2%	3%	3%	3%	5%
CAR [-10 to +10]	3%	3%	4%	3%	5%

CAR Difference-in-means test [-10 to +10] – t-stats in parentheses

Sale of Target-Value maximization	(-1.304)
Sale of Target-Corporate governance	(-1.523)
Sale of Target-Business strategies	(-1.432)
Sale of Target-Capital structure	(-0.623)

Figure 1: Cumulative Abnormal Returns (CAR)[20]: For target firms

The figure displays average cumulative abnormal returns before and after 10 days of 13D filing by hedge funds for all the target firms. We follow four-factor model by including the momentum factor for the computation of expected returns.



[20] From Wharton Research Data Services. "WRDS"

Table 4: Summary Statistics for target and matched control firms

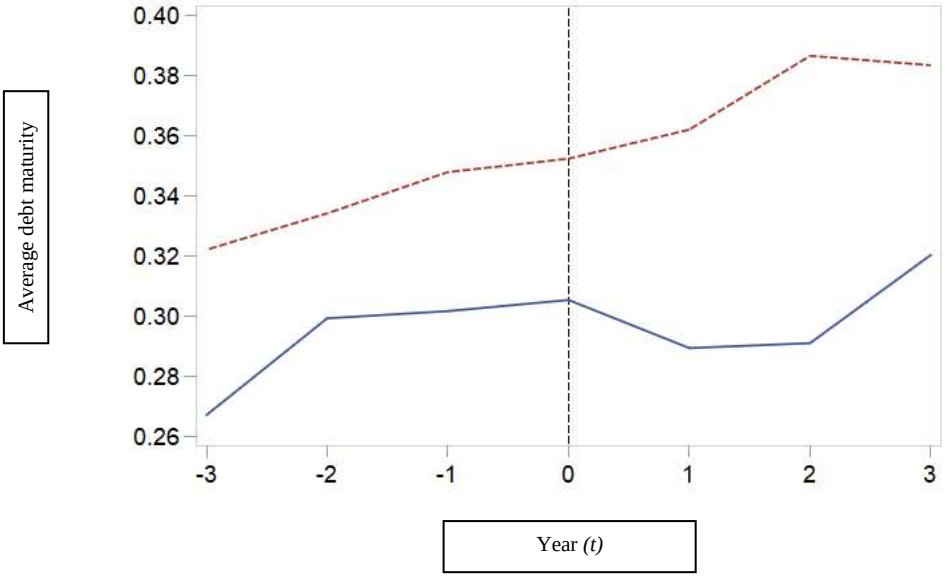
The table provides summary statistics for target as well as matched control group of firms one year prior to intervention (pseudo-events for matched controls). Matched control firms are referred from the same target event year, 2-digit SIC industry code and with the closest propensity score. Propensity scores are estimated by using logistic regression taking some of the main determinants of activism, like log firm size, market-to-book ratio, return on assets measured at time t-1, leverage measured at time t-1, and the change in ROA between t-3 to t-1 (Brav *et al.*, 2018). Differences between matched control and target firms are reported by computing both t-statistics as well as Wilcoxon test statistics. For a variable to be significant, both test statistics should be significant at 10 percent level, and at least one of them should be significant at 5 percent level (Brav *et al.*, 2008). $USM is US million dollars.

