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Josef Bajzík, Tomáš Havránek, Zuzana Iršová, and Jiří Novák *

Abstract

We conduct a meta-analysis of 1,973 estimates of stock price responses to shareholder activism obtained from 67 primary studies. We find that the estimates of stock price reactions, adjusted for publication selection bias, range from 0% to 1.5%. We observe stronger stock price responses in environments where shareholder rights are better protected and where stock markets are smaller relative to the size of the economy. In addition, stock prices respond more positively to activism exercised by individual investors, activism conducted through more confrontational approaches, activism aimed at selling the target company, and activism successful in achieving its objectives. Estimates based on longer measurement periods, simpler approaches to risk adjustment, and more recent and longer data sets, and estimates published in more reputable academic journals tend to be higher. Our results provide insights for regulators in designing an optimal regulatory framework and for researchers in choosing an appropriate research design to measure the impact of shareholder activism.

Abstrakt

Provádíme metaanalýzu 1 973 odhadů reakce cen akcií na aktivismus akcionářů získaných z 67 studií. Odhady reakce cen akcií očištěné o publikační selektivitu se nachází v rozmezí od 0% do 1,5%. Pozorujeme, že reakce cen akcií je silnější v prostředích, kde jsou práva akcionářů lépe chráněna a kde jsou akciové trhy menší v poměru k ekonomice jako celku. Ceny akcií rovněž vykazují pozitivnější reakci na aktivismus individuálních investorů, aktivismus s využitím konfrontačnějších postupů, aktivismus zaměřený na prodej cílové společnosti a aktivismus úspěšný při dosahování svých cílů. Odhady založené na delších obdobích měření, na jednodušších přístupech k očištění o riziko a na novějších a delších datových sadách a také odhady publikované v renomovanějších akademických časopisech jsou spíše vyšší. Naše výsledky poskytují poznatky užitečné pro regulátory pi navrhování optimálního regulatorního rámce a pro výzkumníky při volbě vhodného nastavení výzkumu měřícího dopad aktivismu akcionářů.

JEL Codes: G14, G30, G34, L20.
Keywords: Meta-analysis, model averaging, price response, publication bias, shareholder activism, value created.

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1. Introduction

We study the determinants of the value created by shareholder activism from the short-term point of view. Shareholder activism has become an increasingly prominent feature of corporate governance. The Economist (2023) argues that weakening disciplining oversight by financial markets due to the rise of passive investing, lower interest rates, and environmental, social, and governance (ESG) considerations, are making shareholder activism increasingly important. Financial Times (2020) states that companies nowadays face more shareholder activism than ever before. The article cites Jim Rossman, head of shareholder advisory at Lazard, as saying that "activism has become a permanent feature of the corporate landscape." In its recent review, Lazard's Capital Market Advisory Group observes a global resurgence of shareholder activism as challenging macroeconomic conditions give urgency to performance improvements (Lazard, 2022). The report points out that much of the activism targets technology companies, which constitute the backbone of the modern economy. The report also mentions the increasing popularity of settlements relative to proxy fights to achieve board representation and the growing number of first-time activists. This implies that more owners than before are ready to take the initiative and actively influence the ways companies are run. Thus, shareholder activism has become increasingly important and concerns a growing number of shareholders.

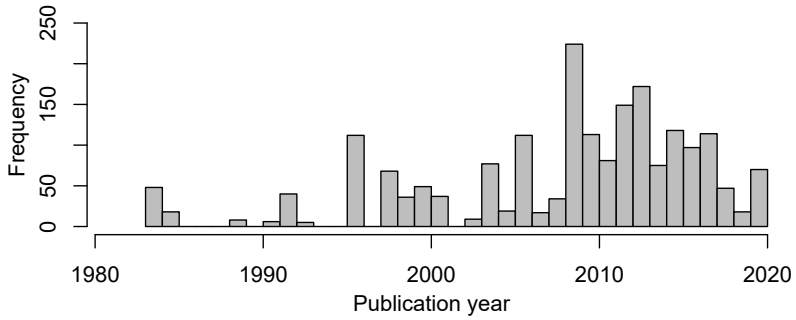
The observations of recent trends made by Lazard (2022) are mostly consistent with prior academic research, which documents a broad trend away from shareholder proposals on remuneration and voting practices, often initiated by pension funds (Holderness and Sheehan, 1985; Wahal, 1996; Smith, 1996), toward direct negotiation with management and potentially also litigation (Denes et al., 2017). The increasing engagement of hedge funds and their readiness to coordinate the activity of like-minded shareholders has transformed the challenge activism poses (Boyson and Mooradian, 2011; Bessler et al., 2015; Becht et al., 2017). Given the evolving nature of shareholder activism, it is important to investigate how much value various forms of activism create and to study how their success depends on the institutional setting.

