

Do Financial Constraints of Corporate Activist Investors Matter?

Leopold Ingenohl
Richard-Wagner Str. 7
76185, Karlsruhe
leopold.ingenohl@student.unisg.ch
15-613-631

Supervised by:
Prof. Dr. Markus Schmid
Swiss Institute of Banking and Finance (s/bf)

A thesis presented for the degree of
Bachelor of Arts HSG

Submitted May 22, 2018

Abstract

- Insert abstract here -

Contents

Contents	ii
List of Tables	iii
List of Figures	iii
List of Abbreviations	iv
1 Introduction	1
2 Literature Review	3
2.1 Schedule 13(D) Filings & Market Reaction	3
2.2 Motives of Corporate Equity Ownership, Value Creation & Financial Constraints	5
3 Data – Constructing the Sample	8
3.1 Measures of Financial Constraints	10
3.2 Identifying the Sample’s Schedule 13(D) Filings	12
3.3 Identifying the Investors prior to their Schedule 13(D) Filing	16
4 Market Reactions to 13(D) Filings – Abnormal Stock Returns	21
4.1 Time Series of Abnormal Returns	23
4.2 Event Windows and Financial Constraints	25
4.3 Financial Constraints and Purpose of Transaction	29

5	Cross Sectional Variation of Abnormal Returns	34
6	Conclusion	39
	Appendices	vi
A	Financial Constraints Measures & Variables	vi
A.1	Rating-Indicator	viii
B	Categorization of Purpose of Transaction	viii
C	Stata Do-Files	x

List of Tables

1	Descriptive Statistics	14
2	Characteristics of Investors prior to their Schedule 13(D) Filing	18
3	Abnormal Stock Returns Surrounding the Initial Schedule 13(D) Filing	26
4	Abnormal Returns by Measures of Financial Constraints and Purpose of Transaction	31
5	Relation between Abnormal Return and Financial Constraints I	36

List of Figures

1	Time Series of Cumulative Abnormal Returns	24
---	--	----

List of Abbreviations

AT	Total Assets
AMEX	American Stock Exchange
AR	Abnormal Returns
BHAR	Buy-and-hold Abnormal Return
CAR	Cumulative Abnormal Return
CEO	Chief Executive Officer
CIK	Central Index Key
CRSP	Center for Research in Security Prices
CUSIP	Committee on Uniform Security Identification Procedures
Dif.	Difference
EBITDA	Earnings Before Interest and Taxes
EDGAR	Electronic Data Gathering, Analysis, and Retrieval system
FC	Financially Constrained
GVKEY	Global Company Key – Unique Six-Digit Number Key Assigned to Each Company in the Compustat Database
HP-Index	Handlock-Pierce Index
H_A	Alternative Hypothesis
H_0	Null Hypothesis
KZ-Index	Kaplan-Zingales Index
Max.	Maximum
Med.	Median
Min.	Minimum
N	Number of Observations
NASDAQ	National Association of Securities Dealers Automated Quotations

NYSE	The New York Stock Exchange
p.	Page
PERMNO	Unique Permanent Security Identification Number assigned by CRSP to each Security
ROA	Return on Assets
SA-Index	Size-Age Index
SEC	Stock Exchange Control
SIC	Standard Industry Classification
S&P	Standard & Poor's
Std. Dev.	Standard Deviation
US	United States
WRDS	Wharton Research Data Services
WW-Index	Whited-Wu Index

1 Introduction

If any person acquires beneficial ownership of more than 5% of an issuer's securities he must file with the Stock Exchange Control (SEC) a Schedule 13(D) within 10 days after the acquisition of that stock. The crux herein lies in beneficial ownership which is not defined as whether the person owns the shares but as whether the particular person can vote the shares and thereby change or influence the control of the company (Harmetz, 2017, p.24). Precisely this mindset is what constitutes shareholder activism, independent of the acquirers identity. In fact, a Schedule 13(D) has to be disclosed by most investor types such as individuals, hedge funds and corporations. In the words of Klein and Zur (2009, p.187), an "entrepreneurial activist is an investor who buys a large stake in a publicly held corporation with the intention to bring about change and thereby realize a profit on the investment". Complementary thereto, corporations filing a Schedule 13(D) to deliberately engage in their investment, can be classified as corporate activist investors.

Hedge fund activists seek to gain seats on the company's board, oppose an existing merger or liquidation of the firm, pursue strategic alternatives or replace the CEO (Klein and Zur, 2009, p.188). Motivation for corporate activist investors to acquire beneficial ownership is to overcome informational and integration barriers and thereby engage in proceedings such as takeovers and strategic cooperations (Huang et al., 2017, p.1). Strategic minority acquisitions help reduce holdup costs, mitigate financing constraints and facilitate greater innovation and relation-specific investment (Nain and Wang, 2018, p.825). In turn, they are followed by significant benefits for both firms (Allen and Phillips, 2000, p.2793).

This action for change is mirrored by a positive market reaction at the announcement of the filing. Hence, when an investor's Schedule 13(D) filing becomes public, the firm that has been partially acquired experiences significant gains on its stock. In recent studies of what happens to the target's stock, Collin-Dufresne and Fos (2015, p.1564) find significant positive abnormal returns around the filing day for filings of all investor types. The evidence is consistent with Brav, Jiang, Partnoy et al. (2008, p.1756) and Klein and Zur (2009, p.209) who report 8.4% and 7.2% abnormal returns respectively but in response to hedge fund activism. The only study inexplicitly noting a positive market reaction to corporate Schedule 13(D) filings is by

Brigida and Madura (2012, p.29). This thesis fills the present shortage and finds evidence that targets of corporate activist investors experience positive abnormal returns around the filing date of the Schedule 13(D). In fact, estimating abnormal returns via the market model results in average abnormal returns of 14% for all targets in the event-window [-10,3]. The positive market reaction is consistent with the evidence of the market's anticipation that activism, likewise action for change, results in actual value improvement for the target (Brav, Jiang, Partnoy et al., 2008, p.1760).

The possible increase in value however, is dependent on the initiator of activism, as it is their own effort that brings the change (Collin-Dufresne and Fos, 2015, p.1563). So if the initiator of activism stands for the actual value improvement, its ability to finance action for change and further involvement in the target, hence its financial appearance, should be related to the market's evaluation of the target's potential gains.

A recent example on this matter is the public's perception of China's largest private conglomerate, the HNA Group. Over the past few years they invested around \$US40 billion in businesses around the world and have currently been of great interest to financial news (Smith, 2018). Not least because they built up a 9.9% stake of around \$US4 billion in Deutsche Bank in 2017, but also because of their complex and nontransparent financing methods (Lockett, 2018). The financing of the group has come under strain as a result of an official crackdown on risky financing at acquisitive private enterprises in China. The highly leveraged group is now facing a potential cash-shortfall and liquidity issues resulting in a S&P global rating downgrade referring to a „deteriorating liquidity profile" of HNA (Schuetze and Ruwitch, 2018). Although the HNA Group is a private conglomerate, the financial appearance of the investor seems to be of great interest to other market participants. The Schedule 13(D) on 28 April, 2018 in which they announced their 9.9% stake in Deutsche Bank was followed by an increase in Deutsche Bank's value. This said, had the increase in value of Deutsche Bank been larger with an HNA Group financially less constrained and thereby more assertive? Hence do financial constraints of corporate activist investors matter when the market anticipates a possible value improvement for the target?

As financially unconstrained corporations are able to raise substantial amounts of external capital, thereby signaling the capability to bring potential change, the opposite should be

true for financially constrained firms (Farre-mensa and Ljungqvist, 2013, p.1). If further the assumption holds that the actual value improvement for the target is dependent on the ability of the investor to bring change, the anticipated value improvement – represented by abnormal returns – should be smaller for financially constrained investors. This thesis finds evidence that it does. The univariate tests show that targets of financially constrained corporations gain less when compared to targets of unconstrained investors. For instance, when financially constrained investors are identified by using the Whited-Wu index, the target’s abnormal return is on average 10% higher had they been unconstrained. They have average abnormal returns of around 6% whereas targets of financially unconstrained firms experience average abnormal returns of around 16%. The significant difference of 10% in abnormal returns indicates that financial constraints of corporate activists investors matter. The multivariate analysis confirms that, other things being equal, the financial constraints of the investor are an important determinant of the abnormal returns of the target. Targets of constrained investors earn 10% less in the $[-10,3]$ event-window indicating financial constraints of corporate activist investors matter, when the market perceives the actual value improvement for the target.

The paper proceeds as follows. Section 2 reviews relevant literature on Schedule 13(D) filings, their effect on the market, corporate equity ownership and financial constraints. Section 3 introduces the measures of financial constraints, outlines the composition of the sample and identifies the sample’s corporate activist investors. Section 4 investigates the market’s reaction to Schedule 13(D) filings and analyses the univariate relation between target’s abnormal returns and investor’s financial constraints. Following the univariate analysis, Section 5 evaluates the cross-sectional effect of financial constraints on the target’s gains.

2 Literature Review

2.1 Schedule 13(D) Filings & Market Reaction

Section 13(d) of the Exchange Act of 1934 was passed in order to increase regulation of tender offers and accumulations of stock. It acts as an early warning, signaling "every large,

rapid aggregation or accumulation of securities, regardless of technique employed, which might represent a potential shift in corporate control" (Harmetz, 2017, p.2). This means that under Section 13(d), anyone who becomes the beneficial owner of 5% of an issuer's equity securities registered under Section 12 of the Exchange Act must file with the SEC a Schedule 13(D) within 10 days after the acquisition. The filing informs shareholder about investors who could influence or change control of the issuing company (Giglia, 2016, p.110). The investors filing such a Schedule 13(D) can be broadly classified into institutional investors (e.g. hedge funds or mutual funds), other entrepreneurial activists (e.g. individual investors) (Klein and Zur, 2009, p.188) and relevant for this thesis, corporate investors. Amongst others, the filing specifies the security and the issuer subject to the filing, the identity and background of the filer, and the purpose of the transaction.

Whereas filing a Schedule 13(D) allows the investor to practice its voting power in an active manner, a passive investor can equivalently file a Schedule 13(G). It is a short-form filing that can be utilized if an investor holds a beneficial ownership interest passively, with no intent to change control of the company (Giglia, 2016). Therefore, corporations filing a Schedule 13(D) confess to manage their investments actively, likewise confess to approach and interact with the target company and can therefore be called corporate activist investors.

So far, there exist many studies that examine the effect the disclosure of such an activist investment has on the target's stock. With regards to short-horizon event studies, all these studies find positive and significant abnormal returns around the Schedule 13(D) filing date. Dealing with investor activism, especially filings disclosed by hedge funds, Brav, Jiang, Partnoy et al. (2008, p.1730) find positive average abnormal returns in the range of 7% to 8% in the (-20,+20) event window. Klein and Zur (2009, p.188) have similar findings and observe 10.2% average abnormal stock returns on the target's stock. In a more recent study on investor activism by Denes et al. (2017, p.410), the average valuation effect is evaluated to be around 5%. A somewhat different approach is found in a study of Greenwood and Schor (2009, p.363) who observe abnormal announcement returns of 2.36% for a sample of activist portfolio investors but document that the ability to force the target into a takeover is the driving force behind the

abnormal market reaction. Nevertheless, all studies observe positive abnormal returns around the filing date and results primarily differ in magnitude.¹

While all of these studies identify hedge fund activism, its motivation and the effect it has on the market, most of them leave filings submitted by corporations aside. Brigida and Madura (2012, p.29) however, note that if the acquirer is a non financial corporation abnormal returns in the (-10,-1) window are around 14%. The reaction implies the market perceives such corporate investments as value generating for the target. Allen and Phillips (2000, p.2803) find abnormal returns of around 7% in the (-10,10) period on corporate purchase announcements which are significantly larger if the announcement is accompanied by strategic investments. Their sample however is based on purchase announcements and therefore differs from studies on the effect of Schedule 13(D) filings.² In addition Collin-Dufresne and Fos (2015) find a positive significant market reaction upon a more general sample of Schedule 13(D) filings, including corporate investors but not explicitly addressing them.

Hypothesis I But what is the rationale of corporations to engage in active equity ownership, thereby disclosing a Schedule 13(D), and why are these investments anticipated to be value generating for the target?