	Target Firms (830)					**Control Firms (830)**					**Difference (Control-Target)**		
	Mean	**S.D.**	**p25**	**p50**	**p75**	**Mean**	**S.D.**	**p25**	**p50**	**p75**	**Difference**	**t-stat.**	**Wilcoxon**
Firm Assets ($USM)	4102.51	15000.19	108.91	379.16	1716.36	5337.81	17519.84	67.56	342.06	2333.15	1235.30	1.54	1.31
Ln(MV)	5.94	2.05	4.55	5.72	7.32	5.90	2.54	4.07	5.89	7.79	-0.04	-0.35	-0.11
ROA	0.03	0.41	0.02	0.09	0.14	0.03	0.68	0.04	0.10	0.16	0.00	-0.16	-2.46
R&D	0.09	0.14	0.01	0.04	0.12	0.09	0.15	0.00	0.03	0.11	0.00	-0.20	-1.34
Leverage	0.22	0.26	0.00	0.16	0.35	0.22	0.32	0.02	0.17	0.34	0.00	0.10	0.62
MB ratio	2.05	4.97	1.10	1.42	1.97	2.29	5.99	1.13	1.52	2.29	0.25	0.91	3.04
Sales Growth	0.14	0.73	-0.04	0.04	0.17	0.12	0.59	-0.05	0.06	0.19	-0.02	-0.59	-1.09
Debt Maturity (3 years)	0.35	0.40	0.00	0.03	0.76	0.30	0.38	0.00	0.01	0.66	-0.05	-2.42	-1.56
Total Debt ($USM)	1133.50	3838.71	0.18	41.72	433.07	1300.70	4231.68	0.88	34.13	475.31	167.20	0.84	0.28
CAPEX	0.05	0.06	0.01	0.03	0.06	0.05	0.06	0.01	0.03	0.06	0.00	-1.02	-0.92
Abnormal Earnings	0.02	0.81	-0.05	0.00	0.03	-0.03	0.63	-0.04	0.00	0.02	-0.05	-1.41	-0.88
Cash	0.22	0.23	0.04	0.14	0.34	0.20	0.21	0.05	0.12	0.27	-0.03	-2.34	-1.58
Asset Maturity	9.06	12.45	2.44	4.89	11.20	10.26	15.35	2.29	5.90	12.75	1.20	1.71	1.35

Figure 2: Debt Maturity: Before and after three years for target and control firms

Figure 2 displays distribution of debt maturing in more than 3 years - before and after 3 years of 13D filings by hedge funds - where year (0) means the year in which 13D was filed by hedge fund(s). Part (a) shows average debt maturity for target and control firms and part (b) shows median debt maturity for target and control firms. Control firms are determined on the basis of closest propensity scores from the same activism year and 2-digit industry SIC code. The *Red* line (dotted) depicts target firms' movements and the *blue* line (solid) shows control firms' movements.

(a) Average – Debt maturity



(b) Median – Debt Maturity

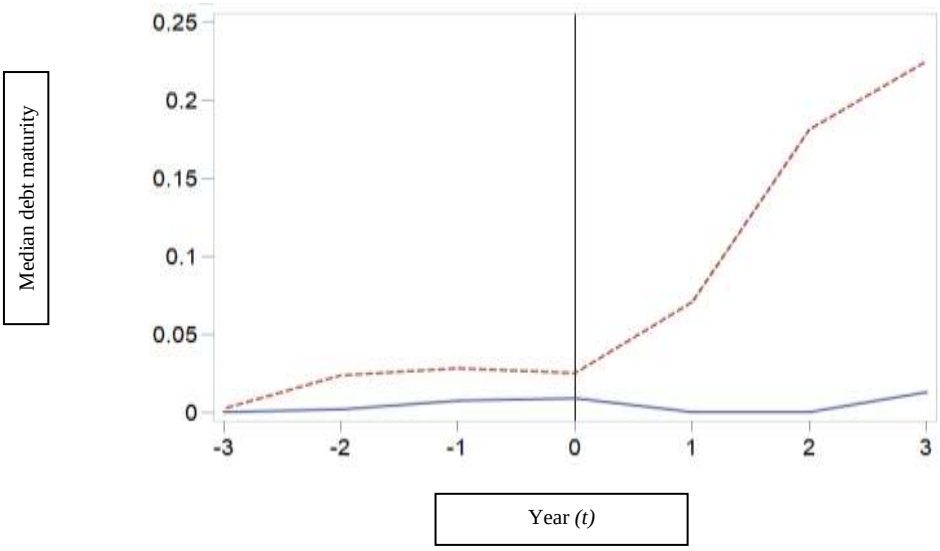


Table 5: Dynamics of debt maturity: Target and control firms

The table provides dynamics of debt maturing in more than 3 years for target and control firms. Pre-event years satisfy the parallel trend assumptions for target and control firms. Control variables are included along with the firm and year fixed effects. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) reports results till 3 years after the event, and column (2) reports till 5 years after the event.

