Shareholder activism in small-cap newly-public firms

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Abstract

We examine a private dataset of engagements by a UK fund in small-cap newly-public firms. The fund inherits unwanted holdings from disparate investors and earns fees liquidating its portfolio. It considers activism only when blocks cannot be exited efficiently. Engagements are with firms that have Founder Chairmen or CEOs, other blockholders thought to be supportive, and few outside directors. Engagements are conducted behind-the-scenes, without involving other shareholders, are strikingly successful, and result in cumulative abnormal returns of 8-10% when objectives are met. The fund outperforms benchmarks and we estimate that abnormal returns derive mostly from engagements rather than stock picking.

JEL classification: G23, G32, G34

Keywords: shareholder activism, corporate governance, institutional investors, small-caps, IPOs

1. Introduction

Following the financial crisis of 2008, policymakers worldwide took steps to revive public equity markets, modifying the IPO process and easing the regulatory burden for small, high-growth firms. Lowering the admission bar, however, has had mixed results. To some, there has been a recovery in IPO activity. To others, it has led to younger, lower-quality firms going public prematurely. In both cases, greater demands have been placed on institutional investors to act as IPO gate-keepers, to hold large blocks in illiquid small-cap stocks, and to become active owners in the aftermarket should agency problems arise. During the same period, campaigns by activist investors have been on the rise. Practitioners[1] suggest that 2022 was a record-breaking year for such activities, with high-profile targets including HSBC, Bayer and BP. Large literatures exist on IPOs, on shareholder activism, and on the effect of liquidity on governance. However, premature IPOs are rarely explicitly examined[2] and, due to lack of data, little is known about whether and how activism occurs in small-cap newly-public firms, despite their central importance to the economy.[3] Our paper addresses this gap.

We perform a clinical study of a UK fund, Brookwell, which operates on London's Alternative Investment Market ("AIM"), Europe's leading market for young, high-growth firms. We believe the fund is interesting for four reasons. First, it deals exclusively with small, newly-public firms. Such firms are under-represented in the governance literature (Hermalin and Weisbach (2003)) and rarely targeted by activists (Klein and Zur (2009)) yet are an ideal laboratory to examine issues of shareholder concentration, board structure and insider control (Boone et al. (2007)).

Second, Brookwell does not pick stocks. Instead, it offers institutions the opportunity to tender their holdings at the market price, in exchange for Brookwell shares. Previous researchers separate

[1] Insightia reports that 929 firms worldwide were publicly targeted in 2022, up 6% from 2021. Lazard reports 69 new activist campaigns globally in Q1 2023, the second highest quarterly activity since 2019.
[2] Exceptions are Audretsch and Lehmann (2008) and Carpentier and Suret (2011).
[3] "The dearth of emerging growth IPOs […] threatens to undermine US economic primacy for decades." IPO Task Force Report, October 20, 2011 (p1).

stock-picking from value-creation by using instruments (Becker et al. (2011)), exploiting regulatory filings (Brav et al. (2015)), or employing structural estimation (Albuquerque et al. (2022)). We believe Brookwell's structure helps us to consider its voice activities as a treatment effect, insofar as it has no say on which stocks are within its portfolio.

Third, Brookwell is part of a growing industry of liquidity providers that has emerged since the 2008 financial crisis, creating secondary markets in illiquid investments, for example real estate, high-yield debt, small-cap stocks and private equity.[4] As a non-management entity holding large blocks, Brookwell displays many of the textbook traits of outside monitors: it has fewer regulatory constraints than mutual or pension funds; it has fewer agency problems of its own; and its interests are more aligned with outside shareholders than managerial blockholders.

Fourth, Brookwell offers an opportunity to examine the effects of liquidity on governance. In early work, Bhide (1993) focuses on ex-post effects (i.e. after portfolio selection) and argues that liquidity weakens the incentives to engage. This view is challenged by Maug (1998) who proposes that illiquidity will hurt ex-ante incentives to acquire a block, and Admati and Pfleiderer (2009) who argue that selling shares is in itself a governance mechanism. The empirical literature (e.g. Edmans, Fang, and Zur (2013)) suggests that ex-ante effects (i.e. portfolio selection) dominate. We shed light on this question by exploiting a unique setting in which portfolio selection is exogenous to the fund.

Brookwell is a closed-end limited-life investment company. The fund is externally managed by Progressive Value Management Ltd ("PVML"). Using comprehensive private data provided by PVML, we examine two main questions. First, does shareholder activism occur in small-cap newly-public firms and, if so, in what form, with what objectives, and with what success? Second, to what extent are activist interventions in such firms value-enhancing?

[4] For example, secondary markets are a large and growing aspect of the private equity market. Preqin reports that secondary PE volume was $12bn in 2009 rising to $42bn in 2014. Hege and Nuti (2011) describe liquidity-driven PE secondary sales during the 2008 crisis. Nadauld et al. (2019) provide recent evidence of the costs of PE secondary transactions.

In answer to the first question, we find that shareholder activism does indeed occur in small-cap newly-public firms. PVML considered 49 such firms for possible intervention and engaged with 27 (or 55%) of them; however, interventions are conducted behind the scenes and perhaps for this reason have eluded prior research. We find that PVML engages mainly with firms that have a Founder Chairman or CEO, other blockholders likely to be supportive of PVML, and few outside directors.

What form do PVML's engagements take? We find they are conducted via private meetings, letters and site visits. Contact is almost exclusively with Chairmen, CEOs and CFOs. There are five instances where PVML privately contacts other institutional shareholders, only one of which results in a joint private letter. There are few instances of public criticism (e.g. PVML poses a question at only seven general meetings) and no hostile actions such as litigation or press campaigns. Based on discussions with PVML, we believe this reflects the fact that the fund is able to requisition an extraordinary shareholders' meeting, either by itself or with other blockholders.

What are PVML's activism objectives and success rates? We find the most frequent objective (46% of cases) is to bring about operational changes, for example in refocusing diversified firms, making assets sales, stopping acquisitions, or disciplining capex. The next most frequent objective (36% of cases) is to effect board changes. PVML is strikingly successful in its interventions, achieving its operational changes in 78% of cases, and its board changes in 55% of cases. Multivariate regressions suggest the dominant factor in engagement choice, success and ultimately fund returns, is the presence of a Founder Chairman. From discussions with PVML and our reading of private letters and meeting notes, success often turns on 'soft' factors that are difficult to measure. For example, senior executives are typically reluctant for disputes to 'go public' and have a general motivation to 'do the right thing' for the firm.

In answer to the second question, that is, whether activist interventions are value-enhancing, we begin by addressing concerns about potential selection bias in our sample, namely that PVML might

be intervening in firms whose management were intending to restructure anyway, absent PVML's intervention. Depending on how a firm responds to PVML's initial activism approach, we classify engagements as collaborative, mixed or confrontational (a definition of engagement attitudes is provided in the Appendix). While changes might have occurred in collaborative situations irrespective of PVML's efforts, the same cannot be said of mixed and confrontational situations in which management strongly oppose PVML's suggestions for change.

Next, we relate the outcomes of PVML's stated activism objectives to abnormal stock returns through an event study. We consider an event to be an 'outcome' of PVML's intervention if it satisfies two conditions: first, the outcome is listed as an objective in PVML's investment committee report prior to the intervention being launched; second, the objective is mentioned in a private letter to the company management. Thus defined, we find that when PVML's engagement objectives are achieved, there are positive abnormal returns around the announcement date of such events (+4-5%). When we exclude outcome events with confounding information (e.g. when an outcome is announced at the same time as a profit warning), the abnormal returns are larger and more statistically significant (+8-10%). We then condition events using our categories of engagement objectives and degrees of engagement hostility. By engagement objective, we find the largest and most statistically significant returns in operational changes (+14-16%). By engagement hostility, importantly, we find the largest and most statistically significant returns in confrontational engagements (+8-10%).

Finally, we decompose Brookwell's returns. The fund delivers an annual IRR net of fees for the period 2008-2013 of 3.09% after adjusting for the FTSE AIM All-Share Index. We find little evidence that returns are correlated with market, size, momentum or market-to-book factors. The annual IRR rises to 4.90% when we limit the portfolio to the 27 engagements, and 8.38% when measuring only the 8 confrontational engagements. Within the 27 engagements, we estimate that 63% of returns derive from event study outcomes.

We therefore find novel results in three aspects. First, we find a significant role for active owners in small-cap stocks, albeit one that is almost entirely hidden from public view. Second, we find that interventions have a significant impact on operational structure and board composition. Third, we find that the returns to interventions are large and statistically significant.

To our knowledge, we are the first to report on activism in small-cap newly-public firms. In doing so, we complement literature on de-risked IPO markets (Dambra et al. (2015), Chaplinsky et al. (2017)) and on challenges faced by struggling firms in accessing capital (Brophy et al. (2009), Lim et al. (2021)). Our study also complements literatures on hedge fund activism (Brav et al. (2008) and Bebchuk, Brav and Jian (2015)) and behind-the-scenes engagements (Green et al. (2014), McCahery, Sautner and Starks (2016), and Li, Maug and Schwartz-Ziv (2019)) by showing how the engagement strategies of a liquidity provider compare with those of a hedge fund activist and a traditional institutional investor. Finally, we add to literature on the effects of liquidity on governance; consistent with Bhide (1993), in our study, liquidity reduces the incentives to engage in shareholder activism.

We believe our paper is important for practitioners in three respects. First, large institutions routinely invest in small-cap IPOs expecting higher returns (as is the case in high-yield bond new issuance (Becker and Ivashina (2014)) and find themselves trapped in so-called 'lobster pots'.[5] Second, small-cap newly-public firms typically have high levels of insider ownership, meaning the scope for agency problems is high. Third, policy-makers continue to adapt IPO regulations to promote capital formation for so-called emerging growth companies ("EGCs")[6]. These three elements are likely to result in ever greater demands being placed on institutions to act as gate-keepers and monitors.

[5] For example, illiquid small-cap stocks led to the collapse of the highly-reputed £3.7bn Woodford Equity Income Fund in 2019, regarded as the biggest UK investment scandal for a decade, leaving 300,000 retail investors seeking compensation from the regulator.

[6] While the definition of EGCs is constantly evolving, they tend to be substantially larger than the firms in this study and are hence less likely to become "lobster pots". A study of EGC characteristics is provided by the PCAOB in its November 15th, 2017 white paper.

2. Description of the Fund and the Dataset

In this section, we describe the fund and the dataset, set out our empirical approach, and provide summary statistics on Brookwell's fundraising and initial portfolio. The choice of the UK as the setting was dictated by the opportunity to access the specific private dataset, but also for its heterogeneous governance regime (see Online Appendix OA1) which offers greater powers to activists than the US.[7]

2.1 PVML and Brookwell

Brookwell is a closed-end limited-life investment company, established to acquire shares in UK smaller companies (mostly AIM firms) with the objective of realizing value and returning cash to shareholders within a three-year horizon. The fund is externally managed by PVML, which has managed seven small-cap funds since 2000 totaling £267 million (see Table 1), making it the largest dedicated small-cap activist in the UK. The UK, with the US and Japan, is the largest small-cap equity market globally. We believe PVML's track record of activism in UK smaller companies is the most complete dataset that is currently available for research of this type.

PVML's methodology in raising its funds is unique. PVML's website states: "PVML identified that institutional portfolios often contain smallholdings in illiquid stocks. Although these holdings might represent a small proportion of an institutional portfolio's value, they require a disproportionate amount of the manager's time and resources […]. The funds managed by PVML […] have taken on such holdings from institutions by way of a "stock swap", exchanging shares in the fund for the shares held by the investor institutions. PVML has then managed the portfolio of stocks acquired so as to achieve value and liquidity and to return funds to shareholders." Although Brookwell reserves the

[7] Becht et al. (2009) describe the differences between the US and UK legal environments for shareholder activism, noting in particular that UK shareholders with 10% of the voting capital can remove directors by calling EGMs and that "when UK activists write letters to the management of underperforming companies, the recipients are aware of the tools at the investors' disposal for changing the management".

right to refuse stocks which it believes are unrealisable at a reasonable value or would cause a breach of portfolio concentration limits, in practice, no refusal rights were exercised.

PVML does not select stocks for investment, but rather acts as a liquidity provider to institutional investors in UK smaller companies. Typically, such institutions have acquired large holdings in AIM firms at the time of IPO and find themselves unable to liquidate their positions when post-IPO share price performance and trading liquidity has been poor.[8] This may be true particularly after periods of high supply of small-cap IPOs, as was the case in the UK from 2004 to 2007 immediately preceding the financial crisis of 2008 (Table 1 reports the 3-year supply of AIM IPOs before PVML's fund launches).

2.2 The Fund's value-realization approach

There are two investment professionals at PVML dedicated to managing the overall Brookwell portfolio. Their incentives comprise a 1% management fee on assets, a 1% fee on capital returns made in any calendar month, and a 10% share of any value returned to shareholders in excess of 100p per share ("equity appreciation fee"). The value-realization approach is a mixed strategy of exit and voice.

Upon receiving the blind initial portfolio, the first action undertaken by the two PVML investment managers is to perform a triage, earmarking certain holdings for exit and others for voice. PVML assigns a score variable to each holding, calculated as follows:

$$Block\ Score = \frac{\frac{Block\ Value}{Daily\ volume} \times \sqrt{180d\ Volatility} \times Free\ Float^{-1}}{\sqrt{Stock\ Price} \times 2(1 + No\ of\ Analysts) \times (No\ of\ Stakes > 3\%)} \qquad (1)$$

The numerator converts the block into days of trading, then penalizes firms with high volatility and low float (i.e. high insider ownership). The denominator rewards firms that are not penny stocks[9],

[8] A non-technical discussion of the AIM market, including a description of "lobster pot" investments in premature IPOs, can be found in the Financial Times June 19th, 2015 edition: "AIM – 20 years of a few winners and many losers."
[9] Much of Brookwell's portfolio could be considered penny stocks. Of the 49 large blocks in our study, 5 (18) had share prices of 2p (10p) or below at the time of acquisition. Only 3 firms had share prices above 100p.

that have analyst coverage and that have 3% blockholders[10]. The lower the score, the easier the holding is to liquidate, and hence the more likely it will be earmarked for exit, either immediately or via a series trades. The majority of the Brookwell portfolio falls into this category and is liquidated within three months. Where the block score is high, PVML must sell over a long period of time, giving it the opportunity to engage in activism. When deciding whether to engage, PVML staff consider the number of 'friendly' blockholders (described in 2.5 below), the number of outside directors and whether the firm has a Founder Chairman/CEO; and weighs these factors alongside the block score.