2.2 Motives of Corporate Equity Ownership, Value Creation & Financial Constraints

Corporate investments in other firms' equities can be split into three broad categories. They can either be classified as ordinary, far more importantly as strategic and thirdly as stepping stones in a takeover process. In the sense of possibilities that might be reached,

¹Comparing the average abnormal returns across studies can be misleading as the authors use different models and event windows for estimating and aggregating the abnormal returns. Greenwood and Schor (2009) use the market return model with matching portfolios and aggregate in [-10.5]; Brav, Jiang, Partnoy et al. (2008) calculates the aggregated abnormal returns by subtracting the value-weighted market index from the buy-and-hold return and aggregates over a [-20,20] window; Klein and Zur (2009) use a similar approach with the buy-and-hold returns but make several adjustments and aggregate over a [-30,5] window.

²In Allen and Phillips (2000, p.2801) sample, the mean fraction of equity acquired in the sample is 14%, and only includes acquisitions of at least 5% of voting shares, therefore showing similarities to the sample of this thesis.

corporate ownership, in comparison to ownership by institutional investors, is unique (Allen and Phillips, 2000, p.2791).

Huang et al. (2017, p.1) suggest that corporations make strategic minority acquisitions in other companies when they confront informational or integration barriers. Therefore, one reason for corporations to acquire a partial stake is that in the presence of alliances or joint ventures, minority acquisitions help to align the incentives of both firms involved and thereby decrease contracting and monitoring costs (Allen and Phillips, 2000, p.2792). This especially is of importance, if the strategic cooperation involves relationship specific assets and the investing corporation might be concerned with a holdup problem.³ Allen and Phillips (2000, p. 2793) show that in the years following a strategic investment, targets increase investment expenditures, exhibit substantive gains in operating cash flow and the partial stake leads to significant benefits for both firms.

The second motive behind corporate minority investments is that if asymmetric information has an adverse effect on cost and availability of external capital for the target, the investment can provide capital directly to the issuing firm or validate its investment opportunities (Allen and Phillips, 2000, p.2792). This is supported by Ouimet (2013, p.1038) who finds that the investment helps to overcome asymmetric information and thereby helps to certify the target for other outside investors. The proposition is further verified by Liao (2014, p.78) who finds that target firms issue new equity (debt) and raise their market capitalization thereby supporting the theory that equity stakes certify the investment opportunities of target firms. Target firms correspondingly increase their operating cash flows, sales and investment expenditures.

Thirdly, by acquiring partial stakes, corporations can effectively monitor or influence the target's management. When compared to institutional investors, a corporate investor has superior knowledge and operating expertise (Allen and Phillips, 2000, p.2792) and can thereby further increase the target's operational performance.

But acquiring a minority position also helps to better assess real options, notably that of expanding. The acquisition of a minority stake helps to better assess the target for a potential majority acquisition (Ouimet, 2013) and according to Huang et al. (2017, p.30) gather more

³Ouimet (2013, p.1023) Defines the holdup problem as a decrease in the investors bargaining power in a renegotiation of the contract because the value of the initial investment is dependent on future cooperation with the target.

information before launching a bid for takeover. In this sense, by decreasing informational barriers the investments can help as a stepping stone towards full control (Huang et al., 2017, p.3).

Because there exist two options to acquire full control of a publicly traded firm in the United States, either through a merger or through a tender offer (Offenberg and Pirinsky, 2015, p.2), Betton et al. (2008, p.1) use the term takeover "for any acquisition of corporate control through the purchase of the voting stock of the target firm, regardless of whether the bid is in the form of a merger agreement or a tender offer". Prior to the takeover bid, the corporations can also acquire a toehold where neither management nor target's shareholders know of the investor's takeover intention until the announcement of a Schedule 13(D) is due (Eckbo, 2009, p.158). Ultimately, takeovers are interlinked with offer premiums and target shareholders are compensated with premiums of around 45% relative to the target's share price (Eckbo, 2009, p.154).

Concluding, corporations filing a Schedule 13(D) and thereby confessing to actively manage the investment have several reasons to do so. However, overcoming informational and integration barriers seems to pervade in almost all cases and there exists potential for actual value improvement. Strategic investments generate value through synergies, the target's financing validates investments opportunities and engaging in a takeover leads to offer premiums. So information contained in corporate Schedule 13(D) filings is of value to the market's target evaluation.

But beyond the motives of corporations to actively engage in another firm and the benefits such an investment brings to both, to what extent does the corporations financial condition matter when the market values such activist investments? While motives and benefits are conceivable, their successful implementation is dependent on the corporate investor. Thus if the investing company proxies for the target's value improvement, its financing capabilities should have an impact on the market's anticipation of present and future value of the target. At large, do financial constraints of corporate activist investors matter when the market reacts to Schedule 13(D) filings?

Under the assumption of perfect capital markets, the financial structure of the investor should be irrelevant to investment and the market, because "external funds provide a perfect substitute for internal capital" (Fazzari et al., 1988, p. 141). This however, is not the case for financially

constrained firms because they face an inelastic supply of external capital (Farre-mensa and Ljungqvist, 2013, p.1). Hence, financial constraints refer to the degree of access to external financing. Consequently, firms who are able to raise substantial amounts of external capital without much of an increase in the cost of capital are considered as unconstrained (Farre-mensa and Ljungqvist, 2013, p.1). This results in Whited and Wu (2006, p.531) measure of financial constraints, in which financial constraints affect the intertemporal substitution of investment today for investment tomorrow via the shadow price of scarce external funds – their investment policy is dependent on the cost of capital. Because constrained firms have less access to external financing, Fazzari et al. (1988, p. 142) argue that a constrained company’s investment behavior is dependent on fluctuations in the companies cash flow and can therefore be unstable. As difficulties of external financing could also imply that the company is subject to information asymmetry, the quality of the investor’s investment opportunities has not yet been evaluated comprehensively by providers of external finance (Fazzari et al., 1988, p.142). Furthermore, constrained firms appear to invest at a low rate, despite good investment opportunities (Whited and Wu, 2006, p.533).

Concluding, financial constraints arise from frictions such as information asymmetries that make external funds more costly than internal funds and lead to a different investment behavior compared to healthy firms. Following Almeida et al. (2011, p.691) a majority of managers in the U.S. list financial flexibility as the most important goal of their firm’s financial policies which is consistent with the idea of ensuring funding for future investment undertakings. This said, financial constraints of corporate activist investors should matter when the market evaluates the value improvement for the target.

3 Data – Constructing the Sample

The data that is used to analyse the relation between the investor’s financial condition and the market reaction to Schedule 13(D) filings, is primarily composed of information contained in the filings from SEC’s Edgar database and secondly of data on stock and fundamentals, accessed through Wharton Research Data Services (WRDS). The sample of Schedule 13(D) filings is constructed as follows. First, using an automated search script, 48’626 filings

from the 20 year period starting in January 1996 and ending in December 2016 were identified. The script identifies all Schedule 13(D) filings that appear on Edgar and extracts the following information: name of filer and subject, the CUSIP of the underlying security and the filing date. Next, to only have filings submitted by corporations hence to separate corporate investors from institutional investors (i.e. hedge-funds or pension-funds), 10-K reports were cross-referenced with the initial sample of filings.⁴ To be considered, the filer had to have a 10-K report submitted at least 12 months prior to the filing which reduced the sample to 3'325 filings. As daily stock returns and prices for the target's securities come from the Center for Research in Security Prices (CRSP) the subject not only had to have SEC's Cusip identifier but also an active link between Cusip and CRSP's Permno identifier. For estimating the market reaction to Schedule 13(D) filings, there had to be sufficient stock data for the remaining 1'467 filings. The data was only available to subjects of 1'151 filings. The accounting fundamentals for identifying the investing corporation's financial condition were extracted from the Compustat database. To be included, the filer had to have a valid link between its 10K-CIK and Compustats's Gvkey identifier. This further reduced the sample to 1'014 filings. In the next step and based on Fama & French's 48 industry classification, all filers belonging to the trading industry (industry code 47) were excluded. This was done for the reason that the investment behavior of corporations in this industry differs substantially from that of other industries. This left a sample 898 filings for which data on specific financials was only available for 644 investors. From the remaining 644 filings, the purpose of the transaction was manually extracted. During this process, Schedule 13(D/A) filings (amendments to previous filings) that were mistakenly classified as original Schedule 13(D) filings and filings not submitted by corporations were excluded. This reduced the final sample to 561 filings.⁵

⁴10-K reports were used to identify corporations because "managers of publicly traded firms are required to produce public documents that provide a comprehensive review of the firm's business operations and financial condition and an important financial disclosure document created by managers to communicate with investors and analysts is the annual report filed pursuant to the Securities Exchange Act of 1934 the Form 10-K." (Loughran and McDonald, 2014, p. 1643)

⁵The only exception were filings submitted by the Commerce Group Inc., which provides both insurance and, real estate, brokerage services. These filings were excluded because (1) the largest part of them were amendments, (2) the amount of filings submitted was disproportionately and (3) all purposes of the transaction were general investments in an investment fund.

3.1 Measures of Financial Constraints

As financial constraints are not directly observable, two determining index-based and two univariate measures are established. Not least because recent literature has cast doubt on the usefulness (Khatami et al., 2015, p.109) of index-based measures but also as to increase the quality of results. The advantage of these four measures is that by allowing to separate the original sample into different sub-samples, a comparison within the sample is possible. Further, three out of the four measures identify financially constrained and unconstrained corporations by comparing them to all firms on Compustat. This allows for a potential comparison to samples of other studies. Each measure specifically is computed for the fiscal year prior to the investor’s Schedule 13(D) filing. A detailed listing of each scores components and calculation is presented in Appendix A.

To test the hypothesis that financial constraints matter, the investor’s dividend payout ratio is the first measure of financial constraints. The reason why firms can be considered constrained if they pay low dividends is that they retain all of the low-cost internal funds they can generate because they require investment finance that exceeds their internal cash flow – the availability of external finance is uncertain (Fazzari et al., 1988, p.158). Following Almeida et al. (2004) and Khatami et al. (2015, p.119), the dividend payout ratio is defined as the two year average ratio of total distributions (dividends and stock repurchases) divided by operating income of the two preceding annual reports at each point in time. After computing the dividend payout ratios for all companies on Compustat, firms in the bottom (top) tercile of the annual payout distribution are then assigned to the financially constrained (unconstrained) group. For the initial sample of Schedule 13(D) filings, this results in the two groups of 184 constrained and 310 unconstrained investors.⁶

The investor’s credit rating is the second identifier. Investors having a S&P 500 long term domestic issuer credit-rating at least 3 months prior to the filing are considered to be unconstrained, whereas those not having a rating are considered to be constrained. Credit ratings

⁶Classifying companies based on the reduced sample of corporate activist investors would introduce a significant bias as companies involved in activist investments may have systematically different characteristics from the entire population (Khatami et al., 2015, p.109). This procedure is applied to the dividend payout ratio, the Whited-Wu Index and the HP-Index.

are an objective assessment of a firm's creditworthiness in terms of risk of default and are often required to raise debt from bank or capital market. (Heller, 2015, p.18). They thus ease the access to outside financing. On the other hand there are many firms not publicly rated even though they may belong to the highest-ranked group regarding their creditworthiness. Hence some investors considered to be constrained are not truly constrained, and could thereby introduce an upward bias when averaging the cumulative abnormal returns for targets belonging to constrained investors in the following section. Nevertheless, it gauges the market's assessment of a firm's credit quality (Almeida et al., 2004, p.1790) and Heller (2015, p.175) finds evidence that the investor's credit rating might nonetheless be a helpful measures of financial constraints.

The first index-based measure of financial constraints to be included is the Whited-Wu index. The index is based on the findings of Whited and Wu (2006, p.543) who augment an intertemporal investment model, in which constraints affect the investment policy through the shadow price of the cost of external finance. The Whited-Wu Index is determined by the variables cash flow to total assets (negative loading), an indicator that takes the value one if the firm pays cash dividends (negative loading), the ratio of long-term debt to total debt (positive loading), the natural logarithm of assets (negative loading), the firms three digit industry sales growth (positive loading) and the firms sales growth (negative loading). After calculating the index for all firms from the Compustat database, following Farre-mensa and Ljungqvist (2013, p.38) firms are then sorted into terciles based on their index value. Firms in the top tercile are coded as constrained whereas firms in the bottom tercile are coded as unconstrained. A pairing with the initial sample of investors yields 126 and 307 constrained investors.