Variables	**(1)**	**(2)**
t-3	-0.014	-0.011
	(-1.28)	(-0.94)
t-2	0.013	0.017
	(1.06)	(1.32)
t-1	0.013	0.017
	(0.96)	(1.22)
t	0.021	0.025*
	(1.53)	(1.77)
t+1	-0.019	-0.015
	(-1.35)	(-0.98)
t+2	-0.014	-0.008
	(-0.92)	(-0.54)
t+3	0.018	0.024
	(1.11)	(1.34)
t+4	--	0.051***
		(2.67)
t+5	--	0.012
		(0.59)
Target*t-3	0.003	-0.001
	(0.16)	(-0.08)
Target*t-2	-0.007	-0.011
	(-0.40)	(-0.62)
Target*t-1	0.001	-0.003
	(0.06)	(-0.16)
Target*t	-0.002	-0.006
	(-0.09)	(-0.31)
Target*t+1	0.045**	0.040**
	(2.31)	(2.01)
Target*t+2	0.053**	0.048**
	(2.53)	(2.21)
Target*t+3	0.009	0.003
	(0.39)	(0.13)
Target*t+4	--	-0.053**
		(-1.98)
Target*t+5	--	-0.038
		(-1.37)
Size	0.049***	0.049***
	(4.93)	(4.89)
$Size^2$	0.0004	0.0004
	(0.41)	(0.42)
Leverage	0.374***	0.374***
	(7.22)	(7.23)
MB	-0.010***	-0.010***
	(-4.52)	(-4.53)
Abnormal Earnings	0.011***	0.011***
	(2.79)	(2.80)
Asset Maturity	-0.001*	-0.001*
	(-1.66)	(-1.65)
Asset Volatility	-0.090*	-0.089*
	(-1.67)	(-1.67)
Tangibility	0.081*	0.081*

	(1.85)	(1.85)
log(Age)	-0.028**	-0.029**
	(-2.50)	(-2.51)
Term Spread	20.444*	20.020*
	(1.79)	(1.76)
Recession Dummy	-0.748**	-0.732**
	(-2.04)	(-2.01)
Observations	22,019	22,019
Firm FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.25	0.25

Table 6: Panel regression of debt maturity: Target and control firms

The table provides panel regression of debt maturing in more than 3 years (dependent variable) for the target and control firms. Control variables are included along with the firm and year fixed effects. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) reports standard regression results by including only firm size and age as our control variables, column (2) reports regression results by including all our control variables, column (3) includes trend component along with the other covariates, column (4) includes industry and year dummies in the regression framework, and column (5) includes Herfindahl-Hircshman Index (HHI) along with the other covariates.