When a holding is designated for voice, PVML typically makes an initial approach to firm management, beginning with an exploration of the potential changes PVML seeks. In collaborative engagements, PVML monitors the implementation of the desired changes, awaits such changes to be announced to the market, and then attempts to sell its holdings in the post-announcement period. In non-collaborative engagements, PVML considers a wider range of possible actions, mostly behind closed doors, before attempting to sell its holdings at the most advantageous time.

2.3 Data

PVML has given us access to all data relating to the Brookwell fund. Starting with details of the initial portfolios and IPO subscribers, we have records of all trading activity in portfolio firms, monthly fees, other expenses, net-asset values, and Brookwell's monthly balance sheet and profit and loss statements. With respect to engagements, we have access to internal and external documents including letters, emails, meeting notes, investment committee reports and other client-related memos. PVML staff provided additional information from personal agendas and hand written notes. We collect external firm-level data on stock prices, trading volume, volatility, research coverage, ownership, management, and various operating characteristics from Bloomberg, Datastream and the

[10] Studies suggest the presence of multiple blockholders has a moderating effect on firms (Rossetto and Stagliano, 2012). Additionally, the identity of a blockholder may affect the presence and composition of other blocks (Hadlock and Schwartz-Ziv, 2017).

Bureau van Dijk Fame database. We use the LSE Regulatory News Service ("RNS") and the Dow Jones Factiva database to collect data on firm announcements, news flow, restructuring outcomes, equity offerings, major transactions (takeovers, asset disposals and divestitures), board changes and payout decisions.

2.4 Empirical approach

Brookwell received 222 stocks totaling £54.9million during the period 2008-2011. We are interested primarily in PVML's voice activities. Since these occur in blocks of 4% or more of a firm's market capitalization or of Brookwell's fund, we apply a 4% cut-off, and reduce the total portfolio of 222 equity stakes to 49 large blocks.[11] Whilst this restricts our ability to perform powerful regressions, it means we compare voice and exit firms (control and treatment groups) that are highly similar.

We believe the fund's structure helps us to consider PVML's voice activities as a treatment effect. PVML acts alone behind-the-scenes, mitigating the confounding effects of other activists.[12] PVML does not pursue litigation or press campaigns, mitigating jawboning effects. Brookwell acquires blocks via a blind tender, mitigating stock-picking effects. Finally, there are no disclosure-related returns to confound engagement-related returns.[13] To complement these structural features, we employ a series of further controls. We survey participating institutions to understand their reasons for tendering. We identify a sub-set of confrontational engagements to control for the possibility that management would have conducted the activists' proposed changes absent intervention. We exclude events with confounding information in our event studies. Finally, we compute returns directly attributable to activist outcomes, not simply the total fund return reported to the fund's investors.

[11] In general, block size determines intervention incentives. For voice, a large block overcomes free-rider problems while also granting more voting rights. For exit, it increases incentives to gather information and the stock price impact of a threatened sale. Fich et al. (2015)) show further that a blockholder's monitoring probability depends on its dollar block size relative to its dollar portfolio. Edmans and Holderness (2017) report statistics on the percentage size and dollar value of large blocks in US firms and discuss the potential significance of researching blocks by dollar value.

[12] Struggling firms can attract multiple behind-the-scenes activists. When interviewed on this question, PVML were certain they would have known of the presence of other activists and confirmed there were none in the 49-block portfolio.

[13] We provide evidence in the Online Appendix section OA4.

2.5 Summary statistics on Brookwell's fundraisings

Table 2 Panel A lists 17 UK institutions subscribing for 3%+ of Brookwell. Of these, 6 (35%) take part in more than one fundraising. Survey evidence indicates that investors are mostly motivated by liquidity (Q1) and have not made their own activist attempts prior to tendering (Q2). On average, investors also directly hold shares in 4.35 of Brookwell's 49-block portfolio. PVML refers to such holdings as 'friendly' (Kedia et al. (2021)). Friendly stakes arise when institutions hold shares in firms that other participating institutions choose to tender. Alternatively, they arise when institutions do not tender their entire holding, but instead reduce their holdings, which to some extent is delegating activism to PVML in stocks they continue to hold outright.[14] Survey evidence (Q1) reports that this happens with 4 institutions (24%), of which 3 (18%) have explored their own activism attempts (Q2). PVML anticipates the support of friendly stakes when conducting activism but does not contact such investors directly due to UK regulatory restrictions on coordinated actions (see Dimson et al. (2021) for a discussion of so-called "concert party" rules).

Panel B reports the prior stock performance of stocks tendered. Although 60% of stocks are in the lowest two deciles for 6-month and 1-year prior periods, some are in the higher deciles. This suggests institutions tender both losing and winning positions, attracted by the chance to exit.

Panel C reports the duration of Brookwell's investments. Voice firms have a mean (median) duration of 546 (473) days compared to 344 (348) days for exit firms. Non-collaborative engagements take longer to be resolved than collaborative ones, with a mean (median) duration of 661 (589) days.

[14] Appel et al. (2019) find index funds delegate activism to safeguard relationships with firms, or to protect their reputation from possible disputes. Gantchev and Jotikasthira (2018) find similar evidence with trading funds. Lewellen and Lewellen (2022) examine the financial incentives, in the form of increased management fees, for institutional investors to become engaged shareholders.

These results are consistent with Brav, Jiang and Kim (2015), who report mean (median) duration of 581 (348) days for US activist hedge funds in the period 1994 to 2011.[15]

2.6 Summary statistics on Brookwell's portfolio

Table 3 provides summary statistics for the 49-block portfolio. On average, blocks represent 6.7% of market capitalization and 112 days' trading volume[16]. Firms are small, illiquid, under-researched and volatile. They are 3 years out from their own IPOs, have fewer than 4 outside directors, and in 33% (41%) of cases have a Founder Chairman (Founder CEO).[17] As such, they closely resemble privately-held firms; hence Brookwell can be regarded more as a PIPE (Private Investment in Public Equity) investor than a typical public market activist.[18]

Following triage, 22 blocks are liquidated, and 27 firms contacted. PVML classifies engagements as collaborative (12 cases), or non-collaborative (15 total, of which 8 are openly confrontational). Voice firms are more likely to be larger blocks (by value) with a greater number of friendly stakes, fewer outside directors, and a Founder Chairman. Collaborative firms are more likely to have a Founder CEO, VC presence, and more outside directors. These findings are consistent with Baker and Gompers (2003) who highlight the positive corporate governance influence of a VC in newly public firms. We find the number of outside directors decreases after the firm's IPO; hence, collaborative engagements are more likely amongst recently-public firms.

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[15] The investment horizons of activists is an area of debate, with critics suggesting that hedge funds target short-term gains (e.g. Bebchuck, Brav and Jiang (2015)). Since many authors are restricted to data contained 13D/A filings, and some employ the date at which hedge fund ownership in a target falls below 5% as a proxy for exit, it is likely that previous studies underestimate the true duration of investments.

[16] Brav, Jiang and Kim (2015) report median initial (maximum) percent stakes of activist hedge funds in the period 1994 to 2011 of 6.4% (9.5%), with initial (maximum) block value of $13.5 ($18.6) million in 2011-constant dollars. Confrontational engagements exhibit larger stakes on both measures. Importantly, engagements do not generally involve controlling blocks, suggesting activists require support from other shareholders to achieve their objectives.

[17] Boone et al. (2007) find that demands for monitoring, agency issues, and the power of the CEO all influence Board structure in newly-public firms. CEOs with higher ownership and longer tenure have fewer independent directors, particularly in cases where ownership of outside directors is low and there is no VC.

[18] PIPEs are placements of stock by public firms with a small group of sophisticated investors in private transactions (Bernardo, Momtaz, and Welch 2021). While the market is in principle open to any public company, it is most often the small and struggling firms that have not been public for a long time and fail to raise follow-on capital at more favorable terms in public markets (Iliev and Lowry 2020; Lim, Schwert, and Weisbach 2021).

3. Results

In this section, we report five sets of results. First, we examine PVML's voice activities. Second, we report PVML's engagement objectives. Third, we perform regressions to explore the determinants of PVML's voice decisions, and of Brookwell's returns. Fourth, we perform event studies surrounding PVML's activism objectives being met. Fifth, we examine Brookwell's returns and assess to what extent they are attributable to activism. In addition, in the Online Appendix, we present a case study of a confrontational engagement, illustrating PVML's actions over a long period in the face of challenging relations with firm management.

3.1 PVML's voice activities

In Table 4 we report the types of activities undertaken by PVML with respect to the 27 firms in the Brookwell portfolio where voice activities took place. Panel A shows that the majority of contact was with the CEO, Chairman and/or CFO of target firms either in person or in writing, with contact outside this core group of executives being somewhat limited. In all 27 cases, contact was with either the CEO or Chairman, and in 63% of cases, both.[19] PVML also met with Non-Executive Directors ("NEDs") in almost a third of target firms and attended firm-organized site visits with almost one quarter. In total, PVML had 173 contacts with executives, with a mean of 6.3, a median of 5 and a maximum of 15 contacts per firm in two instances. PVML made first contact as soon as 11 days after acquiring investments, with a median first contact of 59 days for CEOs, followed by 86 days for CFOs and 90 days for Chairmen. Site visits and non-executive contacts were made as soon as 42 and 72 days after acquiring investments, but other contacts outside the core executive group were made much later

[19] In examining 'soft factors', we collect data on the age of Chairmen and CEOs in the 49-block portfolio. We find that the mean Chairman year of birth in engaged firms, 1951, is the same as the year of birth of the Managing Director at PVML responsible for voice activities. Examining Chairman year of birth, we find differences at the 1% level of significance in both mean and median between engaged and non-engaged firms. Examining collaborative versus non-collaborative engagements, we find differences at the 1% level in CEO age, but this time with an inverted sign, namely, non-collaborative engagements are characterized by CEOs that are significantly younger than collaborative ones.

in the investment holding period. Our findings are consistent with Becht et al. (2009) who report an average of 9.7 contacts per firm (a median of 7 and maximum of 48) for the 30 firms engaged. However, PVML's contacts were far less frequent with middle management and NEDs, as might be expected given the significantly smaller size of the firms engaged. As previously noted, this pattern is consistent with PVML acting like a PIPE investor dealing with small firms where managerial decision-making power is concentrated in a few hands.

In Panel B we examine contact and cooperation with other shareholders and entities such as banks, brokers, headhunters and other advisers. In only 5 cases (18.5% of the engaged sample) did PVML engage with other shareholders, soliciting support in only 3 cases, resulting in 1 joint meeting and 1 joint letter. Company brokers were contacted in 26% of cases, and headhunters and other advisers in 37% of cases. These findings are at odds with the view that activists solicit wide support from other parties. For example, Becht et al. (2009) report contacts with other shareholders and company brokers in 80% and 70% of their engagements respectively. McCahery, Sautner and Starks (2016) report that 59% of their survey respondents consider coordinating their activism actions. Dimson, Karakas and Li (2015) find higher success rates in coordinated ESG campaigns. One interpretation is that, in many cases, PVML already has the 5% of votes required to call a general meeting. Added to this, PVML believes it can count on (and threaten management with) the votes of its friendly stakes without needing to make formal contact, thus protecting it and those investors from possible concerns over concert party regulations. UK shareholders are free, and indeed encouraged by policy such as the Stewardship Code (2012), to talk to one another, but must take account of the regulatory context of such discussions.[20] Another interpretation is that the firms in question are so

[20] The UK Stewardship Code (2012) sets out the governance responsibilities of institutional investors. Investors must not unlawfully disclose any inside information (as defined in the EU Market Abuse Regulation (EU 596/2014) or MAR) in relation to their intentions, or (if they have such information) the firm, which could amount to market abuse under MAR. Since 2012, over a dozen countries have introduced stewardship guidelines, including the US in 2017 (the "Stewardship Framework for Institutional Investors").

small, with management typically owning large stakes, that there is little need to talk to other shareholders in order for PVML to form its view as to the viability of an engagement.[21]

Panel C reports PVML's actions with respect to shareholders' general meetings. PVML posed questions in 7 AGMs (26% of the sample) but was in general reluctant to make further public interventions, solicit hostile views, or otherwise use its voting power to requisition meetings. For example, in EGMs, shareholders had plans to requisition a meeting in two cases, three were threatened by PVML (going as far as preparing the necessary documents for the meeting), and the Chairman of the target firm planned one, but none were finally called. We observe the same reluctance to 'go hostile' when we consider cases of litigation, press campaigns, and other high intensity actions in Panel D. In only one case did PVML threaten to block a rights issue. In no cases did PVML induce or encourage litigation, hostile takeover attempts or press campaigns, nor seek board representation with or without public criticism of management or a proxy contest.[22]

In summary, PVML's activism tactics are strongly weighted towards behind-the-scenes activities such as meetings and letters with firm management, with only very few instances of interventions at public meetings or hostile actions, typically as a last resort. These tactics are consistent with findings reported by Becht et al. (2009) and survey evidence collected by McCahery, Sautner and Starks (2016), but contrast strongly with many studies of US hedge fund activists. For example, Brav et al. (2008) find that 57% of events in their 1994-2011 sample have some degree of public criticism of target firms. Klein and Zur (2009) report that 40% of their hedge fund campaigns involved a proxy solicitation. Indeed, many previous researchers have suggested a proxy fight is a shareholder's only effective tool

[21] Kakhbod et al. (2023) find that a limited shareholder base arises naturally under heterogeneous beliefs since investors who most disagree with management do not tend to become shareholders; hence, a limited shareholder base can prevent effective engagement.