The increasing prominence of shareholder activism is reflected in extensive empirical research that analyzes its impact. Figure 1 shows the number of estimates of price responses to shareholder activism announcements published in research articles between 1980 and 2020. Our meta-analysis aggregates and synthesizes these diverse results to draw more robust inferences about the value shareholder activism typically creates.

Performing a meta-analysis also allows us to adjust the reported empirical results for biases that may arise when prior evidence is published selectively in academic journals. Selective publication may result from authors' and editors' tendency to publish results that are (i) consistent with their *a priori* expectations and/or with prior empirical findings and (ii) statistically significant. Despite the skepticism expressed in social discourse regarding the benefits of shareholder activism (Coffee and Palia, 2016), researchers in the fields of economics and finance may be prone to perceive activism as an essential corporate governance mechanism that plays a vital economic role in overcoming agency problems (Jensen and Meckling, 1976; Jensen, 1986). Hence, economists may mistrust findings suggesting that activism is ineffective or even detrimental in enhancing economic efficiency. They may also be reluctant to deviate from several prominent studies that document a positive impact of shareholder activism on firm value (Brav et al., 2008a; Klein and Zur, 2009; Edmans et al., 2013; Denes et al., 2017; Albuquerque et al., 2022). Consequently, authors and editors may consciously or subconsciously select publication results that conform with the view that shareholder activism is beneficial and enhances firm value (Gillan and Starks, 2007). Some of the results that contradict

this perspective may get discarded as implausible, which, in turn, may bias the pool of estimates reported in research journals.

Figure 1: Interest in Shareholder Activism Is Increasing over Time



Note: The figure displays the number of estimates of short-term stock returns surrounding shareholder activism campaigns published in each year.

Finally, collecting a large data set of value creation estimates also allows us to exploit the heterogeneity across the primary studies and examine how various characteristics affect the value shareholder activism creates. Our approach is inspired by Holderness (2018), who performs a meta-analysis exploiting the regional variation in the regulatory requirements concerning equity issues. Pooling the data from numerous studies allows the author to identify the fundamental role of shareholder approval of equity issues. Similarly, our study offers novel insights into the relevance of the quality of the institutional setting for the effectiveness of shareholder activism. Such an analysis would be infeasible in a study based on a data set from a single regulatory setting.

We collect 1,973 estimates of stock price responses to shareholder activism campaigns from 67 studies published between 1983 and 2021. We use several methods to detect and correct for the impact of potential publication selection bias, including recent state-of-the-art approaches that detect selective publication even when the conventional assumption of a linear association between the estimates and their standard errors is violated (Andrews and Kasy, 2019; Bom and Rachinger, 2019; Bruns et al., 2019; Furukawa, 2019; Simonsohn et al., 2014a,b). Using this multitude of detection techniques, we find publication selection bias in the empirical research on the impact of shareholder activism. We observe that numerically imprecise estimates are more likely to be published when they are high rather than low or negative. We also observe clustering of test statistics above the conventional levels of statistical significance at 5% and 1%. This tendency biases the pool of published empirical results. After correcting for this bias, the value created by shareholder activism seems to be positive but much smaller than commonly proposed. Our estimates range from 0.000% to 1.473%.

Furthermore, we construct more than 50 variables that capture various aspects of the individual estimates, such as the sponsors of the activism, its types, its stated objectives, and its success in achieving those objectives, as well as a number of other factors related to the data sample and estimation methodology. We test how these characteristics affect the conclusions about the magnitude of the value created by shareholder activism while simultaneously controlling for differences in the research designs used in the individual primary studies. We use Bayesian Model Averaging (BMA) to address the model uncertainty problem that arises when the set of determinants of the dependent variable is not *a priori* defined (Steel, 2020). BMA considers

various combinations of "candidate" explanatory variables and identifies those that are most important in explaining the variation in the dependent variable (Eicher et al., 2011; Feldkircher and Zeugner, 2012; Moral-Benito, 2015; Raftery et al., 1997). This technique allows us to address multi-collinearity issues that may arise when considering numerous potentially relevant variables (George, 2010). Due to its flexibility, BMA is frequently used for meta-analyses (Bajzik et al., 2020; Bajzik, 2021; Cazachevici et al., 2020; Gric et al., 2021; Matousek et al., 2021).