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Target	--	--	--	0.028***	--
				(2.65)	
Post (3yrs)	-0.011	-0.011	-0.011	-0.017	-0.011
	(-1.12)	(-1.05)	(-1.05)	(-1.55)	(-1.05)
Target*Post (3 years)	0.041***	0.038**	0.038**	0.041**	0.038**
	(2.92)	(2.45)	(2.45)	(2.59)	(2.46)
Size	0.035***	0.049***	0.049***	0.086***	0.049***
	(11.05)	(4.91)	(4.91)	(8.99)	(4.91)
$Size^2$	--	0.0003	0.0003	-0.003***	0.0004
		(0.41)	(0.41)	(-3.70)	(0.41)
Leverage	--	0.374***	0.374***	0.460***	0.374***
		(7.20)	(7.20)	(9.68)	(7.20)
MB	--	-0.010***	-0.010***	-0.013***	-0.010***
		(-4.52)	(-4.52)	(-4.85)	(-4.52)
Abnormal Earnings	--	0.011***	0.011***	0.014***	0.011***
		(2.77)	(2.77)	(3.16)	(2.77)
Asset Maturity	--	-0.001*	-0.001*	-0.001***	-0.001*
		(-1.66)	(-1.66)	(-3.46)	(-1.66)
Asset Volatility	--	-0.092*	-0.092*	-0.242***	-0.092*
		(-1.71)	(-1.71)	(-3.66)	(-1.71)
Tangibility	--	0.082*	0.082*	0.175***	0.082*
		(1.88)	(1.88)	(4.69)	(1.88)
log(Age)	0.004	-0.027**	-0.027**	0.025***	-0.027**
	(0.45)	(-2.36)	(-2.36)	(3.72)	(-2.36)
Term Spread	--	20.434*	2.310	-14.618	20.567*
		(1.79)	(0.61)	(-1.64)	(1.80)
Recession Dummy	--	-0.750**	-0.435***	0.445	-0.754**
		(-2.05)	(-3.61)	(1.42)	(-2.06)
Trend	--	--	-0.018	--	--
			(-1.24)		
HHI	--	--	--	--	0.011
					(0.29)
Observations	28,219	22,019	22,019	22,019	22,019
Firm FE	Yes	Yes	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	No
R^2	0.12	0.25	0.25	0.26	0.25

Table 7: Robustness: Debt Maturity structure

The table provides robust findings of debt maturing in more than 3 years. Column (1) reports 3SLS regression results where debt maturity and leverage are jointly endogenous along with the industry and year fixed effects, column (2) reports tobit regression model results along with the industry and year fixed effects, column (3) considers long-term debt to total debt as a dependent variable in the regression specification along with the firm and year fixed effects, column (4) reports results relating to 13G to 13D switches (by hedge funds) for target firms along with the firm and year fixed effects, and column (5) considers a separate set of control group of firms within the same 2-digit industry code, activism year and closest debt maturing in more than 3 years along with the firm and year fixed effects. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses for columns (2, 3, 4 and 5).

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Target	0.023***	0.030	--	--	--
	(4.52)	(1.49)			
Post (3yrs)	-0.015	-0.035*	-0.003	0.024**	-0.004
	(-1.63)	(-1.74)	(-0.28)	(2.09)	(-0.32)
Target*Post (3yrs)	0.037***	0.069**	0.024*	--	0.033**
	(2.93)	(2.44)	(1.70)		(2.03)
13G-to-13D*Post (3yrs)	--	--	--	0.077*	--
				(1.71)	
Controls	Yes	Yes	Yes	Yes	Yes
Observations	22,019	22,019	18,076	11,502	18,435
Industry FE	Yes	Yes	No	No	No
Firm FE	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R^2/*Pseudo* R^2	0.35	0.26	0.20	0.31	0.28

Table 8: Debt maturity and hedge fund stated objectives

The table provides panel regression of debt maturing in more than 3 years across various stated objectives of hedge fund activism campaigns. The stated objectives ranges from corporate governance, capital structure, value maximization, business strategies to sale of target firms. The sample contains only target firms split across various stated objectives of hedge funds while filing Schedule 13D with the regulators. Control variables are included along with the year and firm fixed effects. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	**Corporate Governance**	**Capital Structure**	**Value Maximization**	**Business Strategies**	**Sale of Target**
Post (3yrs)	0.0266**	0.0483**	0.0389**	0.0230	0.0195
	(2.01)	(2.19)	(2.23)	(1.45)	(0.82)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	8,065	3,155	4,505	6,550	3,336
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R^2	0.28	0.26	0.29	0.33	0.27