The Kaplanz-Zingales also identifies financially constrained firms, but Farre-mensa and Ljungqvist (2013, p.29) note that it appears to be an outlier and Whited and Wu (2006) criticise, that it lacks parameter stability both across firms and over time. In addition, Khatami et al. (2015, p.111) and Almeida et al. (2004, p.1779) note that it yields groups of constrained and unconstrained firms that have different characteristics compared to those of other measures. Similar to Whited and Wu (2006, p.546), in a more recent study Hadlock and Pierce (2010, p.1909) cast serious doubt on the validity of the KZ-index as a measure of financial constraints and suggest that researchers consider alternative measures of financial constraints (Hadlock and Pierce, 2010, p.1938).

Furthermore, Heller (2015, p.15) reports that firm size can proxy as a measure of financial constraints as larger firms are better known and can mitigate problems, which may arise from information asymmetries. But following Almeida et al. (2004, p.1790) and Moeller et al. (2004, p.215) who rank firm's based on their asset size and assign to the financially constrained (unconstrained) group those in the bottom (top) three deciles of the annual size distribution, leads to only 27 matches with the initial sample. This suggest that when compared to all firms listed on Compustat, corporation filing a Schedule 13(D) are generally not small in size. Based on these suggestion, investors are further grouped according to their HP-Index (SA-Index) as in Hadlock and Pierce (2010, p.1929). It consists of the two quantities size and age and is therefore equally called the size-age (SA) index. It is used as an alternative measure for the KZ-Index and helps to mitigate the excluded size measure of financial constraints. Again, the intuition is that small firms are typically young, less well known, and thus more vulnerable to capital market imperfection (Almeida et al., 2004, p.1790). As with the previous indices, the HP-Index is computed for all companies on Compustat and dependent on the firm's index value, firms are grouped into terciles with the top (bottom) tercile representing constrained (unconstrained) firms (Farre-mensa and Ljungqvist, 2013, p.29). A matching with the initial sample results in 78 constrained and 355 unconstrained corporate activist investors.

Concluding, two index-based measures (WW-Index & HP-Index) and two univariate measures (dividend payout ratio & credit rating) are used to group the complete sample of corporate activist investors in several sub-samples of financially constrained and unconstrained investors.

3.2 Identifying the Sample's Schedule 13(D) Filings

Table 1 identifies the sample's Schedule 13(D) filings based on several criteria. Column (1) presents information on all filings. In a first subdivision among investors, Column (2) and (3) give information on the two sub-samples of filings disclosed by investors according to their Whited-Wu index. Thus Column (2) represents filings of financially constrained and Column (3) filings of unconstrained corporations.

Turning to Panel A, the total sample consists of 561 filings, with 126 submitted by constrained

and 307 by unconstrained investors. This imbalance in filings is due to the unequal distribution of the Whited-Wu index, its allocation process across investors and the final merge with the sample of this thesis. Further it could be an indicator that generally speaking, corporate activist investors are financially unconstrained. The filings had 507 individual targets but were disclosed by only 426 individual investors. This exemplifies that occasionally either one firm was investing in multiple targets (e.g. 6 filings submitted by AT&T) or a target was subject to more than one filing (e.g. four filings for investments in Clearwire Inc.). Yet multiple occurrences are not common throughout the sample.

With just 91 filings, the smallest amount was disclosed in the years from 1997 to 2001. In the following ten years however, more than 60% of the sample's filings were submitted. The largest amount in the 5-year span prior to the financial crisis and with 176 filings only slightly more than in the following five years surrounding the financial crisis from 2007 to 2011. Interestingly, the amount of filings decreased in the most recent period from 2012-2016 and the merger wave of 2007 (Huang et al., 2017, p.19) could be an explanation for the temporal irregularities. Remarkable is the fact that more than 60% of filings in the 2007-2011 period were disclosed by unconstrained investors and only 17% by constrained, thus implying that financially constrained firms are more sensitive to macroeconomic movements (Campello and Chen, 2010, p.1197).

Panel B lists the extracted "Purpose of Transaction", which represents item 4 in Schedule 13(D) filings. The purpose is only explicitly stated if it occurs in at least five filings. Furthermore, the two purposes *Engaging into a Takeover* and *Strategic Investment* group several purposes by common characteristics. According to Betton et al. (2008, p.1), filings disclosed with the purpose of a merger agreement, tender offer or hostile bid are grouped under the purpose *Engaging into a Takeover* and filings disclosed due to alliance agreements, license agreements, strategic acquisitions and joint ventures are grouped under the purpose *Strategic Investment*. A detailed description on how the filings were categorized can be found in Appendix B. Close to half of the investments were made while engaging into a takeover process and only 53 of these 271 filings were disclosed by constrained investors. On the other hand, more than 50% of the filings in which the investor was subject to a merger were disclosed by constrained investors – the securities underlying the Schedule 13(D) were acquired to distribute them to own shareholders at the execution of the merger. In this scenario, the investor-target relationship is switched.

Table I
Descriptive Statistics

This table reports the descriptive statistics for the final sample of corporate Schedule 13(D) filings (Column 1) along with the two sub-samples of filings disclosed by constrained and unconstrained investors according to the WW-Index (Column 2 and 3). Panel A summarizes the number of filings, investors and targets as well as the number of filings per year. Table B presents the purpose of the transaction. Panel C summarizes the different industries of the investing corporations where industry is defined according to Fama & French's (1997) 48-industry classifications. Only industries with a representation of at least 15 firms are shown.

	Complete Sample of Filings (1)	Filings of Constrained Investors (2)	Filings of Unconstrained Investors (3)
Panel A: Characteristics Schedule 13(D) Filings			
Filings	561	126	307
Individual Investors	426	115	236
Individual Target	507	121	291
Filings per Period			
1996-2001	91	28	44
2002-2006	176	50	76
2007-2011	163	28	100
2012-2016	131	20	87
Panel B: Purpose of the Transaction			
Engaging into a Takeover	271	53	143
Investment Opportunity while Actively Monitoring the Target	99	21	55
Strategic Investment	74	16	46
Investor is compensated through Issuer Stock	49	9	36
Investor is Subject to Merger	39	21	8
Engaging into a Proxy Fight	7	1	6
Issuer Financing	5	1	3
Other	17	4	10

Table I – Continued

Panel C: 48 Fama and French Industry Classifications of the Investor			
Business Services	98	28	28
Pharmaceutical Products	54	32	11
Patroleum and Natural Gas	55	17	28
Electronic Equipment	44	2	25
Communication	46	9	34
Computers	35	12	14
Medical Equipment	21	5	6
Measuring & Control Equipment	16	1	12
Retail	16	-	16
Machinery	15	1	11

With 99 filings, the second most reported purpose was essentially to invest in the target. The target is considered to be a good investment opportunity, frequently undervalued and the investing corporation aims actively monitor and interact with it. The main idea is these filings do not directly imply future collaboration but give room for speculations.

Following actively held investments, strategic investments are the third most common purposes due to which filings were disclosed. Different to the former, they are based on the premise of future collaboration between investor and target and thus denote a likely value improvement for the target. Potentially of high interest, they represent around one quarter of filings. Although only 5 filings explicitly note direct financing as the purpose of transaction, 49 disclose the filing because they were compensated with issuer stock. Compensation can be a form of payment for cash-poor corporations and hence could also be classified as financing of the issuer. This is in line with the findings of Allen and Phillips (2000, p.2792) and Liao (2014, p.78) who suggest one driver of minority acquisitions is the target's financing. Lastly, there are only 7 filings in which the investor announced a proxy fight with the target's management. In general, these presented transaction purposes are in line with the research findings on why corporation would actively hold equity ownership, namely in the process of takeover discussions, while building strategic alliances, for direct issuer financing or overcoming informational barriers.

Turning to Panel C, the major industries in which the investors operate according to their Fama & French's 48 industry classification code are presented.⁷ Shown are only industries, which are represented by at least 15 corporate investors. For the complete sample, 42 out of the maximum 48 industries are represented. As mentioned previously, the sample is reduced by excluding the trading industry due its irregular investment behavior. The highest industry representation is in business services with 98 filings, followed by the industries of pharmaceutical products, petroleum and natural gas and electronic equipment. For the business industry, equally 28 are investors constrained and unconstrained. Looking at pharmaceutical products, there are more constrained than unconstrained investors and this proportion is also present in the computer industry. This could mean that especially in industries in which property rights become blurry and contracting is complicated hence information asymmetry is large, financially constrained firms have a higher representation (Liao, 2014, p.4).

3.3 Identifying the Investors prior to their Schedule 13(D) Filing

After being familiar with general characteristics of the sample's filings, this section focuses on identifying the corporations prior to their Schedule 13(D) filing. What type of corporation makes activist investments and what are the characteristics of firms identified to be financially constrained? Do all these measures overall identify similar investors? Following, Table 2 introduces financial characteristics of each measure's sub-samples.⁸ By the virtue of each measure, the two samples do not necessarily have to add up to the total number of filings. Hence for the WW-Index, the two sub-samples consist out of 307 and 107 investors. By grouping the investors according to their dividend pay out ratio, 184 investors are identified to be financially constrained and 310 as not. The HP-Index identifies only 78 constrained investors in the initial sample and only for the rating measure do the two groups include all investors with 296 having a credit rating and 265 missing one.

For each sample, Table 2 reports the mean [median] of several key financials. For the com-

⁷For simplicity, the SIC-Industry codes are not shown next to the Fama & French industry classifications as these industries are compiled by several 3-digit SIC industries.

⁸Note that investors are classified into three groups based on the tertile values of the financial constraint indices but only the top and bottom groups are presented. There exists a "gray zone" in which investors are not directly classified.

plete sample, standard deviation and both, lowest and highest value are shown additionally. Column (1) and (2) present financials of the two sub-samples identified by each measure, where financially constrained investors are in Column (1) and unconstrained investors in Column (2). Column (3) shows the t -statistic and Z -statistic for differences between financially constrained and unconstrained investor's means and medians. For all following tests, the t -statistics are for differences in means, assuming unequal variances between the two samples. The null hypothesis to be tested is that the population means from the sample of constrained and unconstrained investors are equal $H_0 : \mu_1 = \mu_2$. The two-sided alternative hypothesis reads $H_a : \mu_1 \neq \mu_2$, thus both means are unequal and there exists a difference.⁹ In addition to the parametric t -statistic, the non-parametric Wilcoxon Mann-Whitney Z -statistic tests, similar to Klein and Zur (2009, p.201), whether the samples of constrained and unconstrained investors are from populations with the same distributions. It can also be called a test of differences in the medians, if the two sample distributions have the same shape. The data analysis is conducted by using the statistical program Stata (Version 13.2, StataCorp, College Station, Texas). Specifically, the Mann-Whitney test is conducted by using the command `-ranksum-` based on Mann and Whitney (1947, p.59). All reported data corresponds to the investor's fiscal year which is closest to the filing date and the reported values are winsorized at the 1% and 99% levels so that extreme values are replaced by the respective percentiles. This enables a presentation of more meaningful mean statistics (Klein and Zur, 2009, p.203).

Moreover, characteristics for the WW-, HP- and Dividend Payout indices have explanatory power beyond the sample, as these investors are identified according to their comparative values across the entire Compustat database. Hence, a loose comparison to samples of other studies is possible. For further simplicity, the notion of "financially constrained" is used independently of the measure initially used for identification.

Panel A reports two ratios on profitability – return on assets (ROA), defined as earnings before interest and taxes (EBITDA) to total assets and the ratio of cash flow from operations to total assets. On average, the sample's corporations have positive returns and a 0.059 cash flow ratio. Across all measures, financially constrained investors have a ROA which is significantly lower when compared to their counter-samples. Turning to the HP-Index, financially constrained

⁹assumptions?

Table II
Characteristics of Investors prior to their Schedule 13(D) Filing

This table summarizes characteristics of the investors for the complete sample, and the sub-samples of each measure of investor's financial constraints (column 1 and 2). For the complete sample, standard deviation and minimum and maximum value of the variables are shown. For each variable, the mean [median] is reported. All data are winsorized at the 1% and 99% levels. Column (3) of each measure shows the t-statistic [Z-statistic] testing for differences between financially constrained and unconstrained investors means [medians]. All accounting data are from the end of the fiscal year preceding the Schedule 13(D) filing date reported by the SEC. Panel A presents measures of the investor's profitability, Panel B displays measures of cash balances and debt and Panel C gives information on the investor's size and Investment. See Appendix A for variable definitions. ***significant at the 0.01 level; **significant at the 0.05 level; * significant at the 0.10 level.