Our results identify several important explanatory variables. We observe more positive price responses to shareholder activism announcements in settings where shareholder rights are better protected and where the aggregate stock market capitalization is lower relative to gross domestic product (GDP). Furthermore, stock markets react more positively to activism by individual investors, activism conducted through more confrontational approaches, activism aimed at selling the target company, and activism that eventually achieves its goals. In addition, studies using longer measurement windows, simpler risk-adjustment approaches, and more recent and longer data sets, and those published in more influential academic journals report higher estimates of the value created by shareholder activism.

Our results offer valuable insights to regulators in designing an optimal legal framework and to researchers in making appropriate methodology choices. The controversy in the prior literature and the general public discourse about the merits and drawbacks of shareholder activism constitute a challenge for capital market regulators aiming to design an appropriate framework that trades off the costs and benefits optimally. Our research informs regulatory decisions by quantifying the average impact shareholder activism has on firm value and by identifying several relevant conditioning variables. For example, regulators may benefit from our finding that the value created by shareholder activism is positively associated with the quality of the institutional framework in a given country. Our findings also help researchers identify relevant research design characteristics and quantify how they affect the computed estimates. These results facilitate the interpretation and comparison of prior empirical results and will be useful for making research design choices in future studies.

The remainder of the paper is organized as follows. Section 2 discusses the merits and shortcomings of shareholder activism. Section 3 describes our data collection procedure. Section 4 presents the results of our tests of selective publication. In Section 5, we show the results on the relevance of various estimate characteristics. Section 6 concludes.

2. Merits of Activism

The efficient market hypothesis suggests "that in free and actively traded markets, stock prices will fully reflect all available information about the corporation" (Black, 1983), implying that the search for new information is meaningless. By contrast, in Grossman and Stiglitz's view of capital markets, traders might be financially rewarded for helping the market to be more efficient, without achieving perfect equilibrium (Grossman and Stiglitz, 1980). They enlarge the amount of data that makes it possible to value public companies more precisely. Such activities, including shareholder activism, make the market more efficient by constantly shifting the price of stocks toward their fundamental values (Rose and Sharfman, 2014a).

Conceptually, there is considerable controversy over the merits and drawbacks of activism (Brav et al., 2008b). The Economist (2023) suggests that "Activist hedge funds are often seen as villains who are nasty, brutish and focused on the short term. Sometimes the shoe fits. But more often

activists are playing a role that is essential for shareholder capitalism." Activist campaigns may mitigate agency problems that arise between firm owners and managers due to the separation of ownership and control (Jensen and Meckling, 1976; Jensen, 1986). The Investor Forum, founded in 2014 by UK institutional investors, is explicitly intended to serve "as an 'escalation mechanism' when firms ignore individual investors or exhibit problems that worry many shareholders" (The Economist, 2018). Shareholder activism may thus create value by initiating efficiency improvements, such as refocusing on profitable activities and reducing "empire-building" (Brav et al., 2008a, 2018; Klein and Zur, 2009; Bebchuk et al., 2015; Becht et al., 2017; Brochet et al., 2021; Maffett et al., 2022), and by improving tax efficiency (Cheng et al., 2012). Consistent with the proposition that activism tends to address cases when managers are not sufficiently responsive to owners' requests, Chapman et al. (2022) show that firms with a dedicated investor relations function are less often challenged by activists and the campaigns are less costly and contentious.

On the other hand, shareholder activism may destabilize the company (O'Rourke, 2003) and distract managers from beneficial long-term projects (Brav et al., 2008b). Coffee and Palia (2016) mention concerns that shareholder activism (especially by hedge funds) may pursue short-termist "pump and dump" schemes that temporarily boost dividend payouts but ultimately are detrimental to firms' long-term profitability. Furthermore, the threat of shareholder activism may lead to undesirable preemptive behavior and defensive responses by management. Prior research shows that shareholder activism constrains managerial control over the firm, lowers executive compensation, and increases executive turnover (Ferri and Sandino, 2009; Brav et al., 2010; Edmans and Holderness, 2017). Thus, managers probably have incentives to avoid becoming a target of activism. They may prioritize high current dividend payouts over investments. Activism may thus stifle innovation by reducing research and development (R&D) and other investments that generate long-term value (Bourveau and Schoenfeld, 2017; Maffett et al., 2022). In addition, even well-intended shareholder activism may turn confrontational and lead to unexpected adverse outcomes that damage the firm's reputation (O'Rourke, 2003) and increase the likelihood of lawsuits (Guo et al., 2021). Consistent with the greater risk of negative publicity, Guo et al. (2021) find that shareholder activism targets pay higher audit fees even though they are more transparent and provide more frequent voluntary disclosures (Bourveau and Schoenfeld, 2017).