Table 9: Debt maturity and hedge fund campaign characteristics

The table provides panel regression of debt maturing in more than 3 years on various campaign characteristics. The various campaign characteristics ranges from settled campaigns, non-settled campaigns, hedge funds seeking reimbursement of expenses, campaigns with no reimbursement of expenses, hedge funds with board representations to hedge funds with no board representations. Control variables along with the year and firm fixed effects are reported. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	**Settled campaigns**	**Non-settled**	**Hedge funds seeking expense reimbursement**	**No reimbursement**	**Hedge fund Board representations**	**No Board Seats**
Post (3yrs)	0.03	0.033**	0.027	0.030**	0.033	0.028**
	(1.35)	(2.48)	(1.06)	(2.40)	(1.64)	(2.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,473	8,029	1,850	9,652	4,418	7,084
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.31	0.31	0.29	0.30	0.30	0.32

Table 10: Debt maturity and target firm characteristics

The table provides panel regression of debt maturing in more than 3 years on various target firm characteristics, including abnormal earnings, leverage, tangibility, CAPEX, research and development and cash holdings. Low and high groups are determined by dividing the firms into three different categories (low, medium and high) based on the respective characteristic in the year prior to 13D filings. Control variables along with the year and firm fixed effects are reported. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

	Abnormal Earnings		**Leverage**		**Tangibility**		**CAPEX**		**R&D**		**Cash Holdings**	
Variables	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Post (3yrs)	0.004	0.048**	0.036**	0.006	0.022	0.043**	0.029	0.040**	0.051***	0.003	0.061***	-0.011
	(0.21)	(2.60)	(2.29)	(0.29)	(1.03)	(2.21)	(1.36)	(2.04)	(2.83)	(0.12)	(3.09)	(-0.52)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,736	3,634	3,686	3,781	3,523	3,821	3,611	3,690	2,581	2,513	3,904	3,556
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.33	0.33	0.17	0.19	0.31	0.16	0.34	0.21	0.33	0.20	0.23	0.22

Table 11: Changes in dividend payouts, share repurchases, CAPEX and R&D

The table provides average changes in dividend payouts, share repurchases, capital expenditure (CAPEX) and research and development (R&D) expenditures from three years before [-3] to three years after [+3] the 13D filings by hedge funds. The changes are reported for target firms across different stated objectives of hedge funds while filing Schedule 13D with the regulator. Dividend payouts is expressed as total dividends (Compustat item: DVT) divided by market capitalization. Share repurchases is expressed as share repurchase expenses (Compustat item: PRSTKC) divided by market capitalization. The t-statistics are in parentheses.

	Dividend Payouts			**Share Repurchases**			**CAPEX**			**R&D**		
Stated Objectives	**Before [-3 to 0]**	**After [+1 to +3]**	**Difference (After-Before)**	**Before [-3 to 0]**	**After [+1 to +3]**	**Difference (After-Before)**	**Before [-3 to 0]**	**After [+1 to +3]**	**Difference (After-Before)**	**Before [-3 to 0]**	**After [+1 to +3]**	**Difference (After-Before)**
Corporate	0.052	0.042	-0.01	0.022	0.028	0.006**	0.050	0.044	-0.006***	0.096	0.098	0.002
Governance			(-0.26)			(2.15)			(-3.09)			(0.48)
Capital Structure	0.017	0.016	-0.002	0.026	0.044	0.018***	0.055	0.048	-0.008**	0.079	0.079	0.000
			(-0.39)			(3.09)			(-2.43)			(0.00)
Value	0.015	0.017	0.002	0.020	0.030	0.010***	0.054	0.045	-0.009***	0.081	0.083	0.001
Maximization			(0.44)			(3.13)			(-3.40)			(0.18)
Business Strategies	0.015	0.016	0.001	0.022	0.029	0.007**	0.056	0.048	-0.008***	0.081	0.081	0.000
			(0.16)			(2.42)			(-3.44)			(0.05)
Sale of Target	0.021	0.022	0.001	0.026	0.030	0.004	0.049	0.047	-0.002	0.088	0.082	-0.007
			(0.12)			(0.71)			(-0.72)			(-0.85)
Overall	0.040	0.034	-0.007	0.022	0.028	0.006***	0.052	0.045	-0.007***	0.089	0.091	0.002
			(-0.27)			(2.76)			(-4.32)			(0.44)