Total Sample					Whited-Wu Index			Dividend Payout Ratio			HP-Index			S&P 500 Credit Rating			
	Mean	Med.	Std. Dev.	Min.	Max.	Unconstr. Investor	Constr. Investor	t-Statistic [Z-Statistic] for Diff. Bet. (1) and (2)	Unconstr. Investor	Constr. Investor	t-Statistic [Z-Statistic] for Diff. Bet. (1) and (2)	Unconstr. Investor	Constr. Investor	t-Statistic [Z-Statistic] for Diff. Bet. (1) and (2)	Unconstr. Investor	Constr. Investor	
						(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	
Panel A: Profitability																	
Return on Assets	0.103	0.117	0.145	-0.520	0.418	0.142 [0.133]	0.341 [0.090]	5.5234*** [4.826]***	0.126 [0.134]	0.065 [0.084]	4.8026*** [5.777]***	0.139 [0.133]	-0.0488 [-0.002]	7.4858*** [7.872]***	0.144 [0.134]	0.056 [0.095]	7.2784*** [6.308]***
Cash-Flow/AT	0.059	0.086	0.150	-0.562	0.331	0.341 [0.904]	-0.012 [0.060]	5.4974*** [4.333]***	0.078 [0.096]	0.027 [0.065]	3.7227*** [5.118]***	0.089 [0.093]	-0.079 [0.014]	6.4031*** [6.497]***	0.094 [0.091]	0.018 [0.073]	5.8836*** [4.105]***

Table II – Continued

Panel B: Cash Balances and Debt																	
Cash and short-term Investments	0.203	0.136	0.203	0.000	0.825	0.145	0.259	4.9477***	0.170	0.238	3.4466***	0.156	0.358	7.0237***	0.115	0.300	11.6601***
						[0.092]	[0.197]	[3.971]***	[0.108]	[0.177]	[3.015]***	[0.102]	[0.380]	[6.925]***	[0.076]	[0.266]	[9.836]***
Cash/AT	0.135	0.087	0.143	0.000	0.682	0.099	0.168	4.1310***	0.108	0.163	4.0350***	0.097	0.250	6.5972***	0.077	0.199	10.7535***
						[0.0715]	[0.104]	[2.793]***	[0.071]	[0.131]	[3.623]***	[0.070]	[0.196]	[6.574]***	[0.060]	[0.153]	[9.214]***
Book Leverage	0.234	0.209	0.206	0.000	0.842	0.265	0.206	2.8842***	0.243	0.242	0.0022	0.254	0.124	5.7978***	0.302	0.158	8.8012***
						[0.239]	[0.183]	[3.570]***	[0.233]	[0.197]	[1.277]	[0.237]	[0.027]	[6.572]***	[0.268]	[0.076]	[10.242]***
Short-Term Debt/Assets	0.031	0.008	0.055	0.000	0.322	0.032	0.033	0.1588	0.037	0.021	3.3944***	0.037	0.278	1.2246	0.0378	0.023	3.0761***
						[0.127]	[0.006]	[1.994]**	[0.015]	[0.002]	[5.343]***	[0.013]	[0.002]	[3.037]***	[0.015]	[0.001]	[7.239]***
Long-Term Debt/Assets	0.200	0.167	0.194	0.000	0.814	0.232	0.169	3.1140***	0.203	0.219	0.8753	0.217	0.090	6.3679***	0.262	0.131	8.4183***
						[0.198]	[0.114]	[4.089]***	[0.182]	[0.157]	[0.795]	[0.195]	[0.002]	[7.101]***	[0.228]	[0.026]	[10.384]***
Panel C: Firm Size and Investment																	
Market Value of Equity in \$ Mio.	24'020	2053	55'986	2	422'640	30'961	20'142	1.8330*	38'957	5'648	7.9842***	36'851	410.000	10.2296***	42'643	3'219	9.3491***
						[4'409]	[916]	[6.454]***	[5'819]	[815]	[8.635]	[6'012]	[153]	[11.724]***	[7'675]	[552]	[14.955]***
Size	7.705	7.706	2.262	3.040	13.53	8.666	6.732	7.7573***	8.537	6.756	9.4482***	8.725	4.725	23.9125***	9.187	6.049	22.7719***
						[8.463]	[6.305]	[7.580]***	[8.544]	[6.515]	[8.602]	[8.592]	[4.729]	[12.914]***	[8.980]	[6.037]	[17.061]***
Tobin's Q	2.061	1.637	1.261	0.654	6.82	1.905	2.259	2.448**	2.113	1.819	2.7042***	2.004	2.352	1.869*	1.955	2.178	2.0701**
						[1.541]	[1.783]	[1.997]**	[1.657]	[1.506]	[2.707]***	[1.564]	[1.883]	[1.853]*	[1.591]	[1.735]	[0.963]
						N=307	N=126		N=310	N=184		N=355	N=78		N=296	N=265	

investors even have a negative ROA in the fiscal year prior to the Schedule 13(D) filing. Furthermore, investors in this group also have a negative cash flow (same for the Whited-Wu index) and again, the difference between constrained and unconstrained investors is apparent and significant at the 1% level across all measures. This implies that in general, constrained investors are less profitable (Whited and Wu, 2006, p.544).

Panel B reports ratios on cash balances and debt. Constrained firms have considerably larger amounts of cash reserves (both cash and short-term investments) reflecting their dependency on internal funds when it comes to investments (Fazzari et al., 1988, p.142). The difference in means is significant at the 1% level across all measures and the largest for firms grouped by the HP-index. Unsurprisingly, book leverage, defined as long-term debt plus current debt to total assets (MacKay and Phillips, 2005, p.1440) is higher for firms considered to be financially unconstrained, as financially constrained firms face the issue of restricted access to external finance. Significance in differences is given for all measures, except for the dividend payout ratio where the leverage levels are close to equal. Similar, the differences in the ratio of short-term debt to total assets are small but significant for firms grouped by their dividend payout ratio and credit rating. The sub-samples characteristics are similar to those presented in Whited and Wu (2006, p.544) and Hadlock and Pierce (2010, p.1917), thereby suggesting a successful implementation of the measures on the sample of Schedule 13(D) filings.

Facing Panel C, information on firm size and investment is presented. The market value of equity is defined as the closing price at the end of the fiscal year times the number of shares outstanding. Through all measures, financially constrained firms have a lower market value of equity when compared to their counter samples. Except the Whited-Wu index, the difference is significant at the 1% level. The largest difference is among the two samples classified by the HP-Index. This however is unsurprising, as it only includes the two variables size and age with size playing a determining role. Similar differences are apparent in the variable size, defined as the natural logarithm of total assets. In conclusion, this suggests the investor's size is a determinant across all measures for firms identified to be financially constrained. Lastly, Panel C also presents the investors investment opportunity in the form of Tobin's Q (MacKay and Phillips, 2005, p.1441), which is measured according to Khatami et al. (2015,

p.1). Constrained firms have a higher Tobin's Q which may be evidence of their unexploited investment opportunities (Whited and Wu, 2006, p.539).

To conclude, firms identified to be constrained in the sample of corporate activist investors are less profitable, hoard more cash and have smaller leverage compared to unconstrained firms. They are usually smaller in size and have more unexploited investment opportunities. Across all measures, the financial characteristics of financially constrained and unconstrained corporations tend to move in the same direction and show similarities to those of other studies (see Whited and Wu (2006, p.544) and Hadlock and Pierce (2010, p.1917))

4 Market Reactions to 13(D) Filings – Abnormal Stock Returns

In analyzing whether the financial condition of the activist corporate investor matters, abnormal share price reactions around the filing date identify the effect the 13(D) filing has on the target's stock, likewise the market's perception of value improvement, after accounting for general market movements. **Hypothesis I** The set up of the event study performed for this purpose is as follows: The time line consists successively of the estimation window, in which parameter estimates are obtained, the event window for which the abnormal returns are computed and the post event window. The filing date, as reported by the SEC and reported on EDGAR is set as the event day. For simplicity, the event window $[x,y]$ is determined relative to the event day 0 with x days before and y days after the filing date. Abnormal returns are computed for various event windows. For that reason, the estimation window is set 120 days prior to the largest event window. With the largest event window starting 30 days before the event day, the estimation window begins 150 days prior to the actual event day.

The abnormal return $AR_{i,t}$ for the target's security i at day t is defined as the difference between the actual (observed) return $R_{i,t}$ and the expected return $E(R_{i,t}|X_t)$ given the absence of the event (MacKinlay, 1997, p.15):

$$AR_{i,t} = R_{i,t} - E(R_{i,t}|X_t) \tag{1}$$

The expected return $E(R_{i,t}|X_t)$ is the result of an estimation based the market model, in which the value-weighted NYSE/Amex/Nasdaq index from CRSP proxies for the market return $R_{M,t}$ and likewise is the independent variable (MacKinlay, 1997, p.18).¹⁰ This yields the abnormal return $AR_{i,t}$

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{M,t}) \quad (2)$$

To accommodate for a multiple period event window and to draw overall inferences of the Schedule 13(D) filings (MacKinlay, 1997, p.21), the abnormal returns $AR_{i,t}$ for target i are aggregated over the event window (τ_1, τ_2) .

For robustness, two different methods in aggregation over time are used. The cumulative abnormal return $CAR_{i,(\tau_1, \tau_2)}$ and the abnormal buy-and-hold return $BHAR_{i,(\tau_1, \tau_2)}$. The cumulative abnormal return $CAR_{i,(\tau_1, \tau_2)}$ for security i in event window (τ_1, τ_2) , is the sum of the abnormal returns $AR_{i,t}$ from equation (2).

$$CAR_{i,(\tau_1, \tau_2)} = \sum_{t=1}^T AR_{i,t} \quad (3)$$

The second method of aggregation over time is the abnormal buy-and-hold return $BHAR_{i,(\tau_1, \tau_2)}$. It is independent from the results of equation (2) and no estimation window is required. The abnormal buy-and-hold returns $BHAR_{i,(\tau_1, \tau_2)}$ are the difference between the realized (observed) buy-and-hold returns and the normal buy-and-hold returns $R(R_{i,t}|X_t)$. In contrast to the cumulative abnormal return, the buy-and-hold return mimics the investment strategy of investors that buy the stock and hold it for a longer period of time. In this sense, the actual (normal) buy-and-hold return on day t is the return on day t times its lagged return on day $t-1$ which in turn is the result of a multiplication with its lagged return $t-2$. This means that for the target's security i in the event window (τ_1, τ_2) the abnormal buy-and-hold return $BHAR_{i,(\tau_1, \tau_2)}$ is

$$BHAR_{i,(\tau_1, \tau_2)} = \prod_{t=\tau_1}^{\tau_2} (1 + R_{i,t}) - \prod_{t=\tau_1}^{\tau_2} (E(R_{i,t}|X_t)) \quad (4)$$

¹⁰For the expected return the market model assumes a constant and linear relation between the observed returns $R_{i,t}$ and the return of a market index $R_{m,t}$ (MacKinlay, 1997, p.18). The parameters are estimated by ordinary least squares regressions based on estimation-window observations of stock returns.

Analogous to the estimation of normal returns for equation (2), the value-weighted NYSE/Amex/Nasdaq index from CRSP is used to calculate the normal buy-and-hold returns $E(R_{i,t}|X_t)$ in the respective event windows (τ_1, τ_2) (Brav, Jiang and Kim, 2009, p.25).

4.1 Time Series of Abnormal Returns

Graph 1 plots the times series of average cumulative abnormal returns for securities subject to all filings and subject to filings of constrained and unconstrained corporate investors (grouped by the WW-Index). This means, average abnormal returns are calculated by grouping targets based on characteristics of the investor. A first glance reveals that independent of the investor, all three lines evolve almost equally until day -10. In the following days, targets of financially constrained investors experience smaller abnormal returns, that is their aggregation continues to proceed below the other two. Considering the fact they peak at around 8%, targets of unconstrained investors experience cumulative abnormal returns considerably higher with close to 20%. In-between, abnormal returns for the complete sample of targets aggregate to approximately 15% during the 41-day window. This is approximately 5% more compared to the 10% reported in Collin-Dufresne and Fos (2015, p.1563). Figure 1 indicates that abnormal returns in the [-30,10] window for targets of financially constrained investors differ in magnitude and thus presents first evidence that financial constraints of corporate activist investors could matter to the market.