[22] Activism in the UK has historically had negative connotations, with activists cast as opportunistic "corporate raiders". Institutions were expected to resolve differences with firms behind closed doors. The emergence of a UK activism advisory community (boutiques, audit and PR firms) with a new nomenclature (e.g. corporate 'preparedness', shareholder 'engagement', etc.) suggests such attitudes are changing. Similarly, in the US, 'white-hat' activists refer to investors who favour collaborative measures conducted in private and only instigate public campaigns as a last resort.

to exert pressure on management (e.g. Kahan and Rock (2007)). Once again, the differences in our study are likely due to the tiny market capitalization of the firms in question, and the fact management and key executives hold large stakes.

3.2 Voice objectives, success rates and collaboration attitudes

We report the objectives and success rates of PVML's voice activities by collaboration attitude in Table 5.[23] Many categorizations of objectives are used in prior studies, in particular those articulated in the purpose statements of initial 13D filings of US hedge funds. In 40 out of 87 stated objectives, PVML seeks to restructure firms in some way, in particular aiming to reduce the discount to fair value (24 cases), either explicitly in the case of closed-end funds, or by narrowing the gap between a firm's stock price and the average research analyst estimated valuation of the stock. Selling non-core divisions or non-core assets and stopping acquisitions in order to refocus firms is an objective in 11 cases, while disciplining capital expenditures is an objective in 5 cases. The overall success rate in these restructuring cases is 77.5%, with higher rates in collaborative engagements, and no individual instances below 50%.[24] This compares with a success rate in restructuring reported by Klein and Zur (2009) of 52% for hedge funds, and 68% for entrepreneurial activists, and a 69% success rate reported by Becht et al. (2009).

The next most frequent objective is Board changes (31 out of 87 cases), in particular changing CEO, Chairman or NEDs (21 cases). As might be expected, there are no collaborative engagements in which CEO, Chairman or NED change is the stated objective. The overall success rate in this category is 54.8%. This compares to 64% reported by Becht et al. (2009), and 73% and 71% for

[23] In the Online Appendix OA3, we examine PVML's effort allocation conditioned by the collaboration attitudes of target firms. We find that non-collaborative engagements consume far greater PVML effort (8.2 versus 4 management contacts on average) yet yield lower success rates (63% versus 92% success rates on average).

[24] Main Market firms are required to obtain prior shareholder approval for significant restructuring for the purposes of the UK Listing Rules. In such transactions, activists often seek to influence a particular outcome through public criticism, proxy solicitation or lobbying of investors. AIM firms have less stringent requirements (see Online Appendix OA1).

hedge fund and entrepreneurial activists reported by Klein and Zur (2009). It is likely that PVML's lower success rate derives from the fact that firing a CEO or Chairman, particularly in small firms with high insider ownership, is difficult to achieve without a hostile campaign that requires financial resources beyond PVML's scope. The lowest success rates are in attempts to remove Non-Executive Directors (20%) and to change board remuneration policy (25%). The highest success (83.3%) is in strengthening the independence of the board. In reviewing these apparently widely divergent success rates, we note that failures in the former two categories occur in conjunction with successes in the latter category. Rather than removing a Non-Executive Director or changing remuneration policy, PVML successfully adds one (or more) Non-Executive Directors that are remunerated differently and are likely to vote for changes in the remuneration policy over time.

Finally, PVML also seeks to change certain financial and other policies (16 out of 87 cases), in particular improving investor relations (6 cases). The overall success rate in this segment is 75% and might be higher but for a 0% success in improving operational management. By comparison, Becht et al. (2009) report a 61% success rate in this category, while Klein and Zur (2009) report 53% for hedge funds and 47% for entrepreneurial activists. From a closer reading of PVML's meeting notes, the apparently idiosyncratic success rate of 0% in improving operational management derives from the fact that PVML uses these requests as a form of 'straw man' in order to win more tangible objectives such as equity issues and dividend policy.

3.3 Determinants of voice and impact on returns

In Table 6, we expand on our previous univariate analyses by examining multivariate probit and least squares regressions, and a Heckman selection model. We include as independent variables only those variables that we found to be significant in two-sample tests in Table 3. In Panel A, we begin by estimating the marginal effects of the following probit specification:

$$Pr(y_i = 1) = \Phi(\beta_1 No.\,friendly\ stakes + \beta_2 Years\ since\ IP0 + \beta_3 No.\,outside\ Directors + \beta_4 Founder\ Chairman + \beta_5 Founder\ CEO) \quad (2)$$

where Φ is the cumulative normal distribution. We report the marginal effect of each characteristic on the likelihood of voice over exit (column 1), of engagements being non-collaborative (column 2), and of engagements being successful (column 3). In general, pseudo R-squared ranging from one-third to one-half suggests the specifications have some explanatory power.

In column (1), we find PVML is most likely to intervene in firms with a greater number of friendly stakes (*t*-statistic of 3.91), a Founder Chairman or Founder CEO (*t*-statistics of 2.51 and 2.61 respectively), and with fewer outside directors (*t*-statistic of -3.17). Of these three predictors, the presence of a Founder Chairman/CEO is around four times more important in explaining PVML's decision to engage than the presence of friendly stakes, and one-and-a-half times more important than the number of outside directors. In column (2), we find engagements are more likely to be non-collaborative in the absence of either a Founder Chairman or CEO (*t*-statistics of -3.16 and -3.23 respectively), and as the number of outside directors diminishes (*t*-statistic of -1.97). As before, the economic magnitude of the first two characteristics dominate the latter, in this case by a factor of around 5 times. In column (3), we find engagements are more likely to be successful if the firm has a Founder Chairman or CEO (*t*-statistics of 5.46 and 4.22 respectively). Once again, these two characteristics dominate the regression and are almost 10 times more important in predicting success than other variables such as the years since IPO and the number of outside directors (*t*-statistics of 2.74 and 2.44 respectively).

In Panel B, we report the results of a least squares regression using the same independent variables as our probit regressions. The specification is as follows:

$$Return_i = \beta_1 No.\,friendly\ stakes + \beta_2 Years\ since\ IPO + \beta_3 No.\,outside\ Directors + \beta_4 Founder\ Chairman + \beta_4 Founder\ CEO \quad (3)$$

The dependent variables are three measures of returns achieved by PVML, namely the Internal Rate of Return ("IRR") in Column (1), the IRR with a 0.5% re-investment rate in Column (2), and the raw return (i.e. the cash returned divided by the cash raised, minus 1) in Column (3). In each column, we find a positive, economically large and statistically significant coefficient on Founder Chairman (*t*-statistics ranging from 2.04 to 3.16). In terms of economic magnitude, Founder Chairman dominates the other independent variables by a factor of between five and ten times.

In Panel C, we jointly estimate the selection determinants of Panel A and the outcome determinants of Panel B via a Heckman two-step model. One of the requirements of the two-step procedure is a variable that is present in the first-stage equation but not in the second-stage (Wooldridge (2009)). Akin to an instrumental variable, this additional predictor should strongly influence selection but should have no relationship to the disturbance term in the outcome model. We propose the Block Score variable in this regard. In the second stage, we estimate β by augmenting the outcome equation with the hazard of the first stage estimation, captured by the Inverse Mills Ratio. Thus, in the second-stage, the additional parameter estimate β_{IMR} is obtained on the variable containing the hazard.

When examining the first stage coefficients, we find that Block Score is positive and statistically significant (*t*-statistic of 1.77). For brevity, we do not report coefficients on the other independent variables, although they are included in the specification. The first-stage pseudo R-squared of 0.46 suggests the selection equation provides an improved fit relative to Panel A, as it now includes the Block Score variable. In the second-stage, after controlling for selection, we find the coefficient estimates confirm the pattern of the OLS estimation in Panel B, namely, we find an economically large and statistically significant coefficient on Founder Chairman in each of the three columns. When comparing coefficients in Panels B and C, we find the effect of controlling for selection is to increase the economic magnitude of Founder Chairman by a factor of almost two times.

Taken together, our regression estimates suggest that the presence of a Founder Chairman plays a critical role in PVML's activism, from PVML's decision on whether to engage, to the likelihood of collaboration and success, and ultimately to the returns generated for investors in the fund. Whilst we cannot generalize this finding, it appears to be a novel result, particularly when combined with the 'soft' factor that Chairmen in engaged firms are of a similar age to the PVML fund manager responsible for voice, and that confrontational engagements tend to involve the interaction of an 'older' Chairmen and a 'younger' CEO. Our findings suggest that older founder Chairmen may be holding back the firm from realizing its potential. This may be the result of them having strong domain-specific technical expertise but not necessarily high business acumen. In this sense, it may be that they are simply unaware of potential improvements to the firm, rather than actively choosing to hold back its progress.[25]

We believe there may be parallels in the organizational and social psychological literature examining links between demographic diversity and performance.[26] In early pioneering work, Lau and Murnighan (1998) introduce the concept of demographic 'faultlines', namely dividing lines such as gender, ethnicity, age or nationality that might split a team into subgroups. The authors propose that when such faultlines become 'activated', they significantly affect group functioning and performance. It may be that, in small-cap newly-public firms, faultline activation between the Chairman and CEO occurs when one of the two is the founder of the firm, there is a large age gap between the two, and the board is dealing with the demands of an activist shareholder that fits the demographic of one of the subgroups. This would offer a theoretical explanation for why such situations become

[25] According to this interpretation, older founder Chairmen and younger non-founder CEOs bring different skills to the firm, based on their prior work experience, and react to activist campaigns in different ways. This is analogous to Boyson et al. (2022) who examine activist outcomes through the lens of the skills that activists bring from their own prior work experience, differentiating between generalist activists (with a background in investment banking) and specialist activists (with backgrounds in PE or Special Situations funds).

[26] Adams et al. (2015) discuss research themes around board diversity. Veltrop et al. (2015) examine board faultlines.

confrontational, and why confrontational engagements unlock the largest returns. Further analysis of activist engagements with founders versus non-founders using faultlines such as gender, ethnicity and nationality is beyond the scope of this study but may offer avenues for future research.[27]

3.4 Event studies

We assess the extent to which PVML's voice activities give rise to abnormal stock returns by conducting event studies, details of which are contained in the Online Appendix (OA5-OA8). To be precise, we restrict ourselves to those engagement objectives recorded in Table 5 that by their nature led to an announcement event, for example the disposal of an asset, or the removal of a CEO,.[28] There are 45 such events over the engagement period, an average of 1.67 events per engaged firm. For each event, we construct an event window and measure the cumulative abnormal returns ("CARs") over the event window, after adjusting for the FTSE AIM All-Share Index. Following Becht et al. (2009), we employ event windows of 3 to 11 days that are anchored on the announcement date of the engagement outcome, namely [-1, +1], [-2, +2] and [-5, +5]. Short symmetric windows are typically employed for behind-the-scenes activism and allow for comparison with the prior study.[29] Mean CARs range from 3.93% to 5.10% (medians from 1.84% to 2.27%) for the 45 events across our three event windows, with statistically significant differences from 0 in mean and median tests in the two shorter windows.

Returns attributable to outcome events are frequently contaminated with returns attributable to other simultaneous announcements. For example, the resignation of a CEO may be announced at

[27] In our data, there is insufficient variation in gender, ethnicity and nationality to conduct powerful regressions.
[28] In certain outcome events there may be two event dates for the same outcome, for example when an asset disposal, CEO resignation or equity offer is announced, and when the asset is finally disposed, a new CEO is appointed, and the equity offer is determined.
[29] Studies of activism in which there are public campaigns (e.g. Klein and Zur (2009)) tend to employ longer asymmetric windows around the event, for example [-20, +1], as much of the activists' public jawboning takes place prior to the event. Studies of behind-the-scenes activism tend to employ short symmetric windows, for example [-1, +1], as the market should be unaware of the activists' discussions ahead of the event, unless information leaks in the days immediately prior to the event. Our findings are unchanged using [-20, +1] and [-1, +20] asymmetric windows (Online Appendix OA7 and OA8).

the same time as an earnings announcement, or the disposal of an asset may be contained in the same press release as a profit warning. Of our 45 outcome events, 15 are contaminated in this way with confounding information. When such events are excluded, the CARs increase in both magnitude and statistical significance in all event windows. Mean CARs range from 7.60% to 9.96% (medians from 2.98% to 3.78%) with a difference from 0 in mean and median tests significant at the 1% level in 5 out of 6 cases.

We then condition events using our categories of engagement attitude and engagement objective. First, by engagement attitude (see Table OA5), we find statistically significant CARs only in confrontational engagements. Mean CARs range from 8-10% (medians 3-6%) in such engagements, with and without confounding events. Statistical significance is generally at the 1% level. Our key finding that only confrontational engagements are associated with high CARs is contrary to Becht et al. (2009), although consistent with many other studies of hedge fund activists. The prior authors calculate "agency costs" by multiplying CARs by the average number of events per firm, finding that mixed engagement have the highest such costs (12.1%, or CAR [-1; +1] of 3.68% times 3.3 events per firm), and confrontational engagements the lowest such costs (8.56%, or CAR [-1; +1] of 2.76% times 3.1 events per firm). Using the same methodology, we find exactly the opposite pattern. Agency costs are highest in confrontational engagements (17.7% cost, or CAR [-1; +1] of 8.86% times 2 events per firm) and lowest in mixed engagements (3.9% cost, or CAR [-1; +1] of 5.44% times 0.71 events per firm). Our finding is also contrary to arguments often advanced by critics of activism, namely that confrontational engagements are detrimental to target firms as they occupy and distract management from running the firm.