Table 12: Debt maturity, 'governance' as activism stated objective, and 'governance' response of target firms

The table provides panel regression of debt maturing in more than 3 years and governance response of target firms. The governance response basically covers reforms undertaken with respect to corporate governance practices by target firms after hedge fund activism. The sample contains only target firms split across governance v/s non-governance responses when one of the purposes of 13D filing is to bring corporate governance reforms in target firms. Control variables are included along with the year and firm fixed effects. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	**Governance response**	**Non-Governance response**
Post (3yrs)	0.094***	-0.015
	(2.84)	(-0.89)
Share Repurchases	0.133	0.027
	(0.60)	(0.22)
Share Repurchases*Post (3yrs)	-0.203	0.547*
	(-0.35)	(1.70)
Other Controls	Yes	Yes
Observations	1,980	5,423
Firm FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.37	0.25

Table 13: Target firms and their resistance to activism

The table provides panel regression of debt maturing in more than 3 years on target firms' resistance to hedge fund activism. The sample contains target firms with hostile, moderate and no resistance to activism initiatives. Hostile resistance normally includes lawsuits against hedge funds, adopting poison pills, amendment of golden parachutes, limiting ability of shareholders to amend bylaws or charters, etc. Moderate resistance pertains to adjournment of meetings, amending advance notice requirements, doing something against the wishes of hedge funds, etc. (Boyson & Pichler, 2018). The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) reports standard regression model results along with the year and firm fixed effects, column (2) includes trend component along with the other covariates, and column (3) includes the industry and year dummies in the regression framework.

Variables	**(1)**	**(2)**	**(3)**
Post (3yrs)	0.049**	0.049**	0.054***
	(2.45)	(2.45)	(2.63)
Hostile	--	--	-0.004
			(-0.14)
Moderate	--	--	-0.025
			(-0.89)
Hostile*Post (3yrs)	-0.031	-0.031	-0.026
	(-0.82)	(-0.82)	(-0.68)
Moderate*Post (3yrs)	-0.065	-0.065	-0.085
	(-1.34)	(-1.34)	(-1.54)
Trend	--	-0.018	--
		(-0.59)	
Controls	Yes	Yes	Yes
Observations	5,662	5,662	5,662
Industry FE	No	No	Yes
Firm FE	Yes	Yes	No
Year FE	Yes	Yes	Yes
R^2	0.34	0.34	0.33

Table 14: Adoption v/s non adoption of poison pills

The table provides results relating to adoption v/s non-adoption of poison pills by target firms after 13D filings by hedge funds. The sample contains only target firms. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) reports standard regression model results for target firms who ended up adopting poison pills along with year and firm fixed effects, column (2) reports standard regression model results for target firms who did not adopt poison pills aftermath of 13D filings along with year and firm fixed effects..

Variables	**Adoption of Poison Pills**	**Non-adoption**
Post (3 yrs)	0.0360	0.0314***
	(0.82)	(2.66)
Controls	Yes	Yes
Observations	602	10,900
Firm FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.52	0.30

Table 15: New Private Debt

The table is divided into three parts: part (a) captures propensity to raise bank loans for target and control group of firms, part (b) covers new loan maturity specifically for target firms with new loans issued between -5 to +5 years of activism i.e. 13D filings by hedge funds, and part (c) considers new loan amount raised specifically by target firms between -5 to +5 years of activism.