Furthermore, Figure 1 reveals that in all three cases, abnormal returns start to occur extensively in the [-11,-8] period, implying that valuable information – in any form – is available before the actual filing. Although the behavior is in line with that presented in Collin-Dufresne and Fos (2015, p.1563), Greenwood and Schor (2009, p.370) and Brav, Jiang, Partnoy et al. (2008, p.1756), possible explanations are the following: Stock market participants might knew about the pending stake before it was announced, for which Allen and Phillips (2000, p.2802) choose their event window to be [-10,10]. This is equivalent to information leakage for which Brigida and Madura (2012, p.31) find evidence prior to the actual filing date. Furthermore, filings may not be reported until several days after the actual investment for which reason Liao (2014, p.87) also implements a longer event window. These possibilities are in line with

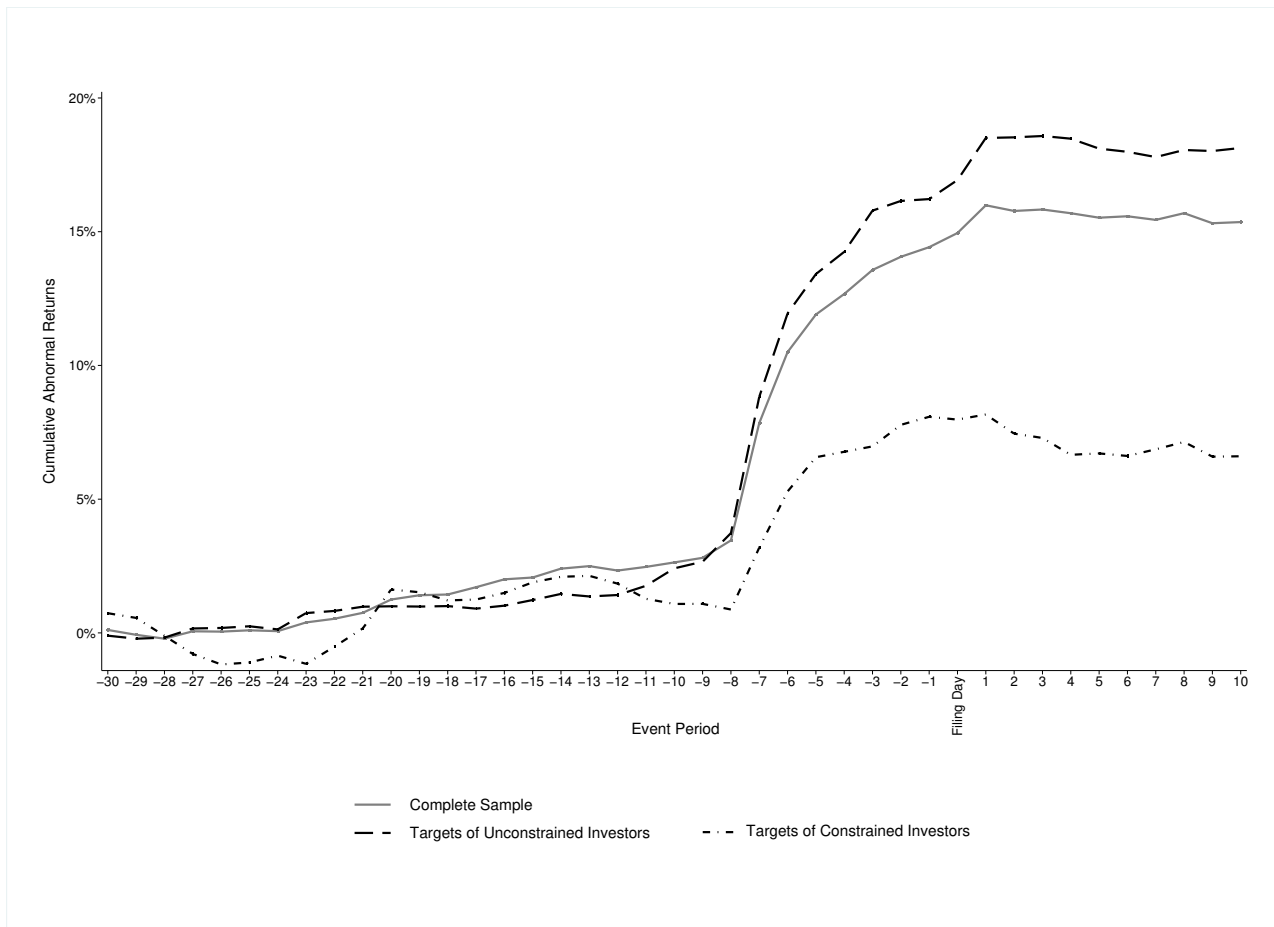


Figure 1. Time Series of Cumulative Abnormal Returns. The solid line plots the time series of average cumulative abnormal returns for all targets where the cumulative abnormal returns is the aggregation of abnormal returns up to each point in time using the market model with the value-weighted NYSE/AMEX/Nasdaq index from CRSP as the market return from 30 days prior to the filing date to 10 days afterwards. Equivalently, the dashed (dashed-dot) line plots the average cumulative abnormal returns for targets of financially unconstrained (constrained) investors.

general characteristics of Schedule 13(D) filings, as Section 13(d) grants the investor a 10-day window after passing the 5% threshold for disclosing the filing and thereby allowing for the possibility of information leakage and delayed disclosure. As it is the investor's own actions that potentially increase the value of the target firm, a potential increase in their trading activity could also explain the early upsurge. This approach is adopted from Collin-Dufresne and Fos (2015, p.1561) who analyze the trading strategy of informed Schedule 13(D) filers. Firstly, they find that trading activity increases in the $[-12, -9]$ period in which the reported event dates are clustered (date on which the 5% threshold is passed). Secondly, they show that close to 1% of outstanding shares are purchased on the event date, compared to only 0.10% and 0.15%

on the days before and after the event date (Collin-Dufresne and Fos, 2015, p.1561). Thirdly they note that the prices move up when Schedule 13(D) filers trade. By combining these three findings, an explanation could be that by their own trading at the event day, corporations drive up prices. This argument however is limited, as constrained firms experience small negative abnormal returns in this period. Summarizing these explanations, Klein and Zur (2009, p.207) start their event window at day -30 to allow for the 10-day 13(D) filing window, possible prior leakage of information and pre-filing price pressure.

That is to say, these researchers have expanded their event-windows to overcome the difficulty of identifying the precise date on which the information reaches the market. This adjustment might create problems as the number of confounding events increases (McWilliams et al., 1999, p.352). For that reason, the sample of Schedule 13(D) filings was cross-referenced with a sample of activism filings provided by SharkRepellent. This however lead to only 40 matched campaigns occurring in the respective month of the target’s Schedule 13(D) filing. For these 40 matches, the reported announcement date by SharkRepellent was either equal to or later than the reported filing date of the Schedule 13(D) and thereby revealing no additional information on the filings.

4.2 Event Windows and Financial Constraints

For the aforementioned reason, Table III present the mean [median] cumulative and buy-and-hold abnormal returns for the following four event windows: Event window 1 is $[-10, 3]$, to allow for the 10-day filing window, information leakage and accommodate subsequent press coverage. The second event window is $[-10, -6]$ to detach the possible effect of information leakages and event-date trading. Analogous, the third event window $[-5, 3]$ aims to control for these two. This seems to be reasonable, as the aggregation of abnormal returns in Graph 1 slows down at around day -5, implying that information has been processed. The fourth event window is $[-1, 3]$ to accommodate for just the filing date and press coverage.

Table 3

Abnormal Stock Returns Surrounding the Initial Schedule

This table shows cumulative abnormal returns (CAR) and buy-and-hold abnormal returns (BHAR) for the target. Cumulative abnormal returns are the aggregated abnormal returns corresponding to each event window and are estimated through the market model, using the value-weighted NYSE/AMEX/Nasdaq index from CRSP. Buy-and-hold abnormal returns are the difference between the target's buy-and-hold return and the value-weighted NYSE/AMEX/Nasdaq index from CRSP. Mean [median] abnormal returns are reported for the total sample of targets (column 1) and for targets subject to filings disclosed by strong and weak investors according to the WW-Index (column 2 and 3). Panel A (C,D) presents abnormal returns for the 10 (5, 1) days prior to the filing day of the Schedule 13(D) through the 3 trading days after the filing day. The abnormal returns in Panel C are for the 10 days prior to the filing day until 6 days prior to the filing day. All data are winsorized at the 1% and 99% levels.

	Total Sample	Investor Constr.	Investor Unconstr.	t-Stat. [Z-stat] for Diff. Bet. Column (2) and (3)
	(1)	(2)	(3)	
Panel A – Abnormal Returns [Days -10,+3]				
CAR	13.36%***	6.01%***	16.81%***	3.9300***
	[7.95%]***	[2.85%]	[10.89%]***	[3.980]***
BHAR	13.97%***	6.93%***	17.58%***	3.8464***
	[8.26%]***	[1.20%]	[11.30%]***	[4.238]***
Panel B – Abnormal Returns [Days -10,-6]				
CAR	8.03%***	4.00%**	10.18%***	2.8772***
	[2.11%]***	[0.42%]	[3.00%]***	[3.608]***
BHAR	8.23%***	4.42%**	10.34%***	2.7678***
	[1.89%]***	[1.00%]	[3.44%]***	[3.396]***
Panel C – Abnormal Returns [Days -5,3]				
CAR	5.33%***	2.00%*	6.63%***	2.6043***
	[1.08%]**	[0.71%]	[0.87%]*	[1.184]
BHAR	5.78%***	2.47%**	7.20%***	2.6811***
	[0.87%]**	[0.50%]	[0.87%]	[1.605] *
Panel D – Abnormal Returns [Days -1,3]				
CAR	1.77%***	-0.48%	2.43%***	2.6174***
	[0.19%]	[-0.73%]	[0.09%]	[2.503]**
BHAR	1.90%***	-0.09%	2.62%***	2.4891**
	[0.08%]	[-0.31%]	[0.25%]	[2.317]**
N	561	126	307	

Column (1) presents the abnormal returns for all targets. Column (2) and (3) show the abnormal returns for targets dependent on their investor’s financial condition. The investors are grouped by the Whited-Wu index and groups are equal to those presented in Table II, with 126 filings disclosed by constrained and 307 disclosed by unconstrained investors.

For the abnormal returns in columns (1), (2) and (3), significance levels are shown. The null hypothesis to be tested is that the mean day abnormal return is equal to zero, and thus concerns the average effect of an event on returns to shareholders. If the average abnormal returns are independent, identical distributed, and normal, the test statistic is distributed Student- t under the null hypothesis (Brown and Warner, 1985, p.7). As shown in Brown and Warner (1985, p.11), the t -Statistic can be applied even under the assumption of non-normality and a sufficient adjustment for cross sectional dependence is the application of the market model for estimating abnormal returns (Brown and Warner, 1985, p.22). Therefore, the statistical significance of the cumulative abnormal returns is given by a two-tailed t -test for which the alternative hypothesis is defined as: cumulative abnormal returns are different from zero. The statistical significance of the median is computed by a quantile regression of the abnormal returns where the p -value of the coefficient represents the statistical significance of the median (UCLA, 2018). Column (4) tests the difference in means [medians] of column (2) and (3). As in Section 3, the t -statistic represents the standard parametric test for difference in means and the Z -statistic is the non-parametric Mann-Whitney rank-sum test. All returns presented in Table III are winsorized at the 1% and 99% level. This extensive presentation of aggregated abnormal returns is done for three reasons. Firstly, to test the differences in abnormal returns over varying event windows and thereby accomodate for the time-effect. Secondly, to test whether the estimated abnormal returns are similar for the two methods of measurement and thirdly to test whether the investor’s financial condition matters independently of time (across all event windows).

Panel A presents the abnormal returns for the largest event window $[-10+3]$. Both, cumulative and buy-and-hold abnormal returns are positive and strongly significant at the 1% level with mean abnormal returns being 13.36% and 13.97% respectively. Consistent with Graph 1, targets of unconstrained investors have a mean CAR and BHAR of 16.81%, around 10% higher when compared to those of constrained investors. For both, CAR and BHAR,

the difference in abnormal returns across the two groups is statistically significant at the 1% level. This shows, the investor's financial condition does matter economically and statistically when comparing the two means. These findings are supported by differences of around 7% in medians. Furthermore, the abnormal returns of around 13% are different to those observed in Klein and Zur (2009, p.208) but support Brigida and Madura (2012, p.29) findings that abnormal returns are higher for non-financial corporations.

Turning to panel B, the largest runup happens in the [-10,-6] event window. Abnormal returns aggregate to around 8%, making up more than 50% of the total [-10,3] runup. These results are matching with Brigida and Madura (2012, p.32) who find that the target's runup is greatest during the event window [-10,-6]. Again, targets of weak investors only gain 4% whereas those of unconstrained investors have abnormal returns up to 10.30%. Furthermore, the difference in means is significant at the 1% level for both methods of estimation.