Second, by engagement objective (see Table OA6), we find the announcement of restructuring outcomes is associated with the largest excess returns. When excluding confounding events, restructuring outcomes result in mean CARs of 14-16% (medians 6-7%) with 1% levels of significance

in tests for difference from 0. By contrast, CEO and Chairman turnover outcomes result in mean CARs of 4-5% in shorter event windows (medians 2-3%) with 5% levels of significance. This is important since many confrontational events are due to the CEO or Chairman being entrenched and likely lacking in competence. Our findings are consistent with those of Becht et al. (2009), in particular in the highest returns being associated with restructuring and then Chairman/CEO turnover. The magnitudes of our CARs are in general higher, although our *t*- and *z*-statistics are somewhat lower (though still significant) and our number of sample events smaller than the prior study. Studies of hedge fund activism report similar findings.

Critics of activism sometimes claim that returns achieved, particularly in adversarial interventions, are short term in nature. It is likely that the high magnitudes of positive CARs in the short event windows in our event study reflect the low trading volumes and high stock volatility of our sample of AIM firms. In this sense, the positive CARs may be a temporary phenomenon of 'over-reaction' rather than evidence of long-term value enhancement. In the Online Appendix (OA9), we present evidence that PVML's activities have persistent effects on various operating measures (return on assets, total assets, number of employees, and market to book ratios) one and two years after Brookwell has exited its stake. In unreported results, for post-event windows of [+5; +60 days] and [+5; +180 days], we test for but are unable to find evidence of statistically significant negative CARs (indicating mean reversion), finding instead that abnormal returns are not statistically different to zero. These findings are consistent with Brav, Jiang and Kim (2015) who report short-term post-event returns of around zero when examining specific short-term tactics such as 'pump and dump', 'asset stripping' and 'adversarial' intervention. In longer post-event studies, Clifford (2008) finds positive three- and four-factor alphas of up to 1.9% per month for windows of [0; 12 months] and [0; 24 months] when running calendar-time portfolio regressions for target firms. Studies of post-event

periods up to 5 years (e.g. Bebchuck, Brav and Jiang (2015)) provide further evidence that abnormal returns do not revert.

3.5 Return performance of the Brookwell fund

Table 7 Panel A presents performance statistics for the fund from inception (IPO of A shares) to close (final liquidation of D shares). Using trading and valuation information provided by PVML, we construct the cash flows and compute monthly and annualized IRRs for the fund's life. Given Brookwell's value-realization objective and its return of cash to investors every six months, we employ a reinvestment rate of 0.5% on cash returns. We follow prior studies (e.g. Becht et al., 2009) and report the fund's performance after deducting fees and expenses. On this basis, annual IRRs average -0.44% for the fund's life, or +3.09% after adjusting for the FTSE AIM All-Share Index. (If fees and expenses were added back, the annual IRR would be +0.30%, or +3.83% in excess of the market). When examining the 'large' block portfolio (the 49 investments that form the basis of our engagement and event studies), monthly IRRs are higher, with an average of +0.12%, or +0.41% after market adjustment. We also calculate total returns for the fund (namely the cash returned minus the cash raised, all divided by the cash raised). When comparing total returns, after market adjustment, the difference between the overall portfolio (-0.15%) and the large block portfolio (+11.75%) becomes more evident. The difference suggests PVML's engagements, concentrated as they are in the larger investments, contribute significantly to returns.

In Panel B, we present the fee structure of Brookwell. In 4 out of 6 years, no performance fees accrue to PVML. In the years in which performance fees are collected, these represent a small portion of total fee income (less than 20%), resulting in average performance fee contribution of around 10% of total fee income. Compared to a typical hedge fund, PVML's fees are low, potentially affecting the effectiveness of both exit and voice (as shown by Dasgupta and Piacentino (2015) when comparing mutual fund and hedge fund activists). The low fees may also explain why no other UK managers, to

our knowledge, raised dedicated small-cap activist funds during the Brookwell trading period, nor funds that were designed to provide liquidity to small-cap investors in the manner of Brookwell.

The returns presented in Panel A do not adjust for other factors such as size, momentum and market-to-book. To examine these factors, we present performance attribution regressions in Panel C using four models: a CAPM model, a Fama-French 3-factor model, a Momentum model, and a combined Fama-French and Momentum model. Brookwell's monthly alpha is positive in all four regressions, though not economically large or statistically significant. The market return factor is also positive throughout, though again not statistically significant. This suggests Brookwell's performance is somewhat dependent on overall market performance. We find positive and economically larger coefficients on the SMB factor, but *p*-values are insignificant, which is perhaps surprising given the small-cap composition of Brookwell's portfolio. The momentum factor is also positive, though again not statistically significant, suggesting that Brookwell's returns are not simply related to the reversal in trend of previously underperforming firms.

We also examine the monthly risk profile of Brookwell. The portfolio beta averages 0.92 for the life of the fund, but changes significantly over time, with a low of 0.28 in the second year and a high of 3.1 in the final year. This reflects the fact the fund is fully invested at IPO and follow-on offerings but has other periods in which there are fewer than 5 investments. The pattern of idiosyncratic risk varies for the same reasons. Idiosyncratic risk averages 29.1% for the life of the fund, with a low of 6.5% and a high of 49.9%. The resulting monthly Sharpe ratio of the fund is 0.04, indicating the high risk of activism in small-cap stocks.

3.6 Returns attributable to activism

In Table 8, we decompose Brookwell's total return and annual IRR (as previously calculated) by block size, and for large blocks by exit versus voice, and within voice by engagement attitude. We find the largest total return (23.0%) and annual IRR (4.85%) in confrontational engagements. These

findings are consistent with studies on the differing returns of hostile versus friendly M&A. Servaes (1991) reports that hostile bids in the US trigger a CAR of almost 32% whereas returns in friendly bids are around 22%. Franks and Mayer (1996) find post-announcement returns of almost 30% for hostile UK bids versus 18% for friendly ones.

To measure the extent to which event study returns contribute to Brookwell's overall performance, we compute an Event Study Contribution ("ESC") ratio. The formula is as follows:

$$ESC = \frac{\sum_{i=1}^{N}\sum_{j=1}^{J}\left[(MV\ of\ block)_{i,j,t-2} \times CAR_{j,[t-2,t+2]}\right]}{Total\ Sterling\ Excess\ Return\ of\ Brookwell} \quad (4)$$

For each outcome in our event study (excluding those events with confounding information), we multiply the market value of the Brookwell block at day -2 before the announcement by the CAR for the [-2; +2] window, and sum the sterling returns across all J events and N firms in the large block portfolio. We take this sterling sum and divide it by the total sterling net return of Brookwell from inception to liquidation.

We find that around 63% of the total return from engagements is comprised of event study returns, with an 86% ratio in collaborative engagements and a 31% ratio in confrontational ones. Confrontational engagements are associated with the highest cash return (£11.6 million), the highest total return (23%), and the highest annual IRR (4.85%), but such returns derive less from event study outcomes than the returns from collaborative engagements. Meanwhile, the lowest returns come from mixed engagements (-47% raw return). Since PVML does not know at the outset if non-collaborative engagement will be openly confrontational or mixed, the risks involved in non-collaboration are therefore high. Becht et al. (2009) report similar high returns in non-collaborative situations. In their event study on the Hermes Fund, the authors find that 30.5% of sterling returns in the study occur in confrontational engagements.

4. Conclusions

The fund we study is the largest dedicated small-cap activist in the UK, with the broadest possible sample of newly-public firms for examination. We exploit the fund's data to shed light on how activism takes place in such firms, and to measure the return contribution of engagements.

Using qualitative and quantitative information, we show that the first step taken by the fund is to assess the saleability of each holding. For blocks that are deemed unsaleable, the fund assesses whether an activist approach might be effective. If the firm has a Founder Chairman or CEO, other blockholders who are likely to be supportive, and few outside directors, the fund chooses to engage. Engagements are conducted behind the scenes with senior executives, seeking corporate restructuring (46% of cases) and board changes (36% of cases). We find statistically significant and positive abnormal returns when the fund's activism objectives are met (8-10%) particularly in restructuring (14-16%) and in confrontational situations (8-10%). When examining the fund's returns, we find that openly confrontational engagements yield the highest annual IRRs (8.38% vs. an overall fund return of 3.09%), and that 63% of engagement returns derive directly from event study outcomes.

There are a number of qualifications to our findings. First, they relate to one fund only and may not extend to other managers. Second, event study returns are a function of AIM's auction-based trading system and the activism tools available for AIM investors: we cannot generalize to other markets. Third, the fund's activities result in a risk profile that changes significantly over time, raising the issue of appropriate benchmarks for calculating abnormal returns.

Two questions remain. If activism is linked to improved stock performance, first, why do firms in our study not simply voluntarily pursue the strategies proposed by our activist, and second, why do small-cap managers not raise their own dedicated activist funds or engage more in activism? On the first question, many small-cap firms have entrenched owners/managers, resulting in a high likelihood of not maximizing shareholder value. On the second question, PVML's fee structure sets a low

baseline that may deter new entrants from raising their own funds; at the same time, fund managers typically hold small stakes in listed firms and may not be willing to spend the required resources on activism since there is no way to internalize the benefits, namely, the improved stock returns accrue to all shareholders, including those who do not bear the cost of activism.[30]

With respect to future research in this area, we note that five years after our sample period, the adoption of MiFID II appears to have caused a reduction in trading liquidity and research coverage in smaller firms listed on AIM (Li, Liu and Pursiainen (2022)). Practitioners and academics may wish to examine post-MiFID II liquidity impacts on small-cap IPOs, while policy-makers may wish to modify the incentives and powers of activists, for example by changes in the AIM rules or via enhanced legal tools in the UK Companies Act.

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[30] We examine the returns to so-called 'free-riding' on Brookwell in the Online Appendix (OA10) and find that replicating strategies would have outperformed the fund by using either public or private information on the fund's activities.

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Table 1: PVML-managed funds since 2000

Name of Fund	ADVARC	SAVR	TAVR	AIMVARC	Brookwell		
					A Shares	B Shares	D Shares
Launch	Jul 2000	Apr 2003	Dec 2005	Dec 2006	Jun 2008	Feb 2009	Feb 2011
Type of investment	Listed securities	Listed securities	Listed securities with up to 10% AIM	AIM securities with up to 10% Listed	Listed and AIM securities	Listed and AIM securities	Listed and AIM securities
Number of companies	113	138	114	86	84	62	76
					(222 total of which 86% AIM)		
Fund size	£52.7m	£45.8m	£76.1m	£37.8m	£25.5m	£13.0m	£16.4m
					(£54.9m total of which 80% AIM)		
Cash returned	£44.7m	£59.7m	£74.1m	£20.8m	£11.6m	£14.3m	£14.5m
Liquidated after	3 years 2 months	2 years 2 months	3 years 3 months	3 years	2 years 6 months	2 years 1 month	2 years 5 months
Supply of IPOs*	284	614	1,036	1,336	1,265	860	252

* The number of AIM IPOs in the 3-year period prior to launch of the fund (source: London Stock Exchange)

Table 2: Summary statistics on Brookwell's fundraising

Panel A lists investors (anonymized) subscribing to 3% or more of Brookwell's fundraisings and the number of times these investors are also 3%+ holders in the 49 largest blocks in Brookwell's portfolio ('friendly stakes'). The survey questions score as follows. Q1: exit at bid price = 1; delegate activism to PVML = 2; upside potential in fund = 3. Q2: none = 1; exploratory discussions only = 2; yes = 3. Investors surveyed include Cazenove, Artemis, Allianz, Fidelity, East Riding, USS, Invesco, Schroder, Aberdeen, JP Morgan and Gartmore. Panel B reports the distribution of the 49 large blocks' relative performance to the FTSE AIM All Share index by performance decile, based on the 6-month and 1-year periods prior to sale to Brookwell. Performance decile 1(10) contains companies in the highest (lowest) 10% performance interval. Panel C reports Brookwell's holding period computed as the number of calendar days from the date of first purchase to the date of last sale. We report the mean [median] and *t*-statistic [χ-statistic] for differences in mean [median]. ** and * denote two-sided significance at the 1% and 5% level respectively.

Panel A: Institutional participants in Brookwell's fundraisings

Investor	3%+ subscriptions in Brookwell		Investor survey		No. of direct 3%+ stakes in Brookwell's 49 large blocks ('friendly stakes')
	Value (£m)	Number	Q1: Primary reason for taking part?	Q2. Own activism attempts prior to tendering?	
A	8.2	3	1	1	5
B	6.2	2	1	1	4
C	3.9	1	2	2	5
D	3.6	2	2	2	4
E	3.4	1	2	1	3
F	3.3	3	1	1	3
G	2.8	2	1	1	7
H	2.5	1	1	1	3
I	2.4	2	2	2	4
J	2.3	1	1	1	3
K	2.3	1	1	2	4
L	1.7	1	1	1	5
M	0.9	1	1	1	4
N	0.8	1	1	1	4
O	0.8	1	1	1	3
P	0.6	1	1	1	3
Q	0.5	1	1	1	10
Mean	2.72	1.47	1.24	1.24	4.35

Panel B: Relative stock performance of firms prior to Brookwell's acquisition

Performance decile	6 months prior	1 year prior
1	7	6
2	2	0
3	1	1
4	2	2
5	4	1
6	2	1
7	0	5
8	2	3
9	6	2
10	23	28
No. of Firms	49	49

Panel C: Brookwell's holding period from acquisition to final exit

	Large blocks (1)	Exit (2)	Voice (3)	Collaborative (4)	Non-Collaborative (5)	Diff. (2) vs (3) (6)	Diff. (4) vs (5) (7)
Days held	455 [377]	344 [348]	546 [473]	401 [297]	661 [589]	-2.43* [-1.83]	-2.17* [-2.27*]
No. of Firms	49	22	27	12	15	22/27	12/15

Table 3: Summary statistics on Brookwell's portfolio

The table summarizes characteristics of firms in Brookwell's large block portfolio. For each variable (defined in the Appendix) the mean [median] is reported and *t*-statistic [χ-statistic] for differences in mean [median]. ** and * denote two-sided significance at the 1% and 5% level respectively.