Due to these conflicting perspectives, it is not *a priori* obvious whether shareholder activism, on average, enhances firm value. It is also unclear how value creation depends on the quality of the institutional setting in which the activism takes place and what kinds of activism tend to be more beneficial than others. The optimal design of corporate governance regulation should trade off the benefits of reducing agency costs and improving efficiency against the cost of forgoing beneficial innovative long-term projects. Hence, an estimate of the magnitude of the value created by shareholder activism is an important input for regulatory decisions. In this paper, we provide such an estimate by aggregating and synthesizing prior empirical evidence on price responses to shareholder activism announcements. Furthermore, we exploit the heterogeneity in the data samples and research methodologies used in the primary studies to examine how value creation varies with different characteristics of activism.

3. Data Sample

A meta-analysis represents an effective way of estimating the "true effect" in settings where there is an extensive pool of prior estimates based on different data samples and estimated using various methodologies (Stanley and Doucouliagos, 2012; Habersang et al., 2019). Systematic coverage of activism campaigns differs across jurisdictions and over time (Becht et al., 2017; Maffett et al.,

2022), which makes it challenging for researchers to cover the phenomenon comprehensively. Data on the impact of shareholder activism is scattered, and many primary studies use diverse and often fairly small data sets. For example, Matsusaka et al. (2019) use a hand-collected data set covering only six years. Furthermore, Weber and Zimmermann (2013) and Krishnan et al. (2016) use a data set covering only four years, and Cai and Walkling (2011) use data for only three years. The median length of the sample period in the primary studies on shareholder activism is only 8.3 years. Empirical results based on these samples may be affected by the regulatory framework and macroeconomic conditions specific to a given setting and time. This may compromise the generalizability of the reported findings and contribute to substantial heterogeneity in the reported estimates.

Prior literature uses two broad approaches to measure the value created by shareholder activism. The event study approach, as used, for example, by Brown and Warner (1985), uses price responses to shareholder activism announcements as a proxy for the value activism creates. The price response is typically measured over fairly short return windows ranging from several days to a few months (Denes et al., 2017; Brav et al., 2008b). This approach essentially captures how marginal investors update their estimates of firm value based on the expected impact of shareholder activism. Provided that financial markets are reasonably efficient, the short-term stock price response reflects the re-evaluation of the firm's intrinsic value, i.e., the incremental value activism creates. Thus, in this paper, we use the terms "price response" and "value creation" interchangeably.