In Panel C, abnormal returns for the event window [-5,3] are shown. Independent of the investor, all targets experience a mean CAR of 6.63%, significant at the 1% level. Here too, targets of unconstrained investors outperform those of weak investors with around 5%, while being statistically significant at the 1% level.

Turning to abnormal returns for the smallest event window [-1,3] in Panel D, targets on average gain 1.77% which is significant at the 1% level. Hence a positive market reaction at the announcement of the filing exists and is not only apparent in the previous days. Striking is that on average, targets of constrained investors now experience negative returns but statistically not different from zero. Furthermore, the difference of approximately 2% among the two samples is considerable, especially when considering the short event window and the already low-level of abnormal returns.

Concluding, both buy-and-hold and cumulative abnormal returns show similar results with positive and significant market reactions in all event-windows surrounding the Schedule 13(D) filing date. Furthermore, the largest aggregation happens in the [-10,-6] event window but is not exceptionally high when compared to the overall runup. Most importantly however is the difference in average abnormal returns for targets of financially constrained and unconstrained investors. The difference is present, both on an economic and statistical level. When testing the differences in means, the difference is significant across all event windows, thus present-

ing further evidence that financial constraints matter, independent of the event-windows of aggregation.

4.3 Financial Constraints and Purpose of Transaction

This paper follows various studies when using the longer event window. So far it has been shown that independent from the event window, targets of financially unconstrained corporate investors gain on average significantly more, when compared to those of financially constrained investors. Attached thereto and applying the Whited-Wu Index for identification, this section aims to analyse whether this difference is existent both, across filings' different transaction purposes and across different measures of financial constraints.

For this reason, Table 3 presents the mean [median] cumulative abnormal returns from the $[-10, +3]$ event window for each each measure and further for different transaction purposes. The measures of financial constraints and among which the sample separation takes place are the Whited-Wu Index, the investor's dividend payout ratio, the HP-Index and lastly the investor's S&P's long-term issuer credit rating. For comparison, Panel A shows the abnormal returns for the complete sample of targets whereas Panel B presents the abnormal returns dependent on the filings purpose. Hence *Engaging into a Takeover* involves merger agreements, tender offers and hostile bids and *Strategic Investments* represents alliance agreements, license agreements, strategic acquisitions and joint ventures. *Remaining Purposes* groups the abnormal returns for the remaining transaction purposes. This structuring is applied to enable a better comparison to relevant studies. For each measure, Column (1) and (2) present mean [median] cumulative abnormal returns for the two sub-samples. Column (3) tests the difference between column (1) and (2) and displays the t -statistic [Z -Statistics].

Turning to Panel A, average abnormal returns for all samples, without specifying the transaction the purpose, are presented. Across all measures, targets of financially constrained investors have significantly lower abnormal returns in the $[-10, 3]$ event window. Starting with the samples formed by the Whited-Wu index, the difference for the mean CAR is 10% and significant at the 1% level. Targets of unconstrained investors gain 16.81% and those of constrained only 6%. Similar conclusions can be drawn when comparing the samples grouped by the in-

vestor's dividend payout ratio. Targets of constrained investors encounter abnormal returns of 9.79% compared to 15.76% for unconstrained investors. Again, the difference in means is significant at the 5% level and comparing the sub-samples of the HP-index yields similar results – targets of constrained investors experience abnormal returns of 9.18%, those of financially unconstrained investors 16.2% and the 7% difference in means is significant but only at the 5% level. On the other hand, the difference in market reactions to filings of investors with and without a credit rating is present but has no statistical significance. An explanation could be a possible upward bias in mean abnormal returns for the sample of constrained investors, as some of the least constrained corporations might lack a credit rating and are therefore mistakenly identified as financially constrained (Heller, 2015, p.18). Nonetheless, across all measures is a difference in the mean cumulative abnormal returns visible, further indicating that financial constraints might matter when the market assesses the value improvement for the target.

Facing Panel B, abnormal returns of targets are now additionally sorted by the filing's purpose of transaction. The purpose of engaging into a takeover generates the strongest market reaction with a mean CAR of 21.45% for the 271 targets and cross all measures, targets of financially unconstrained investors have a CAR of roughly 25% for the [-10,3] event window. Khatami et al. (2015, p.112) have similar results for acquisition announcement returns when the acquirer is financially unconstrained with an 11-day CAR of 25%. The difference in abnormal returns is the largest for the Whited-Wu index and the smallest for the investor's credit rating which is analogous to Panel A. For all measures, except the HP-index, the difference in mean CAR's is significant at least at the 5% level. For targets of investors grouped by the HP-Index, the difference is significant only at the 10% level which might be due to the low sample size of only 43 filings from constrained investors. Nonetheless, the univariate comparison reveals that investors' financial constraints might be especially important in the context of mergers and acquisitions (Khatami et al., 2015, p.112).

Table IV
Abnormal Returns by Measures of Financial Constraints and Purpose of Transaction

This table shows cumulative abnormal returns aggregated over the window [-10,3] for the sub-samples of each measure of financial constraints. Measures of financial constraints are equal to those presented in Section 3. Mean [median] target abnormal returns of each measure are reported for the sample of financially constrained (column 1) and unconstrained investors (column 2). Column (3) presents the t-stat [Z-stat.] for differences in means [medians] of Columns (1) and (2). Panel A shows the cumulative abnormal returns for the complete sample of targets whereas Panel B presents the cumulative abnormal returns for targets based on the purpose of transaction. The purposes are equal to those presented in Section 3. See Appendix A for Measure and Appendix B for Purpose definitions. All data are winsorized at the 1% and 99% levels.

	Complete Sample	I. Whited-Wu Index			II. Dividend Payout Ratio		
		Investor Constr.	Investor Unconstr.	t-Stat [Z-stat] for Diff. Bet. (1) and (2)	Investor Constr.	Investor Unconstr.	t-Stat [Z-stat] for Diff. Bet. (1) and (2)
		(1)	(2)	(3)	(1)	(2)	(3)
Panel A: Complete Sample							
All Purposes	13.36%***	6.01%***	16.81%***	3.6856***	9.79%***	15.76%***	2.3935**
	[7.95]***	[2.85%]	[10.88%]***	[3.980]***	[6.26%]***	[8.86%]***	[1.791]*
	N=561	N=126	N=307		N=184	N=310	
Panel B: Purpose of Transaction							
Engaging into a Takeover	21.45%***	14.48%***	25.96%***	2.6896***	17.03%***	25.85%***	2.4404**
	[19.31]***	[9.56%]**	[22.27%]***	[3.080]***	[15.67%]***	[24.16%]***	[2.242]**
	N=271	N=53	N=143		N=84	N=153	
Strategic Investment	7.92%**	1.14%	10.20%**	1.0278	9.44%*	3.58%	-0.8641
	[1.13]	[-0.61%]	[1.23%]	[0.434]	[14.16%]	[-0.88%]	[-2.078]**
	N=74	N=16	N=46		N=15	N=53	
Remaining Purposes	1.01%	-0.49%	8.31%***	2.1685**	2.65%	7.12%	1.2405
	[-0.09%]	[-2.9%]	[3.17%]*	[2.705]***	[1.02%]	[1.43%]	[0.871]
	N=117	N=57	N=118		N=85	N=104	

Table IV – Continued

	III. HP-Index			IV. S&P Long-Term Credit Rating		
	Investor Constr.	Investor Unconstr.	t-Stat [Z-stat] for Diff. Bet. (1) and (2)	Investor Constr.	Investor Unconstr.	t-Stat [Z-stat] for Diff. Bet. (1) and (2)
	(1)	(2)	(3)	(1)	(2)	(3)
Panel A: Complete Sample						
All Purposes	9.18%*** [6.69%]** N=78	16.20%*** [10.12]*** N=355	2.0678** [1.804]*	11.74%*** [7.65%]*** N=265	14.80%*** [8.69%]*** N=296	1.3357 [0.835]
Panel B: Purpose of Transaction						
Engaging into a Takeover	18.22%*** [21.08%]*** N=43	25.85%*** [22.27%]*** N=163	1.6634* [1.290]***	18.26%*** [16.37%]*** N=138	24.75%*** [22.22%]*** N=133	2.0704** [1.719]*
Strategic Investment	11.17% [21.09%] N=3	8.38%** [10.96%] N=58	-0.1841 [-0.667]	2.42% [5.68%] N=18	9.69%** [1.09%] N=56	0.9 [0.101]
Remaining Purposes	-3.22% [-2.92%] N=34	7.86%*** [5.47%]*** N=62	2.5283*** [3.070]***	5.03%* [1.33%] N=109	5.12% [1.81%] N=107	0.00267 [0.506]

Targets subject to filings with the purpose of strategic investments have a 7.92% CAR, significant at the 5% level which is a similar market reaction to the one observed by Allen and Phillips (2000, p.) who find abnormal returns of 6.9% in response to strategic announcements. For the reason that the sample consists of only 74 filings having the purpose of a strategic investment, performing tests and deriving conclusions on the difference's economic and statistical significance is problematic. The issue becomes even more demanding when further splitting filings into the sub-samples of each measure, as they become smaller and tests lose their meaningfulness.

Subsequently, there are only 16, 15 and 18 observations in the three samples of constrained investors from the WW-Index, dividend payout ratio and credit rating and just three for the HP-Index. Samples of the Whited-Wu index and the investor's credit rating present differences in mean CAR's matching with previous findings but when considering the sub-samples of the dividend payout ratio and the HP-Index, results differ. Although for these, targets of constrained investors now have higher abnormal returns, the difference is not significant. Hence the samples small scales do not allow valid inferences between returns for targets of financially constrained and unconstrained investors.

For the group of remaining purposes, the sample size is large enough to draw extensive univariate conclusions. As the average cumulative abnormal return during the $[-10,3]$ event window for all remaining purposes is only 1.01%, filings disclosed for strategic investments and takeovers lead to the strongest market reactions. When looking at the abnormal returns for sub-samples of the Whited-Wu index, targets of constrained investors earn -0.49% and those of unconstrained investors 8.31%. The average CAR for targets of unconstrained investors is significantly different from zero plus the difference in abnormal returns is significant at the 5% level. Similar conclusions can be drawn for the sub-samples formed according to the HP-index for which targets of constrained investor experience negative abnormal returns of -3.22% and those of unconstrained investor 7.86%. The difference average cumulative abnormal returns across the two groups is significant at the 1% level. Those are the only two sub-samples in which negative returns occur which implies the market perceives these announcements as a decline in the target's value. Concerning the dividend payout ratio, the difference in mean CAR's is visible but not significantly different from zero and for the samples of the credit rating, the difference is non-existent. This confirms that the investor's credit rating might have the least explanatory power in identifying financially constrained investors compared to the other measures.

The univariate analysis shows that both, across measures and transaction purposes, the difference in abnormal returns for targets of constrained investors is generally present and significant. Hence Table III gives further evidence on whether financial constraints of corporate activists matter. Irregularities are only evident for filings with the purpose of a strategic investment, but here too does the Whited-Wu index show differences in abnormal returns. Table III also shows that abnormal returns are the highest for filings with the purpose of engaging into

a takeover, followed by filings disclosed due to a strategic investment. Except for these filings, statistical tests on differences are valid and show that the average CAR significantly differs across groups. Concluding, measures for identifying financially constrained investors separate the sample in a meaningful way and have categorical power when analyzing the sample’s cumulative abnormal returns. This in turn supports the hypothesis that financial constraints of corporate activist investors matter.