	Large blocks (1)	Exit (2)	Voice (3)	Collab-orative (4)	Non-Collab. (5)	Diff. (2) vs (3) (6)	Diff. (4) vs (5) (7)
Firm size / mkt profile							
Market cap (£m)	17.4	18.6	16.4	11.8	20.1	0.23	-1.47
	[9.3]	[6.1]	[12.1]	[4.0]	[17.3]	[-1.07]	[-1.37]
Free float (%)	67.4	65.2	69.2	64.0	73.4	-0.71	-1.26
	[67.9]	[64.4]	[73.6]	[67.2]	[78.8]	[-0.94]	[-1.61]
Avg. daily trade vol. (£)	16,935	18,765	15,444	14,281	16,374	0.47	-0.27
	[5,293]	[8,019]	[4,721]	[3,964]	[12,054]	[0.14]	[-0.15]
No. of analysts	0.86	0.73	0.96	1.0	0.93	-0.69	0.13
	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[-0.25]	[0.17]
180-day volatility (%)	64.0	67.9	60.8	52.2	67.6	0.85	-1.39
	[62.2]	[62.8]	[62.1]	[50.6]	[75.6]	[0.38]	[-1.32]
Brookwell's block							
Block value (£k)	734.3	509.4	917.5	694.7	1,095.8	-2.51*	-1.46
	[593.0]	[501.4]	[707.0]	[477.0]	[1,062.1]	[-1.73]	[-1.22]
Block size (% MC)	6.7	5.8	7.4	7.6	7.3	-1.53	0.19
	[5.7]	[5.1]	[5.7]	[6.2]	[5.7]	[-1.07]	[0.59]
Block size (% Fund)	3.9	3.0	4.6	3.6	5.5	-1.82	-1.22
	[3.7]	[2.3]	[4.2]	[2.9]	[4.2]	[-1.05]	[-0.78]
Outside ownership/control							
No. of friendly stakes	2.7	1.8	3.4	3.8	3.2	-3.35**	0.71
	[2]	[2]	[3]	[3]	[3]	[-2.85**]	[0.38]
No. of stakes > 3%	5.3	4.7	5.8	6.0	5.6	-1.15	0.26
	[4]	[4]	[4]	[5]	[4]	[-0.71]	[0.15]
VC-controlled	0.14	0.18	0.11	0.25	0.00	0.68	1.91
	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.70]	[2.02*]
Insider-controlled	0.20	0.22	0.19	0.08	0.27	0.35	-1.27
	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.36]	[-1.20]
Firm attributes							
LTM excess return (%)	-27.8	-22.6	-32.1	-26.3	-36.6	0.74	0.76
	[-28.1]	[-23.8]	[-33.7]	[-29.7]	[-35.1]	[1.07]	[1.03]
Return on assets (%)	-22.6	-23.6	-21.6	-20.4	-22.7	-0.20	0.14
	[-10.0]	[-14.5]	[-7.5]	[-14.4]	[-6.0]	[-0.05]	[-0.19]
Total assets (£m)	45.0	39.9	50.4	48.0	52.4	-0.63	-0.17
	[19.7]	[13.9]	[28.4]	[4.5]	[32.8]	[-0.51]	[-0.67]
Market-to-Book (x)	2.9	1.3	4.5	3.2	5.8	-1.66	-0.68
	[1.1]	[1.1]	[1.1]	[1.6]	[0.61]	[-0.32]	[1.23]
Years since IPO	3.2	3.1	3.3	2.4	4.0	-0.28	-2.19*
	[3]	[3]	[3]	[2.0]	[4]	[-0.14]	[-1.79]
No. outside directors	3.9	4.3	3.6	4.3	3.1	2.25*	3.43**
	[4]	[4]	[4]	[4.5]	[3]	[1.89]	[2.85**]
Founder Chairman	0.33	0.14	0.48	0.42	0.53	-2.80**	-0.58
	[0]	[0]	[0]	[0]	[1]	[-2.54**]	[-0.59]
Founder CEO	0.41	0.45	0.37	0.58	0.20	0.58	2.09*
	[0]	[0]	[0]	[1]	[0]	[0.56]	[2.01*]
No. of firms	49	22	27	12	15	22/27	12/15

Table 4: PVML's voice activities

Panel A reports cases in which PVML had management contact, and the number of days before such contacts were made after Brookwell acquired its blocks. Panel B reports contact and cooperation with third parties. Panel C reports interventions at shareholders' general meetings. Panel D reports cases of high-intensity actions.

Panel A: Contact with management of the 27 engaged firms

	Meetings			Letters			Days investment held before first contact made	
	No firms met	% sample	Total meetings	No firms written	% sample	Total letters	Median	Min.
CEO	25	92.6%	57	1	3.7%	1	59	11
Chairman	19	70.4%	38	11	40.7%	20	90	13
CFO	18	66.7%	33				86	11
COO	3	11.1%	3				240	155
Division Manager	2	7.4%	2				493	197
Head of Strategy	1	3.7%	1				200	200
SID	1	3.7%	1				197	197
Head of IR	1	3.7%	1				305	305
Chair Rem. Commit.	1	3.7%	1				305	305
Non-Exec. Directors	8	29.6%	9				289	72
Site Visits	6	22.2%	6				123	42

Panel B: Contact and cooperation with other shareholders and relevant parties

			Other shareholders		Banks/ Bondholders	Head-hunters*	Company brokers
	Calls/ Meetings	Solicit Support	Joint Letter	Joint Meetings	Solicit Support	Any contact	Any contact
No observed	5	3	1	1	1	10	7
% sample	18.5%	11.1%	3.7%	3.7%	3.7%	37.0%	25.9%

* includes contact with competitors, industry experts and other 3rd party advisers

Panel C: Shareholders general meetings

	AGM				EGM		
	Pose questions	Add item	Solicit hostile views	Planned	Requis-itioned	Planned by PVML	Planned by other shareholders
No observed	7	1	3	3	2	3	1
% sample	25.9%	3.7%	11.1%	11.1%	7.4%	11.1%	3.7%

Panel D: High-intensity actions

	Threaten to block rights issue	Hostile takeover attempt		Press campaign		UK litigation	
		Observed	PVML induced	Observed	PVML induced	Observed	PVML induced
No observed	1	0	0	0	0	0	0
% sample	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5: Voice objectives and success rates

The table reports governance objectives and success rates for voice activities and collaborative and non-collaborative subsamples. Column 1 lists governance objectives. Columns 2, 4 and 6 report cases where PVML lists the objective in its investment committee papers: it adds one for firms where the objective was primary, one-half for firms where the objective was not primary, and zero otherwise. Column 3, 5 and 7 report the percentage of cases where the objective was achieved: it adds one for firms where the governance issue was both set as an objective, and the outcome was fully achieved, one-half for firms in which the outcome was partially achieved, and zero otherwise.

Governance objective	Voice		Collaborative		Non-Collaborative	
	No. cases	% success	No. cases	% success	No. cases	% success
Restructuring						
Refocus Diversified Firms	4	75.0	0	-	4	75.0
Restructure Firms through Asset Sales	5	80.0	0	-	5	80.0
Stop Acquisition	2	50.0	0	-	2	50.0
Discipline Capital Expenditures	5	80.0	2	100.0	3	66.7
Reduce Discount to Fair Value	24	79.2	12	91.7	12	66.7
All Restructuring themes	**40**	**77.5**	**14**	**92.9**	**26**	**69.2**
Board Changes						
Change CEO	8	50.0	0	-	8	50.0
Change Chairman	8	75.0	0	-	8	75.0
Change Non-Executive Directors	5	20.0	0	-	5	20.0
Strengthen "Independence" of Board	6	83.3	3	100.0	3	66.7
Change Remuneration Policy	4	25.0	0	-	4	25.0
All Board themes	**31**	**54.8**	**3**	**100.0**	**28**	**50.0**
Financial and Other Policies						
Equity Issue	4	100.0	2	100.0	2	100.0
Increase Cash Payout to Shareholders	1	100.0	0	-	1	100.0
Improve Operational Management	3	0.0	1	0.0	2	0.0
Stop Unequal Treatment of Holders	2	100.0	0	-	2	100.0
Improve Investor Relations	6	83.3	3	100.0	3	66.7
All Other themes	**16**	**75.0**	**6**	**83.3**	**10**	**70.0**

Table 6: Voice determinants and return regressions

Panel A reports the marginal effects of probit regressions corresponding to Equation (2). The dependent variable is a dummy equal to one if PVML chooses voice over exit (Column (1)), if the engagement is non-collaborative (Column (2)), and if the engagement is successful (Column (3)). Engagements are successful if the success rate is 100%. Panel B reports the coefficients of least squares regressions corresponding to Equation (3). The dependent variable in column (1) is IRR, in column (2) IRR with re-investment at 0.5%, and column (3) Raw Return. Panel C reports the results of a Heckman model using the two-step consistent estimator. In the first stage equation, the dependent variable is the Voice dummy (1/0), the instrument determining Voice is the Block Score variable, and the independent variables are the five variables present in the outcome equation. We report *t*-statistics based on delta method standard errors in Panel A, and robust standard errors in Panels B and C. Variables are defined in the Appendix. ** and * denote two-sided significance at the 1% and 5% level respectively.

Panel A: Probit regressions on voice activities

	Prob (Voice) (1)		Prob (Non-Collaborative) (2)		Prob (Successful) (3)	
	Marg. Effect	*t*-stat	Marg. Effect	*t*-stat	Marg. Effect	*t*-stat
No. friendly stakes	0.095**	3.91	-0.036	-0.94	-0.022	-0.64
Years since IPO	-0.045	-1.22	-0.040	-0.52	0.208**	2.74
No. outside directors	-0.245**	-3.17	-0.242*	-1.97	0.242*	2.44
Founder Chairman	0.319*	2.51	-1.320**	-3.79	2.291**	5.46
Founder CEO	0.371**	2.61	-1.204**	-3.11	1.721**	4.22
Obs.	49		27		27	
Pseudo R-squared	0.37		0.35		0.55	

Panel B: Least squares regressions on returns

	IRR (1)		IRR with 0.5% reinvestment (2)		Raw return (3)	
	Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
No. friendly stakes	-0.035	-1.08	-0.014	-1.32	-0.125	-1.68
Years since IPO	0.032	0.73	0.015	1.04	0.159	1.71
No. outside directors	0.089	1.45	0.040	1.80	0.135	1.05
Founder Chairman	0.412*	2.37	0.122*	2.04	1.078**	3.16
Founder CEO	0.057	0.28	-0.003	-0.04	0.336	0.93
Obs.	49		49		49	
R-squared	0.21		0.21		0.27	

Panel C: Heckman two-step regressions on returns (selection dependent variable = voice)

	IRR (1)		IRR with 0.5% reinvestment (2)		Raw return (3)	
	Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat
First stage						
Block Score	0.023*	1.77	0.023*	1.77	0.023*	1.77
Mills	0.141	0.70	0.052	0.84	0.493	1.14
Independent Vars.	YES		YES		YES	
Pseudo R-sq.	0.46		0.46		0.46	
Second stage						
No. friendly stakes	0.009	0.23	-0.003	-0.27	-0.038	-0.44
Years since IPO	0.035	0.68	0.020	1.24	0.106	0.95
No. outside directors	0.041	0.34	0.027	0.71	-0.188	-0.70
Founder Chairman	0.726**	3.46	0.238**	3.64	1.823**	3.98
Founder CEO	0.279	1.16	0.093	1.25	1.122*	2.14
Obs.	49		49		49	
Wald chi2 (5)	17.46**		19.24**		25.44**	

Table 7: Performance of Brookwell fund

Panel A reports Brookwell's IRR (with a 0.5% re-investment rate for capital returns during the holding period) and total return (cash returned minus cash raised, all divided by cash raised). We show performance before (gross) and after (net) of management and performance fees. Panel B reports the fund's fee structure. Management fees are 1% p.a. of assets managed together with a 'capital return fee' of 1% of capital returns up to 100p per share. Performance fees comprise an equity appreciation fee of 10% of any value returned in excess of 100p per share. In Panel C, the dependent variable is the monthly rate of return net of management and performance fees of the Brookwell portfolio in excess of the risk-free rate, as proxied by the U.K. Short Gilts yield taken from the DMO office website. Factor regressions of monthly returns are then estimated, and the results reported below. The table reports the intercept α and the coefficients (factor loadings) on the explanatory variables RMRF, SMB, HML and Momentum. These variables are the returns to zero-investment portfolios designed to capture market, size, book-to-market and momentum effects, respectively. Data for RMRF, SMB, HML and MOM are taken from Ken French's website. The sample period is from June 2008 to September 2013 (64 monthly observations) for the dependent variable. *p*-values are reported in parenthesis. ** and * denote two-sided significance at the 1% and 5% level respectively.

Panel A: Fund returns

		Before (i.e. gross of) fees			After (i.e. net of) fees		
		Brookwell portfolio (raw returns)	FTSE AIM All-Share	Brookwell portfolio (excess returns)	Brookwell portfolio (raw returns)	FTSE AIM All-Share	Brookwell portfolio (excess returns)
Total portfolio	IRR monthly*	0.02%	-0.29%	0.31%	-0.04%	-0.29%	0.26%
	IRR annual*	0.30%	-3.53%	3.83%	-0.44%	-3.53%	3.09%
	Total return	-23.35%	-26.19%	2.84%	-26.34%	-26.19%	-0.15%
Large blocks only	IRR monthly*	0.17%	-0.29%	0.46%	0.12%	-0.29%	0.41%
	IRR annual*	2.11%	-3.53%	5.64%	1.44%	-3.53%	4.97%
	Total return	-10.45%	-26.19%	15.74%	-14.44%	-26.19%	11.75%

*Assumes a 0.5% re-investment rate for capital returns during the holding period

Panel B: Fee structure

Year	Management fee (assets managed) (£)	Management fee (capital returns) (£)	Performance fee (equity appreciation) (£)	Total fees (£)	Proportion in Management Fees (%)	Proportion in Performance Fees (%)
2008	148,894	36,000	0	184,894	100.0	0.0
2009	374,055	115,833	106,669	596,557	82.1	17.9
2010	261,752	79,438	55,617	396,807	86.0	14.0
2011	160,725	55,000	0	215,725	100.0	0.0
2012	164,244	17,000	0	181,244	100.0	0.0
2013	95,809	7,600	0	103,409	100.0	0.0
Total	1,205,479	310,871	162,285	1,678,636	90.3	9.7

Panel C: Performance attribution regressions

	CAPM (1)	FF (2)	Mom (3)	FF + Mom (4)
Alpha	1.02	0.92	0.72	0.62
	(0.78)	(0.81)	(0.85)	(0.87)
RMRF	0.92	0.94	1.09	1.07
	(0.07)	(0.16)	(0.07)	(0.12)
SMB		1.35		1.62
		(0.45)		(0.38)
HML		-0.02		0.51
		(0.99)		(0.78)
Momentum			0.46	0.66
			(0.57)	(0.47)
Obs	64	64	64	64

Table 8: Returns attributable to activism

The table reports the IRR and total return net of fees as presented in Table 11 Panel A by engagement, by engagement attitude and by event study contribution. For the event study contribution, we compute the sterling return of the fund for the event. To be precise, we multiply the market value of the block held by Brookwell at day -2 before the announcement by the CAR for the [-2,+2] window. We then sum these sterling returns across all outcomes and firms in the Brookwell portfolio (a total of 29 events, once events with confounding information are excluded) and compute them as a proportion of the total sterling return of the fund between inception on 26/06/2008 and final value realization on 19/10/2015.