Part A: Propensity to raise bank loans

Part (a) captures propensity to raise bank loans for target and control firms. Data relating to new private debt come from Dealscan for both target and control firms. Logistic regression is employed with year dummies in order to examine the likelihood of getting new loans for both target and control firms. Target dummy refers to firms getting targeted by hedge funds in year *t*. The coefficient shows an average marginal effects of activism on propensity to raise bank loans. The *test*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	**(1)**
Target dummy	0.020
	(1.32)
Controls	Yes
Observations	22,911
Year dummies	Yes
Pseudo R^2	0.16

Part B: New loan maturity

The table provides regression results of new loan maturity (in years) pertaining to new private loans against various hedge fund activism characteristics. The sample contains only those target firms who got loans between 5 years before and 5 years after 13D filings by hedge funds. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) includes industry, year, loan type and purpose dummies without activism stated objectives, column (2) includes industry, year, loan type and purpose dummies with activism stated objectives and column (3) includes firm fixed effects along with year, loan type and loan purpose dummies.

Variables	**(1)**	**(2)**	**(3)**
t+1	-0.016	0.087	0.0119
	(-0.37)	(0.74)	(1.14)
t+2	0.018	0.097	0.042
	(0.33)	(0.79)	(0.39)
t+3	0.060	0.180	0.075
	(0.64)	(1.01)	(0.49)
Hostile resistance	--	-0.056	--
		(-0.68)	
Corporate Governance	--	-0.025	--
		(-0.42)	
Capital structure	--	0.040	--
		(0.51)	
Business strategies	--	0.078	--
		(1.32)	
Hostile*t+1	--	0.185	0.192
		(1.35)	(1.44)
Hostile*t+2	--	-0.410***	-0.472***
		(-2.64)	(-3.68)
Hostile*t+3	--	0.137	0.110
		(0.99)	(0.93)
Corporate Governance*t+1	--	-0.146*	-0.190**
		(-1.68)	(-2.42)
Corporate Governance*t+2	--	0.022	0.077

		(0.22)	(0.85)
Corporate Governance*t+3	--	-0.277*	-0.196
		(-1.91)	(-1.38)
Capital structure*t+1	--	-0.115	-0.166*
		(-0.93)	(-1.71)
Capital structure*t+2	--	0.068	0.140
		(0.77)	(1.61)
Capital structure*t+3	--	-0.018	0.057
		(-0.15)	(0.52)
Business strategies*t+1	--	0.020	0.024
		(0.17)	(0.22)
Business strategies*t+2	--	-0.146*	-0.112
		(-1.78)	(-1.49)
Business strategies*t+3	--	0.083	0.135
		(0.64)	(0.99)
Controls	Yes	Yes	Yes
Observations	1,312	1,312	1,312
Loan type and purpose dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	No
Firm fixed effects	No	No	Yes
R^2	0.72	0.54	0.67

Part C: New loan amount

The table provides regression results of new loan amount (in logarithm) pertaining to new private loans. The sample contains only those target firms who got loans between 5 years before and 5 years after 13D filings by hedge funds. The *t*-statistics - standard errors clustered at the firm level - are displayed in parentheses. Column (1) includes industry, year, loan type and purpose dummies, and column (2) includes firm fixed effects along with year, loan type and loan purpose dummies.

Variables	**(1)**	**(2)**
Post (3yrs)	-0.177**	-0.123*
	(-2.38)	(-1.83)
Controls	Yes	Yes
Observations	1,312	1,312
Loan type and purpose dummies	Yes	Yes
Year dummies	Yes	Yes
Industry dummies	Yes	No
Firm fixed effects	No	Yes
R^2	0.58	0.58

Table 16: New public debt

The table is divided into two parts: part (a) covers propensity to issue public debt for target and control firms in sample, and part (b) provides details relating to target firms and corporate bond issuances by them.