5 Cross Sectional Variation of Abnormal Returns

Equally important as the average abnormal return subject of analysis in the previous section is its cross-sectional variation because it reflects the heterogeneity in market perceptions regarding the expected value generated by activism. The advantage is that it allows to draw *ceteris paribus* conclusions, which simple t-tests of means cannot do (Khatami et al., 2015, p.111). Does the market’s perceived value improvement for the target depend on the investor? What is the relationship between financially constrained investors and target’s abnormal returns among the sample of Schedule 13(D) filings? Table V report the results from ordinary least squared regressions exploring the cross-sectional variation in market response to corporate activist investors’ Schedule 13(D) filings. The regression is constructed as follows

$$AR_i = \beta_0 + \beta_1 FC_i + \sum_{k=1}^n \beta_k + X_{k,i} + \epsilon_i \quad (5)$$

where the dependent variable AR_i in Table V is the cumulative abnormal return in the longer [-10,3] event window for target i . This means the regressions is based on cross-sectional data, as for each filing (event) there exists one observation of abnormal returns, the cumulative abnormal return for target i . FC is a dummy variable equal to 1 if in filing i the investor is classified as financially constrained and zero if otherwise and corresponds to each of the measures. Hence for each measure – Whited-Wu index, HP-Index dividend payout ratio and credit rating, the regression is performed separately. This leads to four regressions in Table V. $X_{k,i}$ represents a vector of control variables of filing, investor and target characteristics, with *takeover* and *strategic* being equal to one if the transaction purpose was due to engaging into a takeover or

strategic investment. To minimize the risk of spurious inference, proxies for the business cycle *recession*, and both the investor's and target's Tobin's Q are included. *Recession* is a dummy variable equal to one if the filing was disclosed either in the year 2001 (early 2000s recession) or in the years from 2007-2009 (Gret Recession) and zero otherwise. In addition, the regression controls for the *ROA* and *Cash flow from Operations to Assets* for both investor and target and the *Relative Size*, defined as the natural logarithm of target total assets divided by bidder total assets. The variable *Relative Size* is included because small firms are more vulnerable to capital market imperfections as they are less well known (Almeida et al., 2004, p.2004). In a last step, all regressions control for both, the investor's and target's industry, defined by Fama & French's 17 Industry classification code.¹¹ The effect size of each independent variable is in original units of the dependent variable, thus can be interpreted as the effect in abnormal returns.

Turning first to Column (1) and keeping everything else equal, corporate activism of financially constrained investors identified by the Whited-Wu index generates abnormal returns 10.12% lower when compared to activism by unconstrained investors. The coefficient of the Whited-Wu dummy variable is significant at the 1% level, implying that investor's financial constraints matter when the market reacts to Schedule 13(D) filings and there is cross-sectional dependency between abnormal returns and the investor's financial condition. This finding is matching with previous results of the univariate analysis where targets of financially constrained investors had average abnormal returns 10% lower compared to target's of unconstrained investors. Furthermore, relative size seems to be an important determinant of the market reaction across all measures, meaning that if investor and target have the same size, abnormal returns are reduced by 28%. This is matching with findings on financial constraints as smaller firms have less excess to external finance. The smaller the target and the larger the investing corporation, the smaller is the reduction in abnormal returns. As the regression controls for relative size, the financial constraints reduction of 10.12% in abnormal returns is independent from the size effect. Furthermore, the dummy variable takeover has a positive coefficient of 16.35, significant the 1% level. This means targets subject to a filing with the purpose of engaging into a takeover experience abnormal returns 16.35% higher, keeping everything else equal. The significance is

¹¹To prevent over-classification of the model, the 17 rather than the 48 industry classification is used.

Table V

Relation between Cumulative Abnormal Returns and Financial Constraints I

The dependent variable is the cumulative abnormal return during the (-10,+3)-day window around the Schedule 13(D) filing date. The main regressors are the financial constraints measures as defined in Section 3. All regressions control for the *Relative Size* defined as the natural logarithm of target total assets divided by bidder total assets and is taken from Khatami et al. (2015, p.112). The two dummy variables *Takeover* and *Strategic*, equal to one if the purpose of transaction was engaging into a takeover or a strategic investment, zero otherwise. *Recession* equal to one if the filing was disclosed 2001 or in the period from 2007-2009, zero otherwise. Target's and investor's *CF from Operations / At*, the ratio of cash-flow from operations to total assets, *Tobin's Q* and *ROA*, the ratio of EBITDA to total assets. Further see Appendix A for Measure and Appendix B for Purpose definitions. All data are winsorized at the 1% and 99% levels. All *t*-statistics adjust for heteroskedasticity. *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels.

VARIABLES	(1) car_seven_mm	(2) car_seven_mm	(3) car_seven_mm	(4) car_seven_mm
Whited-Wu Index	-0.1012*** (-3.1909)			
HP-Index		-0.0264 (-0.6352)		
Dividend Payout Ratio			-0.0447* (-1.7344)	
Credit Rating				-0.0037 (-0.1425)
Relative Size	-0.2803*** (-4.3565)	-0.2541*** (-3.9225)	-0.2734*** (-4.6737)	-0.3038*** (-5.2627)
takeover	0.1635*** (5.8778)	0.1857*** (6.5362)	0.1691*** (6.4145)	0.1597*** (6.6681)
strategic	0.0215 (0.4372)	0.0440 (0.9104)	-0.0100 (-0.2562)	0.0272 (0.6328)
Recession	0.0433 (1.1501)	0.0216 (0.5951)	-0.0077 (-0.2381)	0.0009 (0.0297)
CF from Operations / Assets	-0.0135 (-0.0557)	0.2189 (1.1638)	0.1333 (0.8223)	0.2431 (1.5693)
CF from Operations / Assets (Target)	0.1949** (1.9948)	0.0522 (0.5188)	0.0690 (0.6959)	-0.0825 (-0.7601)
Tobin's Q	-0.0038 (-0.3218)	-0.0055 (-0.5291)	-0.0086 (-0.8022)	-0.0019 (-0.2082)
Tobin's Q (Target)	-0.0232*** (-3.6815)	-0.0279*** (-3.8742)	-0.0243*** (-4.0870)	-0.0261*** (-4.3028)
ROA	-0.1419 (-0.6171)	-0.2760 (-1.3470)	-0.1537 (-0.9216)	-0.2657* (-1.6641)
ROA (Target)	-0.2451** (-1.9925)	-0.0445 (-0.3643)	-0.0741 (-0.6216)	0.0859 (0.7231)
Constant	0.2887*** (3.9297)	0.2188*** (2.9130)	0.2629*** (3.4050)	0.2390*** (3.2169)
Observations	401	403	458	521
R-squared	0.2553	0.2482	0.2360	0.2170

Robust *t*-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

given across all measures. When compared to the coefficient of the variable *strategic* which has an effect of 2.15% on target's abnormal returns, the results of the regression are matching with the previous analysis, namely that targets subject to filings with the purpose of engaging into a takeover experience the largest abnormal returns. Moreover Column (1) shows that the more profitable the target is, the higher are its abnormal returns.

Heading to Column (2), the HP-index is used to identify financially constrained investors. If the investor is financially constrained, targets have abnormal returns 2.6% lower when compared to unconstrained investors. Although not statistically significant, the coefficient points in the same direction as in the case of the Whited-Wu index. It follows that the null hypothesis of no effect of financially constrained investors on target's abnormal returns cannot be rejected. This however does not imply that investor's financial constraints have no effect on target's gains. Similar to the regression in Column (1), relative size has a large effect on the target's abnormal returns. In the process of developing the regressions, the coefficient of the HP-index dummy loses its significance when including the investor's size in the regression. One explanation could be its high correlation with the investor's size but beyond that, size is also a determinant of financial constraints as Almeida et al. (2004, p.1790) and Heller (2015, p.15) point out. Column (3) shows regression results using the investors dividend payout as a dummy for financially constrained and unconstrained investors. It follows that targets of financially constrained investors have lower abnormal returns when compared to targets of unconstrained investors. While the coefficient is significant at the 10% level, targets of financially constrained investors have abnormal returns 4.37% lower, other things equal. This is further evidence that financial constraints of the investor matter when the market perceives the value improvement for the target. Lastly, Column (4) presents the results of the regression using the investor's credit rating as a measure of financial constraints. Similar to the HP-Index, the coefficient loses its significance when including the investor's size in the regression. This might be due to inaccuracy of the investor's credit rating as a measure of financial constraints as it might falsely identify financially unconstrained investors as constrained. Additionally, by grouping investors according to their credit rating the complete sample size is used which is inconsistent to the samples identified by the remaining measures. Nonetheless targets of fin-

financially constrained investor have abnormal returns 0.03% lower when compared to targets of financially unconstrained investors.

Concluding, the cross sectional regression supports previous findings, namely that financial constraints of the investor matter. Investors sorted by the Whited-Wu index have the strongest impact on abnormal returns followed by those sorted according to their dividend payout ratio. Although these measure support the hypothesis that financial constraints matter, the evidence from Table V is twofold. Two out of the four measures fail to provide statistical significance to support the hypothesis the financial constraints matter when the market perceives the value improvement for the target. Nonetheless, these coefficients pointing in the right direction such that financial constraints have a negative impact on the target's abnormal returns.

6 Conclusion

Schedule 13(D) filings enjoy wide spread attention, particularly when initiated by institutional investors. Recent literature has addressed their interests and motives, the value added and highlighted differences across investor types. Yet a detailed investigation of corporate activist investors has not been conducted. This thesis supports the evidence on why corporations would actively hold equity ownership, namely in the process of takeovers, strategic investments and issuer financing. Furthermore, targets of corporate activist investors experience significant gains around the filing date of a Schedule 13(D). The complete sample of targets experiences average abnormal returns of 13% which is in line with existing evidence that activism – in any form – is perceived as an actual value improvement for the target. Furthermore, using a sample of Schedule 13(D) filings disclosed by corporations from the period 1996-2016, the effect of investor’s financial constraints on target’s gains is analyzed. The thesis provides evidence that financial constraints of activist investors matter, as in the manifestation of significantly lower abnormal returns for targets of financially constrained investors. Across all purposes and independent of the financial constraints measure, targets of financially constrained investors have much smaller abnormal returns. The evidence is further supported by the cross sectional analysis of stock returns, showing that the financial constraints of corporate activists matter. Other things equal and when identifying investors with the Whited-Wu index, targets of constrained investors have abnormal returns 10% lower when compared to those of unconstrained investors. Concluding, both univariate and multivariate analysis show, that financial constraints of corporate activist investors matter.

Appendices

Appendix A Financial Constraints Measures & Variables

Whited–Wu Index

Used from Whited and Wu (2006, p.543) and following Farre-mensa and Ljungqvist (2013, p.38) the Whited-Wu index is calculated as:

$$WW = -0.091X_1 - 0.062X_2 + 0.021X_3 - 0.044X_4 + 0.102X_5 - 0.035X_6$$

where

X_1 is the ratio of cash flow to assets defined as the sum of income before extraordinary items and depreciation and amortization divided by total assets $\frac{ib+dp}{at}$

X_2 is an indicator set to one if the firm pays a dividend, likewise if the sum of common and preferred dividends paid is positive, zero otherwise $dvp + dvc > 0$

X_3 is the ratio of long-term debt to total assets $\frac{dltt}{at}$

X_4 is the size of the investor defined as the natural logarithm of total assets $\log(at)$

X_5 is the average industry sales growth, estimated for each three digit SIC industry and each year separately $\frac{SALE_t}{SALE_{t-1}}$

X_6 is the investor's sales growth $\frac{SALE}{SALE_{t-1}}$

Following convention, the index is calculated for all firms on Compustat and firms are then sorted into terciles based on their index value. Firms in the top tercile are coded as constrained and those in the bottom tercile are coded as unconstrained (Farre-mensa and Ljungqvist, 2013, p.38).

Dividend Payout Ratio

Following Khatami et al. (2015, p.119) and Almeida et al. (2004, p.1789), the investor's dividend payout ratio is defined as the two-year average of the dividend payout ratio from the two preceeding annual reports at each point in time.

The yearly dividend payout ratio is defined as the sum of dividends ($dvp + dvc$) plus stock repurchases (total expenditure on the purchase of common and preferred stocks $prstk$) minus any reduction in the value of net number of preferred stocks outstanding (redemption value $pstkrv$) divided by operating income ($\frac{ib}{at}$) as in Jagannathan et al. (2000, p.369). Further, following Khatami et al. (2015, p.119) and Hadlock and Pierce (2010, p.1923) dividend payout ratios are set equal to 1 if they are above 1 and if a firm has negative operating income and positive dividends. After computing the two-year average payout ratio for all firms on Compustat, firms are sorted into terciles based on their annual payout distribution. Firms in the bottom (top) tercile are coded constrained (unconstrained).

HP / SA – Index

Following Hadlock and Pierce (2010, p.1929) and Khatami et al. (2015, p.119) the index is calculated as: $HP = -0.737 * Size + 0.043 * Size^2 - 0.040 * Age$ where size is the log of inflation adjusted (to 2004) book assets and age is the number of years the firm has been on Compustat with a non-missing stock price. In calculating the index, size is replaced with log(\$4.5 billion) and age with 37 years if the actual values exceed these thresholds (Hadlock and Pierce, 2010, p.1929). After computing the HP index for all companies on Compustat, the firms are sorted into terciles based on their annual index values. Firms in the top tercile are coded as constrained and those in the bottom tercile are coded as unconstrained (Farre-mensa and Ljungqvist, 2013, p.38).