	Total portfolio		Large blocks by strategy		Large voice blocks by engagement attitude		
	All stakes	Large blocks	Exit	Voice	Collab-orative	Mixed	Confron-tational
No companies	222	49	22	27	12	7	8
Initial value	£54.9m	£36.0m	£11.2m	£24.8m	£8.3m	£7.0m	£9.5m
Cash returned	£40.4m	£30.8m	£9.1m	£21.7m	£6.4m	£3.7m	£11.6m
Total return	-26.3%	-14.4%	-19.0%	-12.4%	-23.4%	-47.0%	23.0%
Annual IRR* (raw)	-0.44%	1.44%	1.80%	1.37%	0.77%	-3.97%	4.85%
Annual IRR* (excess)	3.09%	4.97%	5.33%	4.90%	4.30%	-0.44%	8.38%
Event study contribution [-2; +2] window				62.6%	85.7%	-6.80%	30.8%

*Assumes a 0.5% re-investment rate for capital returns during the holding period

Appendix: Variable definitions

Categorization of engagement attitudes (source: PVML)	
Confrontational	Engagements are classified as confrontational when the target CEO or Chairman initially rejects the proposals for change that are put to the firm and this attitude does not change throughout the engagement period.
Mixed	In mixed engagements, demands are implemented reluctantly or grudgingly, or after a prolonged period of resistance.
Collaborative	In the vast majority of collaborative engagements there is little doubt about the attitude or response to the engagement.
Firm-level data (source: Bloomberg, Datastream, Bureau van Dijk, Brookwell)	
Market cap	Market value of equity (£ million) at Brookwell's acquisition price
Free float	(Number of shares owned by insiders / Total shares outstanding) x 100
Average daily trading volume	Average no. of shares traded daily in prior 6 months x Average share price in prior 6-month period (£)
No. of analysts	Number of investment banks/brokers with research analysts covering the firm
180-day volatility	180-day historic volatility of shares
Years since IPO	Number of years since the firm's IPO
No. outside directors	Number of independent directors on the board
Founder Chairman	Binary variable equal to one if the firm has its Founder as its Chairman
Founder CEO	Binary variable equal to one if the firm has its Founder as its CEO
LTM excess return	Buy-and-hold total stock return relative to the FTSE AIM All-Share Index for the 12 months prior to investment by Brookwell
Return on assets	Earnings before interest, taxes, depreciation and amortization (EBITDA) / Average total assets
Total assets	Value of average total assets for the fiscal year (£m)
Market-to Book	Market value of equity / Book value of equity
Shareholding and block data (source Bloomberg, Bureau van Dijk, PVML)	
Block score	$\frac{\frac{Block\,Value}{Daily\,volume} \times \sqrt{180d\,Volatility} \times Block\,Value \times Free\,Float^{-1}}{\sqrt{Stock}\,Price \times 2(1 + No\,of\,Analysts) \times (No\,of\,Stakes > 3\%)}$
Block value	No. of shares in block x Brookwell acquisition price (in thousand £)
Block size (% mkt cap)	Block value / market capitalization
Block size (% fund)	Block value / Total value of Brookwell share class
No. friendly stakes	No of 3% blockholders that are also 3% shareholders in Brookwell funds at inception of each share class
No. of stakes > 3%	Number of blockholders with block size larger than 3% of market cap
VC-controlled	Binary variable equal to one if the firm has a VC owning 20% or more
Insider-controlled	Binary variable equal to one if the firm has an Insider owning 20% or more
Voice activity and return data (source: Dow Jones Factiva, Regulatory News Service, PVML)	
Days held	Number of calendar days from date of Brookwell acquisition to date of last sale
Success rate	No. of activism objectives met / Total number of activism objectives
Successful dummy	A dummy variable defined as one if success rate = 100% (i.e. if activism objectives are met in full)
Total mgt. contact	Total number of contacts between Brookwell and an engaged firm's officers
Days before first contact	Number of calendar days between Brookwell acquiring a stake and the first engagement contact with a firm's officers
IRR	The internal rate of return for a Brookwell fund-holder
IRR with re-investment at 0.5%	The internal rate of return with early cash returns re-invested at 0.5% for the remainder of the holding period
Raw return	(Cash returned / Cash raised) – 1

Online Appendix for:

Shareholder activism in small-cap newly-public firms

OA1: Comparison of the UK Main Market and AIM

OA2: Case study of a confrontational engagement

OA3: Voice activities by collaboration attitude

OA4: Event study around the disclosure of stakes

OA5: Event study by engagement attitude

OA6: Event study by engagement objective

OA7: Event study by engagement attitude – asymmetric windows

OA8: Event study by engagement objective – asymmetric windows

OA9: Changes in firms 1- and 2-years after Brookwell's exit

OA10: Returns to 'free-riding' on Brookwell

OA11: References

OA1: Comparison of the UK Main Market and AIM

	London Stock Exchange ("LSE") Main Market			LSE Alternative Investment Market ("AIM")
	Premium segment (Official List)	Standard segment	High growth segment	
Legal status of market	Regulated market (rules set by EC) plus 'super-equivalent' rules imposed by FCA (LR 6-13)	Regulated market (rules set by EC) with no additional rules	Regulated market (rules set by EC) plus rules set by LSE in HGS Rules	Not a regulated market: rules set by LSE in AIM Rules for Companies
Minimum free float	25%	25% (with some UKLA exceptions)	10% (with value at IPO of at least £30m)	No minimum (Nomad confirms issuer is suitable)
Minimum market cap	£700,000	£700,000	None (but see free float)	None
Track record requirement at IPO	At least 3 years financial information	None	CAGR in revenue of at least 20% over prior 3 years	None
Liability for false statements in IPO documents	Issuer, directors and other persons responsible for IPO prospectus are personally liable under s.90 FSMA to pay compensation to any person who acquires shares at IPO. FCA can fine issuer/directors for breach of PR/LR.		As premium segment, except LSE can fine issuer (but not directors) for HGS rules breach.	LSE can fine issuer (but not directors) for breach of AIM rules.
Pre-emption on new shares	Yes (LR 6.1.25 and 9.3.11)	Not required by LR	Not required by HGS rules	Not required by AIM rules
Max. discount for new shares	10%	No maximum	No maximum	No maximum
Regulation of share schemes	Shareholder approval for LTIPs and discounted options	No	No	No
Corporate governance	All issuers must comply or explain against UK Corporate Governance Code (LR 9.8(56) and (6) and DTR 7.2). Must have an audit committee (DTR 7.1)	No obligation to comply or explain, but issuer must disclose details of any code to which it voluntarily complies	No particular code specified. Issuer must comply or explain against its national code (if so required by its domestic law)	No specific requirements
Legal tools for activist shareholders	Statutory powers (CA06) and additional rights (s342, s527, s153) including raising "any matter" at AGM (s338A) and having such matters circulated at expense of issuer (s340A&B)			Statutory powers only

Abbreviations: EC = European Commission; LR = Listing Rules; FCA = Financial Conduct Authority; DTR = FCA's Disclosure and Transparency Rules; HGS = LSE's High Growth Segment rules; Nomad = Nominated Adviser; PR = FCA's Prospectus Rules; UKLA = UK Listing Authority; FSMA = Financial Services and Markets Act 2000; LTIP = Long term incentive plan; CA06 = Companies Act 2006.

The table reports summary differences in the listing and corporate governance requirements of Main Market and AIM firms, as well as the legal tools available to activist shareholders.[31] There are

[31] The LSE details all UK listing and financial reporting requirements, including rules for AIM firms and their nominated advisers. The Financial Reporting Council ("FRC") provides the full UK Corporate Governance Code. Black and Coffee

no minimum free float, market capitalisation or track record requirements for firms upon admission to AIM. Once listed, such firms do not share the same restrictions on new equity issuance or equity-based remuneration as Main Market firms, and are not required to maintain insider lists or provide specific information in shareholder circulars for major transactions. Consequently, many AIM firms are young and/or small, are focused on a single technology or business plan, have never made a profit, have concentrated shareholdings with high insider ownership, and are able to dilute minority shareholders for general corporate purposes or executive remuneration. AIM firms can hence be characterised as riskier than Main Market firms.[32]

Main Market firms are subject to the UK Corporate Governance Code (formerly the Combined Code) and its "comply or explain" principle, whereas AIM firms need only abide by the AIM Rules for Companies.[33] The AIM rules govern the conduct of directors and disclosure of executive remuneration, but they are less stringent than the UK Corporate Governance Code and have no prescribed governance requirements. Compliance with the AIM rules is delegated by the LSE to Nominated Advisors (so-called "nomads"). Nomads are responsible for determining the suitability of a firm for AIM listing, and for notifying the exchange regulation team if a firm for which they act ceases to be suitable (Nomad Rule 14). Nomads are typically investment banks, corporate finance advisory boutiques, audit or legal firms. Although approved by the LSE and regulated by the Financial Conduct Authority ("FCA"), nomads are nevertheless private sector organisations appointed and paid for by AIM firms. Consequently, the regulatory setting in which AIM firms operate poses greater agency risks for investors.[34]

With respect to legal tools available to an activist, shareholders in AIM firms are restricted to statutory powers only, as enshrined in the Companies Act 2006 ("CA06"). Amongst such tools is the

(1994) argue the UK provides greater legal tools than the US for shareholder activists. Becht et al. (2009) compare the UK and US settings. Davies and Bardell (2018) provide a recent discussion of UK shareholder rights.

[32] Gerakos, Lang and Maffett (2012) report that AIM firms generate lower returns, suffer from lower levels of trading liquidity and are more likely to fail than Main Market firms during the period June 27th 1995 to end 2008. Vismara, Paleari and Ritter (2012) report that average long-run performance of IPOs on European junior markets including AIM is dramatically worse than for main markets, and that liquid trading rarely develops in these firms. Arcot, Black and Owen (2007) report that once AIM firms are able to demonstrate sustainable profitability and a market capitalization above £500 million, they are encouraged by the LSE to transfer their listing to the Main Market.

[33] Snell and O'Brien (2008) find that 77% of the largest 100 AIM firms by market capitalisation comply with some aspects of the UK Governance Code, but only 3% adopt it in full. Larger AIM firms do not necessarily provide better governance.

[34] Nielsson (2012) examines whether AIM attracts lower quality firms due to its lower corporate governance, financial reporting and listing requirements, but finds that AIM firms are equivalent in terms of profitability, growth and leverage to NYSE, NASDAQ, Deutsche Boerse and Euronext listed firms. Piotroski and Srinivasan (2008) find that smaller firms are more likely to consider an AIM listing over a US or UK Main Market listing in the period following the passage of the Sarbanes Oxley Act in 2002. The Financial Services Authority (2008) reviews Main Market versus AIM regulation standards.

ability to call for a general meeting (CA06 sections 303-305), for the circulation of a statement (sections 314-317), or for specific resolutions to be considered at a firm's annual general meeting (section 338), in each case provided that a shareholder holds at least 5 per cent of a firm's issued share capital. Further statutory powers allow shareholders to remove a director from office (section 168) and request a copy of the firm's shareholder register (section 116). However, shareholders in Main Market firms have additional rights not available to AIM shareholders, for example the ability for beneficial owners to count towards shareholder thresholds (section 153), the right to require directors to obtain an independent report on any poll taken at a general meeting (section 342), the right to require the firm to clarify any matters relating to the audit of the firm (section 527), and the right to include "any matter" for discussion at a general meeting (section 338A) while having such matters circulated at the expense of the firm (section 340A&B).[35] Given the higher concentration of ownership in AIM firms, activists seeking support from fellow shareholders ("acting in concert") are also at greater risk of triggering rules relating to mandatory bids and market abuse.[36]

[35] In August 2017, the UK government announced further corporate governance reforms aimed at large firms, for example requiring them to explain publicly how their directors take shareholders' interests into account. The Investment Association introduced a Public Register for Main Market firms that receive 20% or more votes against any proposed resolutions, or withdraw a resolution prior to an AGM. As a result, several firms have established measures for investor engagement, including Marks & Spencer, that created a private investors panel and given its members access to its board, and Royal Bank of Scotland, that hosted an event specifically for private investors.

[36] A person is viewed by the Disclosure and Transparency rules ("DTRs") as an indirect holder of shares if it has concluded an agreement with a shareholder that "obliges them to adopt, by concerted exercise of the voting rights they hold, a lasting common policy towards… management". Shareholders acting in concert therefore need to consider whether they have indirect interests in each other's shares, leading to thresholds (e.g. 3% threshold for disclosure under DTR5; 30% threshold for mandatory bid under Takeover Code Rule 9) being met, or if dealings in shares are undertaken on the basis of their knowledge of another shareholder's intentions and strategy (or if their own comments give rise to deceptive indications as to their future intentions), leading to possible breaches of market abuse and insider dealing regulations.