Part A: Propensity to issue public debt

Data relating to new public debt come from Thomson Reuters' EIKON platform for both target and control firms. Logistic regression is employed with year dummies in order to examine the likelihood of issuing new public debt for both target and control firms. Target dummy refers to firms getting targeted by hedge funds in year *t*. The coefficient shows an average marginal effect of activism on propensity to issue new public debt. The *test*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	**(1)**
Target dummy	0.010**
	(2.58)
Controls	Yes
Observations	22,911
Year dummies	Yes
Pseudo R^2	0.02

Part B: Target firms and corporate bonds

The table provides information relating to target firms and corporate bond issuances across different dimensions comprising number of target firms with bond issuances, number of bond observations and bond maturity in years, amount (proceeds) in million dollars, type of issue i.e. investment graded or high yield corporate bonds. Panel (a) reports total number of firms with existing outstanding bonds during 13D filings by hedge funds. Panel (b) provides information relating to first-time bond issuances by target firms. Panel (c) provides target firms with both pre- and post-activism bond issuances during 10 years before and 10 years after the 13D filings [-10 to +10].

	No. of firms	**Bonds Observations**	**Maturity (in years)**	**Amount (in Million dollars)**	**Investment Graded**	**High yield**
Panel A. *Target firms with existing bonds during 13D filings*	208	779	16.74	309.87	514	257
Panel B. *Target firms with first-time bond issuances*	67	121	8.36	507.06	24	95
t	--	6	5.36	323.89	1	4
t+1	--	7	5.92	377.895	2	5
t+2	--	9	7.05	635.33	4	5
t+3	--	9	7.08	546.62	2	7
t+4	--	8	17.16	283.72	3	5
t+5	--	13	10.28	350.98	3	10
Panel C. *Target firms with both pre- and post-activism bond issuances [-10 to +10 of 13D filings]*	94	656	10.00	508.30	332	322
Difference between post and pre issuances (in logarithms): t-statistics in parentheses			0.059 (1.11)	0.10*** (9.07)		

Table 17: Target firms and long-term debt issuance

The table provides average change in long-term debt issuance from three years before [-3] to three years after [+3] 13D filings by hedge funds. Panel (a) considers only target firms with observations panning between three years before to three years after 13D filings by hedge funds. Whereas, on the other hand, panel (b) also includes control group of firms in the regression setting.

Panel (A): Changes in long-term debt issuance

Panel (a): The changes are reported for target firms across different stated objectives of hedge funds while filing Schedule 13D with the regulator. Long-term debt issuance is a cash flow statement variable available from Compustat database (item code: DLTIS). It has been expressed as a ratio to total assets, and captures new long-term debt issuances by firms in the form of proceeds from bonds, notes and debentures, and various other long-term debt obligations.

Stated Objectives	Before [-3 to 0]	After [+1 to +3]	Difference (After-Before)
Corporate Governance	0.098	0.126	0.028***
			(3.71)
Capital Structure	0.095	0.118	0.023**
			(2.17)
Value Maximization	0.104	0.117	0.013
			(1.38)
Business Strategies	0.101	0.133	0.032***
			(3.82)
Sale of Target	0.099	0.105	0.006
			(0.50)
Overall	0.102	0.121	0.019***
			(2.98)

Panel (B): Long-term debt issuance: Regression analysis

Panel (b) reports changes in a multivariate regression framework by accounting for control group of firms as well. The sample ranges from three years before to three years after 13D filings by hedge funds for target and control firms. Pre-activism captures three years before the 13D filings, and post-activism considers three years after the 13D filings by hedge funds for treated group of firms. Firm and year fixed effects are included in the regression specification. The *test*-statistics - standard errors clustered at the firm level - are displayed in parentheses.

Variables	(1)
Pre-activism (3 years)	0.007
	(0.93)
Post-activism (3 years)	0.018**
	(2.34)
Controls	Yes
Observations	7,916
Firm FE	Yes
Year FE	Yes
R^2	0.11