A.1 Rating-Indicator

Other Variables

- Return on assets $\frac{ebitda}{at}$
- Cash flow from operations to total assets $\frac{oancf}{at}$
- Cash and short-term investments to total assets $\frac{che}{at}$
- Cash to total assets $\frac{ch}{at}$
- Book Leverage (MacKay and Phillips, 2005, p.1440) $\frac{dltt+dlc}{at}$
- Short-term debt to total assets $\frac{dlc}{at}$
- Long-term debt to total assets $\frac{dltt}{at}$
- Market value of equity $prcc_f * csho$
- Size of the firm $\log(at)$
- Tobin's Q (Khatami et al., 2015, p.120) $\frac{at-ceq-txdb+csho*prcc_c}{at}$

Appendix B Categorization of Purpose of Transaction

The following definitions are explanatory excerpts of Schedule 13(D) filings from the sample. Based on these descriptions the filing's transaction purpose was identified. Following, the Reporting Person is the investor disclosing the Schedule 13(D) whereas the Issuer is the company subject to the filing.

1. Merger: "the Company entered into the Merger Agreement with the Reporting Person and Merger Sub, pursuant to which the Reporting Person will acquire all of the outstanding equity interests of the Company."

2. Tender Offer: "The Reporting Person announced its intention to commence a partial cash tender offer for up to *number of* shares of Common Stock at a price of \$ *price* net per share"
3. Hostile Takeover: "The Shares have been acquired by the Reporting Persons with a view to ultimately acquiring control of the Issuer pursuant to a merger with, or acquisition of additional stock by, the Reporting Person or one of its subsidiaries. [...] The Reporting Person has contacted the Chairman of the Board of the Issuer and expressed an interest in acquiring the Company and expects to have further discussions with management of the Issuer."
4. Investment Opportunity while Actively Monitoring the Target: "The primary purpose of the Reporting Person's acquisition of the Common Stock is for investment. The Reporting Person believes that at this time, the Common Stock represents an attractive investment opportunity. Although it has no current intention to do so, at some time in the future the Reporting Person may decide that it is desirable to seek to acquire the Issuer or seek to control or otherwise influence the management and policies of the Issuer."
5. Alliance Agreement: "The purpose of the transaction is for investment and to establish a long term distribution alliance between the Reporting Person and the Issuer."
6. License Agreement: "As set forth, the Shares were purchased on in connection with the Development and License Agreement between the Issuer and the Reporting Person."
7. Joint Venture: "The Reporting Person acquired shared voting and investment power over the Contributed Shares in connection with the formation of the joint venture with the Issuer."
8. Engaging into a Proxy Fight: [...] nominating *Person* and *Person* to be elected by holders of the Shares to the Board of Directors of the Issuer (the "Board") at the annual meeting of stockholders of the Issuer, or any other meeting of stockholders held in lieu thereof, and any adjournments, postponements, reschedulings or continuations thereof (the "Annual Meeting"). The Reporting Persons reserve the right to take all action they deem appropriate to obtain Board representation.

9. Investor is Subject to Merger: "At the effective time of the Merger (the "Effective Time"), the separate existence of Merger Sub will cease and the Reporting Person will continue as the Surviving corporation and as a wholly owned subsidiary of the Issuer. Each holder of outstanding common stock of the Reporting Person, par value \$ *per share* will receive, in exchange for each share of the Reporting Person's Common Stock held by such holder, *amount* of a share of the Issuer Common Stock (the "Exchange Ratio").
10. Issuer Financing: "The purpose of the purchase of the Stock was to provide the Issuer with immediately available funds to address its urgent liquidity needs in exchange for an equity interest in the Issuer."

Appendix C Stata Do-Files

References

- Allen, Jeffrey W. and Gordon M. Phillips (2000). Corporate Equity Ownership, Strategic Alliances, and Product Market Relationships. *The Journal of Finance* **55**(6), 2791–2815. ISSN: 00221082. DOI: 10.1111/0022-1082.00307.
- Almeida, Heitor, Murillo Campello and Michael S. Weisbach (2004). The Cash Flow Sensitivity of Cash. *The Journal of Finance* **59**(4), 1777–1804. DOI: 10.1111/j.1540-6261.2004.00679.x.
- (2011). Corporate financial and investment policies when future financing is not frictionless. *Journal of Corporate Finance* **17**(3), 675–693. DOI: 10.1016/j.jcorpfin.2009.04.001.
- Betton, Sandra, B. Espen Eckbo and Katrin S. Thorburn (2008). 'Corporate Takeovers'. URL: <https://ssrn.com/abstract=1131033>.
- Brav, Alon, Wei Jiang and Hyunseob Kim (2009). Hedge Fund Activism: A Review. *Foundations and Trends® in Finance* **4**(3), 185–246. DOI: 10.1561/05000000026.

- Brav, Alon, Wei Jiang, Frank Partnoy and Randall Thomas (2008). Hedge Fund Activism, Corporate Governance, and Firm Performance. *Journal of Finance* **63**(4), 1729–1775. DOI: 10.1111/j.1540-6261.2008.01373.x.
- Brigida, Matthew and Jeff Madura (2012). Information Leakages Prior to 13D Filings. *Journal of Financial and Economic Practice* **12**(2), 23–38. URL: <https://search.proquest.com/docview/1555333103?pq-origsite=gscholar>.
- Brown, Stephen J. and Jerold B. Warner (1985). Using daily stock returns. *Journal of Financial Economics* **14**(1), 3–31. ISSN: 0304405X. DOI: 10.1016/0304-405X(85)90042-X.
- Campello, Murillo and Long Chen (2010). Are Financial Constraints Priced ? Evidence from Firm Fundamentals and Stock Returns. *Journal of Money, Credit and Banking* **42**(6), 1185–1198. DOI: 10.1111/j.1538-4616.2010.00326.x.
- Collin-Dufresne, Pierre and Vyacheslav Fos (2015). Do Prices Reveal the Presence of Informed Trading? *Journal of Finance* **70**(4), 1555–1582. DOI: 10.1111/jofi.12260.
- Denes, Matthew R., Jonathan M. Karpoff and Victoria B. McWilliams (2017). Thirty years of shareholder activism: A survey of empirical research. *Journal of Corporate Finance* **44**, 405–424. DOI: 10.1016/j.jcorpfin.2016.03.005.
- Eckbo, B. Espen (2009). Bidding strategies and takeover premiums: A review. *Journal of Corporate Finance* **15**(1), 149–178. ISSN: 09291199. DOI: 10.1016/j.jcorpfin.2008.09.016.
- Farre-mensa, Joan and Alexander Ljungqvist (2013). Do Measures of Financial Constraints Measure Financial Constraints ? DOI: 10.1093/rfs/hhv052.
- Fazzari, Steven M, R Glenn Hubbard, Bruce C Petersen, Alan S Blinder and James M Poterba (1988). Financing Constraints and Corporate Investment. *Brookings Paper on Economic Activity* **1988**(1), 141–206. DOI: 10.2307/2534426.
- Giglia, Kristin (2016). A Little Letter, A Big Difference: An Empirical Inquiry Into Possible Misuse Of Schedule 13G/13D Filings. *Columbia Law Review* **116**(1), 105–145. URL: <http://www.jstor.org/stable/43681849>.

- Greenwood, Robin and Michael Schor (2009). Investor activism and takeovers. *Journal of Financial Economics* **92**(3), 362–375. DOI: 10.1016/j.jfineco.2008.05.005.
- Hadlock, Charles J. and Joshua R. Pierce (2010). New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. *Review of Financial Studies* **23**(5), 1909–1940. DOI: 10.1093/rfs/hhq009.
- Harmetz, Lloys S. (2017). *FAQ about Section 13D & Section 13G of the Securities Exchange Act of 1934*. Tech. rep. Morrison & Foerster LLP, pp. 1–22. URL: <https://media2.mofo.com/documents/faqs-schedule-13d-g.pdf>.
- Heller, Sascha (2015). ‘Financial Constraints and Corporate Credit Ratings – Essays in Corporate Finance and Risk Management’. Dissertation. University of Hamburg. URL: <https://d-nb.info/107397037X/34>.
- Huang, Peng, Mark Humphery-jenner and Ronan Powell (2017). ‘Minority acquisitions and information risk : International and cross - border Minority acquisitions and information risk : International and cross - border evidence’. URL: https://acfr.aut.ac.nz/_data/assets/pdf_file/0020/105473/89416-Minority-acquisitions-and-information-risk-International-and-cross-border-evidence-Auckland-Finance-Meeting.pdf.
- Jagannathan, M, Clifford P. Stephens and Michael S. Weisbach (2000). Financial flexibility and the choice between dividends and stock repurchases. *Journal of Financial Economics* **57**(3), 355–384. DOI: 10.1016/S0304-405X(00)00061-1.
- Khatami, Seyed Hossein, Maria Teresa Marchica and Roberto Mura (2015). Corporate acquisitions and financial constraints. *International Review of Financial Analysis* **40**, 107–121. DOI: 10.1016/j.irfa.2015.05.007.
- Klein, April and Emanuel Zur (2009). Entrepreneurial Shareholder Activism: Hedge Funds and Other Private Investors. *The Journal of Finance* **64**(1), 187–229. DOI: 10.1111/j.1540-6261.2008.01432.x.

- Liao, Rose C. (2014). What drives corporate minority acquisitions around the world? The case for financial constraints. *Journal of Corporate Finance* **26**, 78–95. DOI: 10.1016/j.jcorpfin.2014.02.007.
- Lockett, Hudson (2018). *HNA stake in Deutsche Bank cut to 8.8%*. URL: <https://www.ft.com/content/69adbd96-12b1-11e8-8cb6-b9ccc4c4dbbb> (visited on 05/04/2018).
- Loughran, Tim and Bill McDonald (2014). Measuring readability in financial disclosures. *The Journal of Finance* **69**(4), 1643–1671. DOI: 10.1111/jofi.12162.
- MacKay, Peter and Gordon M. Phillips (2005). How does industry affect firm financial structure? *Review of Financial Studies* **18**(4), 1433–1466. DOI: 10.1093/rfs/hhi032.
- MacKinlay, Craig A. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature* **35**(1), 13–39. URL: <http://www.jstor.org/stable/2729691>.
- Mann, H. B. and D. R. Whitney (1947). On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other. *The Annals of Mathematical Statistics* **18**(1), 50–60. DOI: 10.1214/aoms/1177730491. URL: <http://projecteuclid.org/euclid.aoms/1177730491>.
- McWilliams, Abigail, Donald Siegel and Siew Hong Teoh (1999). Issues in the Use of the Event Study Methodology: A Critical Analysis of Corporate Social Responsibility Studies. *Organizational Research Methods* **2**(4), 340–465. DOI: 10.1177/109442819924002.
- Moeller, Sara B., Frederik P. Schlingemann and René M. Stulz (2004). Firm size and the gains from acquisitions. *Journal of Financial Economics* **73**(2), 201–228. DOI: 10.1016/j.jfineco.2003.07.002.
- Nain, Amrita and Yan Wang (2018). The Product Market Impact of Minority Stake Acquisitions. *Management Science* **64**(2), 825–844. DOI: 10.1287/mnsc.2016.2575.
- Offenberg, David and Christo Pirinsky (2015). How do acquirers choose between mergers and tender offers? *Journal of Financial Economics* **116**(2), 331–348. DOI: 10.1016/j.jfineco.2015.02.006.

- Ouimet, Paige Parker (2013). What motivates minority acquisitions? the trade-offs between a partial equity stake and complete integration. *Review of Financial Studies* **26**(4), 1021–1047. DOI: 10.1093/rfs/hhs125.
- Schuetze, Arno and John Ruwitch (2018). *China’s HNA pares back big stake in Deutsche Bank*. URL: <https://www.reuters.com/article/us-hna-group-deutsche-bank/chinas-hna-pares-back-big-stake-in-deutsche-bank-idUSKCN1G00A9> (visited on 15/04/2018).
- Smith, Robert (2018). *HNA via GAR? They mystery of Deutsche Bank’s largest shareholder*. URL: <https://ftalphaville.ft.com/2018/02/23/1519404195000/HNA-via-GAR--The-mystery-of-Deutsche-Bank-s-largest-shareholder/> (visited on 05/04/2018).
- UCLA (2018). *How do I interpret Quantile Regression Coefficients*. URL: <https://stats.idre.ucla.edu/stata/faq/how-do-i-interpret-quantile-regression-coefficients/> (visited on 20/04/2018).
- Whited, Toni M. and Guojun Wu (2006). Financial Constraints Risk. *Review of Financial Studies* **19**(2), 531–559. DOI: 10.1093/rfs/hhj012.