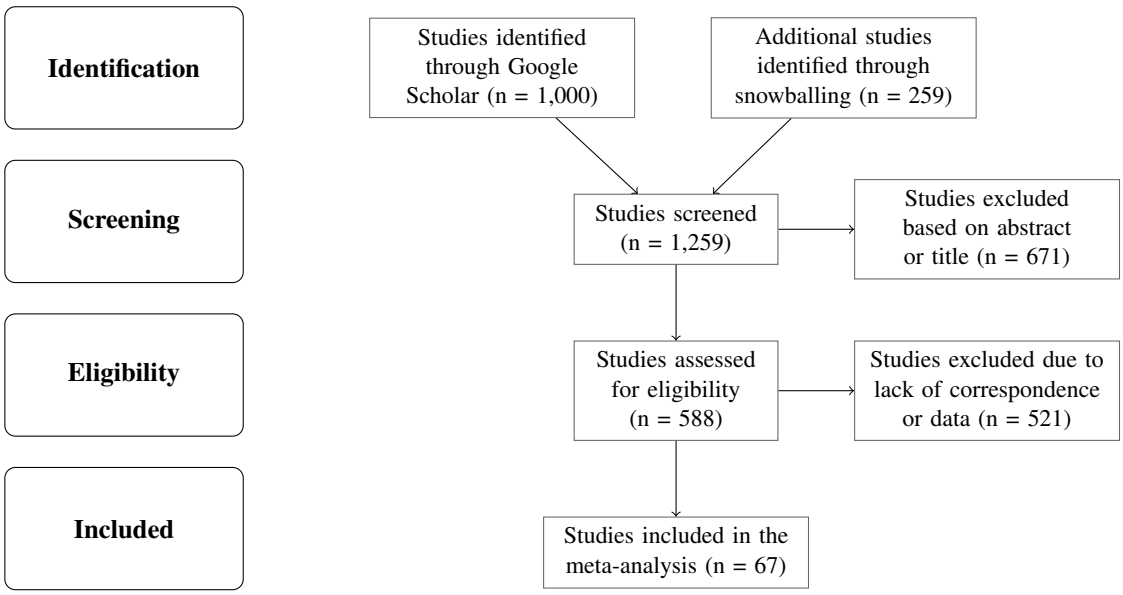
The second approach examines performance improvements and long-run stock returns following activism campaigns (Mitchell and Stafford, 2000). Even though the second approach is appealing due to its focus on the actual economic impact, it is subject to several important limitations. First, long-term estimates may be confounded with other factors unrelated to shareholder activism, such as performance reversal in target companies (Filatotchev and Dotsenko, 2015). Second, it is inherently challenging to estimate long-term abnormal stock returns (Croci, 2007). Third, some activism is explicitly aimed at making the company an acquisition target (Greenwood and Schor, 2009). This implies that its future performance as a stand-alone entity will no longer be available, which probably biases the available data. Thus, we restrict our attention to the analysis of short-term price responses to shareholder activism campaigns.

Our data sample collection follows the guidelines proposed by Havranek et al. (2020). We provide a comprehensive overview of our sample collection procedure in the PRISMA diagram shown in Figure 2. First, we inspect the lists of references in the most influential review articles: Albuquerque et al. (2022), Denes et al. (2017), and Filatotchev and Dotsenko (2015). We then develop combinations of subsequent keywords for our search queries. We observe the list of articles generated by each query, and we iteratively modify the set of keyword combinations to most effectively identify relevant studies. This process generates the following combination of keywords: "abnormal return" AND "activist investor" OR "investor activism" OR "activist shareholder" OR "shareholder activism" OR "shareholder proposal" OR "contested proposal" OR "hedge fund activism" OR "proxy contest" OR "proxy fight" OR "negotiation" OR "litigation" OR "takeover". We verify that these keyword combinations successfully identify the relevant articles cited in the above-mentioned reviews. We also screen the lists of references in these articles to potentially identify additional relevant studies. We conclude our data collection at the end of March 2022. The final data set (including code) is available in an online appendix at `meta-analysis.cz/activism`.

We run our search query using Google Scholar because of its ability to consider the entire full-text contents of articles. We download and examine the first 1,000 entries in the list generated by the

above-described search query. To increase the likelihood that the estimates we collect are reliable, we disregard any sources that are not published in research journals (e.g., working papers, student theses). To get published in an academic journal, a study must successfully undergo a demanding peer-review process intended to assure the quality and reliability of the reported findings. Furthermore, empirical evidence published in academic journals tends to be the most influential in shaping researchers' and professionals' views of the impact of shareholder activism. Thus, limiting our analysis to estimates published in research articles lets us focus on the empirical findings that matter most for the academic and business communities. We do not expect this research design choice to have a dramatic impact on our results because prior research shows that publication selection bias is fairly comparable across published and unpublished studies (Doucouliagos and Stanley, 2013).[1]

Figure 2: Schematics of Study Inclusion and Exclusion (PRISMA)



Note: The figure shows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram that depicts the process we follow to identify relevant estimates in the primary studies that constitute our sample. Our sample collection procedure follows the guidelines proposed by Havranek et al. (2020).

We identify articles that contain estimates of price responses to shareholder activism that meet the following criteria. First, we only collect cumulative abnormal stock returns estimates measured over short-run windows, which we define as being fully contained within the two-month period starting 31 days prior to the event day and ending 31 days after it (Brav et al., 2008b; Denes et al., 2017). Second, to be able to perform our tests of publication selection bias, we require the price response estimates to be accompanied by corresponding *t*-statistics, standard errors, or other statistics from which standard errors can be computed. When several measures are provided, we prefer to collect the corresponding standard errors over *t*-statistics and *p*-values.[2]

[1] Regarding the activism approaches studied in the primary articles, the media pressure approach is the only one that directly aims to reduce the company's value (so it can be bought underpriced). It comprises only 103/1,973 (about 5%) of our sample, so we believe it does not affect our results significantly. Moreover, looking at Table 4, we find the corresponding estimates in the middle of the distribution rather than at the bottom (or top). As regards the other approaches, such as shareholder proposals, direct negotiations, and proxy fights, it is not *a priori* clear whether they will cause an immediate rise or fall in company value.