OA2: Case study of a confrontational engagement

In order to shed light on the multiple interacting factors that underpin small-cap activist engagements, we present a case study of a confrontational engagement. The case illustrates how an EGM can bring about board changes, and consequently why the threat of an EGM can give 'real authority' over the target board and management.

Brookwell D ("the Fund") received 1,350,000 shares at 172p per share, being 6.96% of the equity (7.33% of the free float) in Northern Investors ("NI"), from Teesside Pension Fund ("TPF") on 11 February 2011, valued at £2.322m. The block represented 14.14% of the Fund's total assets and 193 days of average daily trading volume in NI's shares. The shares had underperformed the FTSE AIM All-Share Index by -35.1% (-31.1%) in the prior 1-year (6-month) period. PVML were responsible for creating liquidity and value from the Fund's portfolio. The holding in NI was the largest position in the Fund.

NI is a quoted investment company that takes positions in unquoted companies, often alongside the venture capital trusts ("VCTs") that are managed by Northern Ventures Managers Ltd ("NVM"). The Company was formed in 1984, initially to purchase investments from British Technology Group, which was being privatised, and funds were raised mainly from institutions in the North East of England, mostly local authority pension funds, who were interested in supporting businesses and creating jobs in that area. As of 31 March 2011, the Company's Net Assets were £59.1 million (304.1p per share), of which £12.2m was in cash (down from £19.6m as at 30 September 2010), and the market cap was £33.4m (at 210p per share), a discount of 30.9%. Teesside Pension Fund owned 23.59% of the Company's equity and had been disappointed that no action had been taken to reduce the discount. In addition, NVM had persuaded the board of NI to significantly increase the management fee and incentives without consulting the shareholders and, in particular, the largest one, TPF.

TPF contacted PVML and asked for help to resolve the matter. After initial discussions, TPF transferred part of the holding into the Fund. 18 days after receiving the holding, PVML contacted the Chairman of NI, requesting a meeting. One of the factors was that there was to be a continuation vote that would be taking place in May 2012. In the meeting with the Chairman and NI's advisers, PVML had asked whether NI proposed to invest further before the continuation vote. The Chairman was not prepared to make a commitment that there would be no further investments; in fact, he indicated it would continue to invest in quality situations. Within a week, the Company announced that the cash balance of £20 million had been reduced to £12 million and PVML therefore deduced that the plan was to invest all the money right up to the continuation vote and then tell the shareholders that NI would need 5-7 years to wind it up, a most unsatisfactory situation from Brookwell D's point of view.

On 11 April 2011, Brookwell D wrote to the Board of the Company, requisitioning a General Meeting, proposing the following resolutions, namely that:

(1) the Directors of the Company are requested to put forward constructive proposals to address the lack of liquidity in the Company's ordinary shares and the high discount to Net Asset Value ("NAV") at which such shares have been traded historically on the LSE; (2) the proposals should benefit the interests of all shareholders and enable those shareholders who wish to realise their investments to do so at a value close the NAV over an agreed period; (3) the terms should also be on an equitable basis for continuing shareholders; (4) the Directors of the Company are requested to ensure that no further investments are made by the Company (other than those to which it is already irrevocably committed as of the date of this requisition) until the Board's proposals, as a result of the above resolution, have been voted upon by shareholders in general meeting.

The Board publicly acknowledged receipt of this requisition on 14 April 2011. On 10 May 2011, the Board of NI announced a "Proposed change of investment strategy", following a consultation

with its major shareholders and, as a result, decided to recommend an orderly realisation of the portfolio and efficient return of cash to shareholders. Brookwell D therefore withdrew its requisition notice. A circular was published on 24 June 2011 that reflected the announcement of 10 May and called a General Meeting ("GM"). In particular, the following resolutions were proposed, namely that:

(1) the Company's investment policy be amended to one which will achieve an orderly realisation of the assets of the Company, to be effected in a manner that seeks to achieve a balance between an efficient return of cash to Shareholders and maximising the value of the Company's investments; (2) subject to the passing of Resolution 1, the Investment Management Agreement ("IMA") be amended in order to achieve the aims and objective of the Company's new investment policy, including changes to the Manager's fee arrangements; (3) the Articles of the Company be amended by (a) deleting Articles 147 and 148 of the Company's Articles, and (b) amending Article 122 to make it clear that the Company's capital reserve can be used to fund share buy-backs and redemptions; (4) the share premium account of the Company be cancelled.

The key piece of new information was the proposed change to the IMA. The annual fixed management fee would be reduced in steps from £900k in the year to 31 March 2012 to £300k in the year to 31 March 2016. A performance fee was also introduced, which was a carry based on the return of cash at certain level of higher share prices. The Board also agreed to return £7.5m in cash almost immediately. On 21 July 2011, the GM took place and shareholders approved the arrangements for the management and the change of strategy. In addition, a number of shareholders, including the Fund, voted against the re-appointment of a director who was also on the Board of one of the NVM-managed VCTs and was therefore conflicted. He retained his position by a margin of approximately 10,000 votes. PVML indicated that they would continue to campaign for his resignation. However, at this meeting, the Chairman succeeded, after a question by a representative of PVML, in misleading the meeting and, therefore, Brookwell D applied another requisition to replace the Chairman and

another member of the board. The Chairman resigned on 15 September 2011 and was replaced by Nigel Guy as Chairman and Philip Marsden was also appointed as a NED. Both Nigel and Philip were executives of 3i, the private equity house, with responsibilities for disposing of private equity investments. The change of strategy meant that the board made no further investments and focused on realisations. As a result, the share price increased, and the NAV discount reduced, and Brookwell D was able to sell its shares in one of the sequence of tenders. The duration of the investment was 1,370 days, the second longest holding period of any investment made across Brookwell A, B or D shares. Total cash returned to investors was £8,819,394 representing a raw return of 279.8%.

OA3: Voice activities by collaboration attitude

The table reports summary statistics for the activities described in Tables 4 and 5 of the paper. For each variable the mean [median] is reported, and *t*-statistic [χ-statistic] for differences in mean [median]. ** and * denote two-sided significance at the 1% and 5% level respectively.

	Voice (1)	Collaborative (2)	Non-Collaborative (3)	Diff. (2) vs (3) (4)
Total management contact	6.33	4.0	8.20	-3.35**
	[5]	[3.5]	[8]	[-2.70**]
Chairman meetings and letters	2.11	1.00	3.00	-3.49**
	[2.0]	[1.0]	[3.0]	[-2.81**]
All other activism actions	1.78	0.83	2.53	-2.46*
	[1]	[0.5]	[2]	[-2.41*]
No. of stated objectives	3.22	1.92	4.27	-4.15**
	[3]	[1.5]	[4]	[-3.46**]
Success rate	0.76	0.92	0.63	2.26*
	[1]	[1]	[0.6]	[2.42*]
No. of Firms	27	12	15	

The table examines the link between PVML effort allocation and engagement attitudes. Non-collaborative engagements involve significantly greater attention by PVML, as reflected in the higher number of management contacts (8.2 versus 4 on average), Chairman meetings and letters (3 versus 1), the timeliness at which such contacts are first made (median of 54 versus 85 days), and the number of other activism actions (2.5 versus 0.8 on average) and stated objectives (4.3 versus 1.9 on average). Despite the extra effort consumed by non-collaborative engagements, success rates in such engagements are significantly lower than in collaborative ones (63% versus 92% success rate on average). One interpretation, consistent with Boyson and Pichler (2019), is that the target firms are simply poorly-performing entities, and that no matter the effort made by PVML the results of its activism are underwhelming.

OA4: Event study around the disclosure of stakes

The table reports mean and median cumulative abnormal returns (%) in various windows around the first disclosure dates of PVML's ownership stakes. First disclosure can be either by RNS or the press. *t*-statistics (*Z*-statistic, Wilcoxon sign rank test) are reported for differences in mean (median) to zero. We use ***, ** and * to denote two-sided significance at the 1%, 5% and 10% level respectively.

Window	Mean (%)	*t*-stat	Median (%)	*z*-stat	% Positive	No events
Panel A: Brookwell A						
[-1; +1]	-1.09	-0.74	0.92	-0.66	57.1	14
[-2; +2]	-2.99	-1.07	-5.37	-1.10	35.7	14
[-3; +3]	-10.87	-1.34	-9.85	-1.29	35.7	14
[-5; +5]	-10.71	-1.26	-7.85	-1.10	35.7	14
Panel B: Brookwell B						
[-1; +1]	0.30	0.40	0.52	1.78*	90.0	10
[-2; +2]	0.02	0.01	1.07	0.87	80.0	10
[-3; +3]	0.76	0.44	0.89	0.76	70.0	10
[-5; +5]	-0.75	-0.21	0.22	0.26	50.0	10
Panel C: Brookwell D						
[-1; +1]	-1.34	-0.74	0.05	-0.11	53.3	15
[-2; +2]	-0.04	-0.02	0.09	0.11	53.3	15
[-3; +3]	1.55	0.66	0.90	0.97	66.7	15
[-5; +5]	3.41	1.05	2.00	0.97	60.0	15

The table measures cumulative abnormal returns ("CARs") around the first disclosure of Brookwell's stakes, after adjusting for the FTSE AIM All-Share Index. As with the Becht et al. (2009) study of the Hermes fund, we restrict ourselves to investments that were disclosed either by RNS (being above the 3% ownership threshold) or in the press shortly after the date of Brookwell's acquisition, resulting in 39 disclosure events out of the 49 large block portfolio. The time delay between Brookwell acquiring its stakes and first disclosure is on average 12.2 days (median 13 days) with a maximum of 39 days. For the other 10 stakes, disclosures were either not required, or made after a substantial period of time.

We find negative though statistically insignificant market responses to first disclosures relating to Brookwell's IPO (A shares). In particular, we find large negative reactions of approximately -10% in the [-3; +3] and [-5; +5] windows in both median and median CARs. Upon closer inspection, we find the negative CARs are in each case in the period preceding disclosure. Given the stock swap arrangement of the IPO, it is clear that participating institutions possess information on Brookwell's stakes before RNS disclosures are made. In the case of Brookwell's IPO, first disclosures were made on average 4.2 days (median 4 days, maximum 25 days) after stocks were acquired. It is therefore possible that participating institutions would seek to provide price support in stocks up to the evening before the IPO (ensuring a high exit price for them), and to sell residual positions in the period between the IPO and Brookwell's first disclosures.

The pattern is not repeated when looking at Brookwell's follow-on offerings (B and D shares), where there is little evidence of either positive or negative market reaction. In both these cases, there was a longer time delay in making RNS disclosures than in Brookwell A. In Brookwell B, first disclosures were made on average 20.2 days (median 19.5 days, maximum 39 days) after acquisition. In Brookwell D, the average (median) was 14.2 (13) days with a maximum of 19 days. One interpretation is that the IPO involved a longer marketing period, allowing investors more time to exchange views and prepare stock swap and monetisation strategies.[37] Another explanation is that investors in the follow-on offerings had come to recognise Brookwell's tactics of using exit and voice, implying a blend of negative (exit overhang) and positive (voice value-enhancement) market reaction effects.

Our findings are consistent with the Hermes fund that experienced small, negative but generally insignificant CARs around disclosure dates, but at odds with much of the hedge fund activist studies worldwide. In the US, statistically significant CARs of 3-10% are commonly reported around the 13D filing dates of ownerships takes above 5% (e.g. Klein and Zur (2009), Greenwood and Schor (2009), Boyson and Mooradian (2011)) with around half of these abnormal returns occurring in the few days leading up to the filing.[38] In Europe, Becht, Franks and Grant (2010) and Stokman (2007) report CARs in the range 6-12% for the [-25; +25] announcement-day window. In Japan, Uchida and Xu (2008) report CARs of 5.6% for the [-2; +2] window. In general, combined evidence suggests outside investors perceive hedge fund activism as value enhancing.

[37] Discussions with PVML staff confirm this potential flaw in the IPO stock swap arrangement. PVML modified its prospectus in the follow-on offerings to include the right to refuse stocks at IPO if it believed the closing bid price on the evening before the offering was not a 'fair' price.

[38] Brav, Jiang and Kim (2015) report that average abnormal trading volume also spikes during the 10-day period prior to 13D filing. The authors offer two explanations. First, since investors are required to file no less than 10 days after exceeding the 5% threshold, it is possible that the filing fund itself engages in additional buying prior to announcement. Second, the abnormal volume may indicate "wolf pack" investing (where several funds buy into a target firm in a loosely coordinated fashion) or "tipping" (where the lead hedge fund reveals its intention to a small number of other funds).

OA5: Event study by engagement attitude

The table reports mean and median cumulative abnormal returns (%) in various windows around the announcement dates of engagement outcomes partitioned by engagement attitude. Engagement attitude can be collaborative, mixed and confrontational. Engagement attitudes are defined in the Appendix. *t*-statistics (z-statistic) are reported for differences in mean (median) to zero. ** and * denote two-sided significance at the 1% and 5% level respectively.