[2] The standard errors for the window of [-2,+1] are not directly comparable to those for the window of [-31,+31]. They could be recomputed to make them directly comparable. In doing so, however, we would change either

Table 1: Primary Studies Included in our Meta-Analysis

Alexander et al. (2010)	Croci (2007)	Lee et al. (2018)
Anson et al. (2003)	Cunat et al. (2012)	Lin et al. (2016)
Azizan and Ameer (2012)	Cziraki et al. (2010)	Matsusaka et al. (2019)
Barber (2007)	DeAngelo and DeAngelo (1989)	Mietzner et al. (2011)
Barber (2009)	Del Guercio and Hawkins (1999)	Morgan and Poulsen (2001)
Barclay and Holderness (1991)	Dodd and Warner (1983)	Mulherin and Poulsen (1998)
Bassen et al. (2016)	El-Khatib et al. (2017)	Nelson (2005)
Bassen et al. (2019)	English et al. (2004)	Nelson (2006)
Bebchuk et al. (2020)	Filatotchev and Dotsenko (2015)	Ong et al. (2010)
Becht et al. (2009)	Fortin et al. (2014)	Park et al. (2008)
Becht et al. (2017)	Ghosh et al. (1992)	Prevost and Rao (2000)
Bessler et al. (2015)	Gillan and Starks (2000)	Prevost et al. (2012)
Bhabra and Wood (2014)	González and Calluzzo (2019)	Renneboog and Szilagyi (2011)
Bizjak and Marquette (1998)	Goodwin and Rao (2014)	Smith (1996)
Borstadt and Zwirlein (1992)	Greenwood and Schor (2009)	Smythe et al. (2015)
Boyson et al. (2017)	Hamao and Matos (2018)	Stadler et al. (2015)
Boyson and Pichler (2019)	Holderness and Sheehan (1985)	Strickland et al. (1996)
Brav et al. (2008a)	Chen and Feldman (2018)	Venkiteshwaran et al. (2010)
Brav et al. (2008b)	Chen et al. (2020)	Wahal (1996)
Brav et al. (2010)	Ikenberry and Lakonishok (1993)	Weber and Zimmermann (2013)
Cai and Walkling (2011)	Karpoff et al. (1996)	Yang et al. (2012)
Carleton et al. (1998)	Krishnan et al. (2016)	Yeh (2014)
Caton et al. (2001)		

***Note*:** This table shows a list of the 67 primary studies from which we source the 1,973 estimates of the short-term stock price response to shareholder activism that constitute our sample.

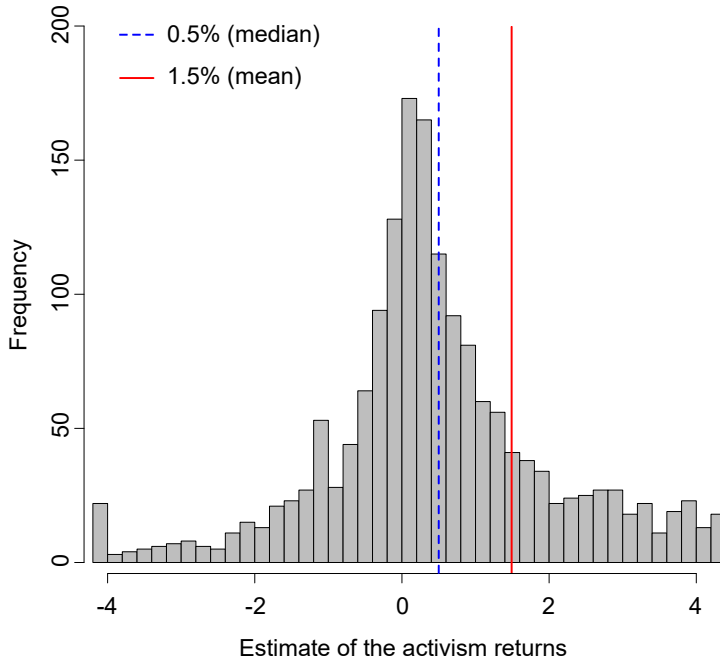
The article discusses only short-run responses within -31 to 31 days around the event. Since the estimates fell within one month around the activism, we believe the effect studied is considered to be short-run. Add ii) Only cumulative abnormal returns are collected. Now, it is explained better in the text. Add iii) Of course, the SE from CAR for the window of [-2,+1] are not directly comparable to the SE in the window of [-31,+31]. The can be recomputed to be directly comparable. But due to recomputation, we change either the significance of the corresponding estimate or the value of the corresponding estimate (to keep the significance). So, there will always be trade-offs in what we adjust and compare directly and which we leave a bit imprecise. Thus, we decided to keep the original values of both estimates and SEs since it seems to be the most straightforward way with the least drawbacks. Add iv)