Window	Mean (%)	*t*-stat	Median (%)	z-stat	% Positive	No. events
Panel A: All investments						
[-1; +1]	5.10	2.68*	1.84	2.52*	68.9	45
[-2; +2]	5.53	2.49*	2.27	2.34*	64.4	45
[-5; +5]	3.93	1.73	2.24	1.04	55.6	45
Panel B: All investments excluding events with confounding information						
[-1; +1]	8.49	3.87**	3.72	4.31**	86.7	30
[-2; +2]	9.96	3.86**	2.98	4.14**	83.3	30
[-5; +5]	7.60	2.80**	3.78	2.48*	66.7	30
Panel C: Collaborative engagements						
[-1; +1]	4.89	1.18	0.38	0.80	61.5	13
[-2; +2]	3.66	0.75	0.39	0.31	61.5	13
[-5; +5]	4.39	0.95	1.08	0.59	53.8	13
Panel D: Collaborative engagements excluding events with confounding information						
[-1; +1]	9.65	1.58	2.84	1.68	75.0	8
[-2; +2]	10.17	1.51	2.35	1.40	75.0	8
[-5; +5]	9.61	1.47	3.18	1.40	62.5	8
Panel E: Mixed engagements						
[-1; +1]	-0.96	-0.32	-0.01	-0.36	45.5	11
[-2; +2]	-0.43	-0.10	-0.18	-0.62	36.4	11
[-5; +5]	-2.24	-0.51	-8.57	-0.89	45.5	11
Panel F: Mixed engagements excluding events with confounding information						
[-1; +1]	5.44	1.51	1.34	1.75	80.0	5
[-2; +2]	9.91	1.48	2.22	1.75	80.0	5
[-5; +5]	8.93	1.44	8.13	1.21	80.0	5
Panel G: Confrontational engagements						
[-1; +1]	8.39	3.22**	5.15	3.04**	85.7	21
[-2; +2]	9.81	3.66**	5.48	3.46**	81.0	21
[-5; +5]	6.88	2.20*	3.15	1.69	61.9	21
Panel H: Confrontational engagements excluding events with confounding information						
[-1; +1]	8.86	3.55**	5.26	3.52**	100.0	16
[-2; +2]	9.87	3.43**	5.90	3.47**	93.8	16
[-5; +5]	6.18	1.82	3.36	1.50	68.8	16

OA6: Event study by engagement objective

The table reports mean and median cumulative abnormal returns (%) in various windows around the announcement dates of engagement outcomes partitioned by the type of governance objective. *t*-statistics (z-statistic) are reported for differences in mean (median) to zero. ** and * denote two-sided significance at the 1% and 5% level respectively.

Window	Mean (%)	*t*-stat	Median (%)	z-stat	% Positive	No. events
Panel A: All investments						
[-1; +1]	5.10	2.68*	1.84	2.52*	68.9	45
[-2; +2]	5.53	2.49*	2.27	2.34*	64.4	45
[-5; +5]	3.93	1.73	2.24	1.04	55.6	45
Panel B: All investments excluding events with confounding information						
[-1; +1]	8.49	3.87**	3.72	4.31**	86.7	30
[-2; +2]	9.96	3.86**	2.98	4.14**	83.3	30
[-5; +5]	7.60	2.80**	3.78	2.48*	66.7	30
Panel C: Restructuring						
[-1; +1]	6.27	2.00	2.49	1.63	66.7	24
[-2; +2]	7.17	1.93	2.53	1.60	66.7	24
[-5; +5]	5.83	1.57	3.46	1.14	66.7	24
Panel D: Restructuring excluding events with confounding information						
[-1; +1]	14.02	3.88**	7.36	3.41**	100.0	15
[-2; +2]	16.42	3.86**	6.62	3.41**	100.0	15
[-5; +5]	14.73	3.39**	6.78	3.01**	93.3	15
Panel E: CEO and Chairman turnover						
[-1; +1]	1.63	0.90	1.59	1.18	66.7	12
[-2; +2]	1.29	0.56	1.10	0.71	50.0	12
[-5; +5]	-1.30	-0.59	-2.00	-0.63	33.3	12
Panel F: CEO and Chairman turnover excluding events with confounding information						
[-1; +1]	3.98	2.52*	2.36	2.38*	87.5	8
[-2; +2]	4.81	2.57*	2.92	2.10*	75.0	8
[-5; +5]	1.09	0.44	0.59	0.42	50.0	8

OA7: Event study by engagement attitude – asymmetric windows

The table reports mean and median cumulative abnormal returns (%) in various windows around the announcement dates of engagement outcomes partitioned by engagement attitude. Engagement attitude can be collaborative, mixed and confrontational. Engagement attitudes are defined in the Appendix. *t*-statistics (z-statistic) are reported for differences in mean (median) to zero. ** and * denote two-sided significance at the 1% and 5% level respectively.

Window	Mean (%)	*t*-stat	Median (%)	z-stat	% Positive	No. events
Panel A: All investments						
[-20; +1]	4.23	2.10*	2.61	1.98*	93.3	45
[-1; +20]	5.55	2.31*	2.56	1.85	82.2	45
Panel B: All investments excluding events with confounding information						
[-20; +1]	7.45	3.23**	4.60	3.64**	90.0	30
[-1; +20]	8.64	2.77**	3.81	2.76*	73.3	30
Panel C: Collaborative engagements						
[-20; +1]	5.40	1.24	4.60	1.36	76.9	13
[-1; +20]	3.88	0.85	4.20	0.52	53.8	13
Panel D: Collaborative engagements excluding events with confounding information						
[-20; +1]	10.50	1.75	5.01	2.10	87.5	8
[-1; +20]	8.76	1.29	2.84	0.98	62.5	8
Panel E: Mixed engagements						
[-20; +1]	-1.46	-0.39	-4.53	-0.36	45.5	11
[-1; +20]	1.32	0.30	2.26	0.45	63.6	11
Panel F: Mixed engagements excluding events with confounding information						
[-20; +1]	5.02	1.16	11.15	1.48	80.0	5
[-1; +20]	9.35	1.32	3.09	1.75	80.0	5
Panel G: Confrontational engagements						
[-20; +1]	6.48	2.43*	2.76	2.38*	81.0	21
[-1; +20]	8.79	2.41*	4.03	2.28*	71.4	21
Panel H: Confrontational engagements excluding events with confounding information						
[-20; +1]	6.69	2.43*	3.52	2.84*	93.8	16
[-1; +20]	8.35	2.97**	4.10	2.22*	75.0	16

OA8: Event study by engagement objective – asymmetric windows

The table reports mean and median cumulative abnormal returns (%) in various windows around the announcement dates of engagement outcomes partitioned by the type of governance objective. *t*-statistics (z-statistic) are reported for differences in mean (median) to zero. ** and * denote two-sided significance at the 1% and 5% level respectively.

Window	Mean (%)	*t*-stat	Median (%)	z-stat	% Positive	No. events
Panel A: All investments						
[-20; +1]	4.23	2.10*	2.61	1.98*	93.3	45
[-1; +20]	5.55	2.31*	2.56	1.85	82.2	45
Panel B: All investments excluding events with confounding information						
[-20; +1]	7.45	3.23**	4.60	3.64**	90.0	30
[-1; +20]	8.64	2.77**	3.81	2.76*	73.3	30
Panel C: Restructuring						
[-20; +1]	5.74	1.80	4.44	1.69	75.0	24
[-1; +20]	7.76	1.90	3.79	1.54	70.8	24
Panel D: Restructuring excluding events with confounding information						
[-20; +1]	12.16	3.23**	5.69	3.41**	100.0	15
[-1; +20]	16.59	3.21**	5.91	3.01**	93.3	15
Panel E: CEO and Chairman turnover						
[-20; +1]	-1.06	-0.36	-0.52	-0.24	50.0	12
[-1; +20]	1.38	1.14	1.17	0.35	58.3	12
Panel F: CEO and Chairman turnover excluding events with confounding information						
[-20; +1]	2.86	0.86	2.56	1.26	75.0	8
[-1; +20]	2.22	1.68	2.41	1.26	62.5	8

OA9: Changes in firms 1- and 2-years after Brookwell's exit

The table reports changes (Δ) in firm characteristics between the fiscal year in which Brookwell acquired its stakes, and one and two years following Brookwell's final exit of its investments. For each variable the mean [median] change is reported, and the *t*-statistic with Satterthwaite approximation (*Z*-statistic, Wilcoxon rank sum test) for differences in mean (median). We use ** and * to denote two-sided significance at the 1%, 5% level respectively.

	Large stakes (1)	Engaged (2)	Non-collab-orative (3)	Succ-essful (4)	*t*-stat (*Z*-stat) (1) vs (2) (5)	*t*-stat (*Z*-stat) (2) vs (3) (6)	*t*-stat (*Z*-stat) (2) vs (4) (7)
Δ 1-year post							
Return on Assets	0.76	2.22	1.36	3.43	-1.52	0.79	-1.12
	[0.99]	[1.19]	[1.21]	[1.37]	[-0.75]	[-0.15]	[-0.92]
Total Assets	1.08	0.98	1.03	0.92	1.01	-0.41	0.38
	[0.94]	[0.83]	[0.85]	[0.90]	[1.87]	[-0.32]	[-0.81]
No. Employees	1.01	0.80	0.74	0.96	3.20**	1.23	-2.92**
	[0.99]	[0.81]	[0.78]	[0.97]	[3.54**]	[0.99]	[-2.72**]
Market-to-Book	1.51	2.01	2.23	1.70	-2.04	-0.51	0.61
	[1.18]	[1.47]	[1.34]	[1.36]	[-2.72**]	[0.90]	[0.23]
Δ 2-year post							
Return on Assets	1.65	3.29	1.35	5.71	-1.25	0.89	-1.12
	[0.87]	[0.87]	[0.59]	[1.09]	[-0.04]	[0.32]	[-1.04]
Total Assets	1.14	0.97	0.85	1.10	1.38	0.78	-0.81
	[0.97]	[0.81]	[0.67]	[0.97]	[1.83]	[0.78]	[-1.91]
No. Employees	1.12	0.81	0.74	0.98	2.70*	1.07	-2.51*
	[1.00]	[0.76]	[0.69]	[1.03]	[3.50**]	[1.04]	[-2.67**]
Market-to-Book	2.75	4.33	5.43	1.80	-2.29*	-0.90	1.86
	[1.34]	[1.63]	[1.54]	[1.58]	[-2.95**]	[1.42]	[1.16]
No. of Firms	46	24	14	12	46/24	24/14	24/12

In order to address concerns that PVML's interventions result in short-term positive abnormal stock returns at the expense of long-term firm performance, we examine changes in operating and market valuation measures for the one- and two-year period after Brookwell's exit from its investments.

We find that engaged firms have reduced numbers of employees and increased market-to-book ratios in both the one- and two-year periods after Brookwell has exited its investments. These results are significant at the 1% level in both mean and median difference tests relative to non-engaged firms. To a lesser extent, engaged firms also display a reduced amount of total assets (with significance at the 10% level in median difference) and a higher return on assets when compared to non-engaged firms, in both time periods. With respect to engagement attitude, we find no statistically significant differences between collaborative and non-collaborative engagements. When comparing successful and non-successful engagements, we find that successful outcomes are associated with a smaller reduction in the numbers of employees in both one- and two-year periods, and a smaller reduction in

total assets in the two-year period, although such firms display a lower increase in market to book ratio in this two-year period.

In summary, the impact of PVML's interventions appears to persist in the operating performance of firms after Brookwell has exited its stakes. Moreover, there is no evidence that any one-year changes reverse in the second year. Engaged firms have fewer employees, lower total assets, generate a higher return on assets and are rewarded with higher market-to-book ratios by investors than non-engaged firms in the years after Brookwell exits.

OA10: Returns to 'free-riding' on Brookwell

The table reports annual IRR returns to trading strategies designed to replicate Brookwell's trading strategy, based on private or public information, with or without rebalancing. Returns to Brookwell's actual portfolio assuming a 0.5 percent re-investment rate for capital returns during the holding period, are reported as a baseline.

Replicating strategy	Rebalancing?	Annual IRR Return (unadjusted for market return)
Panel A: Brookwell performance (baseline)		
Total portfolio net of fees & expenses	Yes	-0.44%
Total portfolio gross of fees & expenses	Yes	0.30%
Large stakes only net of fees & expenses	Yes	1.44%
Confrontational stakes only net of fees & expenses	Yes	4.85%
Panel B: "Free riding" performance		
Public information (RNS-announced stakes only)	Yes	1.93%
Public information (RNS-announced stakes only)	No	5.88%
Private information obtained on the 1st day (large stakes only)	No	6.63%
Private information obtained with a 1-week lag (large stakes only)	No	7.02%

The table examines whether outside investors could have earned similar or better returns than Brookwell, by adopting a tracking policy based on either public or private information. As a baseline, in Panel A we report Brookwell's annual IRR returns net of fees (row 1) and gross of fees (row 2), assuming 0.5% reinvestment and unadjusted for market returns. In the third and fourth rows, we report the net returns of the large block portfolio (1.44%), and the confrontational engagements only (4.85%), both net of fees. As discussed in the paper, returns to hostility are greater than in friendly engagements.

In the first two rows of Panel B, we run a 'public information' experiment, namely we calculate the returns that outside investors would have earned by buying firms in the large block portfolio at the time of the RNS announcements of Brookwell's purchases. In the first row, if investors had re-balanced their portfolios in the same way as Brookwell, they would have earned a 1.93% return. In the second row, if investors had held the investments until the liquidation date of each Brookwell share class (i.e. no re-balancing), they would have earned 5.88%. This suggests outside investors would have outperformed Brookwell by buying at the RNS announcements of the disclosed stakes, and that Brookwell's trading activities (designed to return cash to shareholders, as per the fund's stated objectives) in fact detract from buy-and-hold returns. Our finding is consistent with the negative pre-announcement CARs related to disclosure of Brookwell's stakes (Appendix IA2), allowing outside investors to purchase their shares at lower prices than Brookwell. It is also consistent with Brookwell

generating positive externalities once its stakes are disclosed, and the generally higher long-term returns to equity than cash.

Finally, in the last two rows of Panel B, we run a 'private information' experiment, namely we calculate the returns that investors would have earned had they been able to invest on private information of Brookwell's 1st day and 1st week investments, and then simply held shares until the fund's liquidation date (without re-balancing). This is equivalent to trading on the rumour that Brookwell has invested and hearing such rumours on the first day or after the first week but having no further private information about Brookwell's dynamic trading activities thereafter. We find that such a strategy would have earned an annual return of 6.63% based on 1st day information (row three), or 7.02% based on 1st week information (row four). These findings suggest that Brookwell's returns are unlikely to be associated with private or inside information, and that the fund receives its investments well in advance of starting the engagement process. The findings also confirm that Brookwell typically receives investments in firms with negative stock price momentum, suffering initial losses when its stakes are disclosed, but recovering such losses in particular from positive CARs on successful activism outcomes.

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