Our data collection procedure yields 1,973 estimates, which we collect from 67 research articles. Table 1 provides a list of the primary studies from which we source our estimates. Figure 3 shows the histogram of the price response estimates in our sample. The number of primary studies that contain relevant estimates and the range of these estimates demonstrate the extensive empirical research on this topic. This underscores the benefits of aggregating these diverse findings by means of a meta-analysis. Figure 3 shows that the distribution of the price response estimates is somewhat more dispersed than the normal distribution (excess kurtosis: 2.358, not tabulated). This points to substantial heterogeneity in the coefficients that we collect from the primary studies. The

the significance of the corresponding estimate or its value (to keep the significance). Consequently, there would always be trade-offs in what we adjusted and compared directly and what we left a little imprecise. We therefore decided to keep the original values of both the estimates and the standard errors, since this seems to be the most straightforward way with the least drawbacks.

distribution is positively skewed (skewness: 1.499, not tabulated), with the mean value of 1.52% being above the sample median of 0.50%. Our data set thus features a higher-than-expected frequency of positive observations, while the corresponding low or negative observations are less common. This finding is consistent with a propensity to discard some low or negative estimates of price responses to shareholder activism.

Figure 3: Activism Returns Are Concentrated Around Zero



Note: The figure shows the distribution of the short-term stock returns estimates surrounding the shareholder activism campaigns that we collected from the primary studies. The vertical solid red line indicates the sample mean and the dashed blue line shows the sample median. For the computational part of the work, the outliers are treated by winsorization on the 1% and 99% levels.

4. Publication Bias

4.1 Funnel Plot

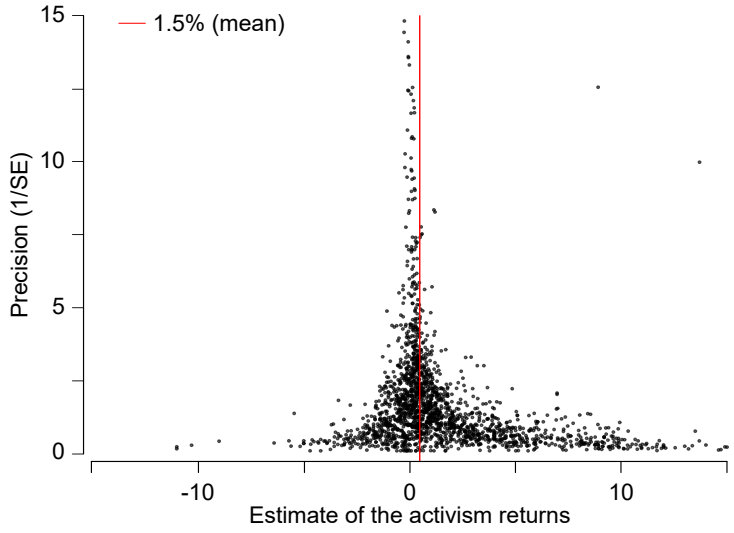
Publication selection bias is a phenomenon that arises when authors and editors have a conscious or subconscious tendency to publish estimates that are consistent with their *a priori* expectations about the nature of the relationship examined or with previously published results, and/or that are statistically significant (Ioannidis et al., 2017). In particular, research based on smaller datasets should sometimes generate counter-intuitive results simply because the given dataset may, purely by chance, happen not to be representative of the entire population. While it may be considered reasonable to discard results that seem implausible given the presumed relationship or in light of prior findings, doing so distorts the pool of estimates published in the empirical research literature. Such a distortion may bias the perception of the overall strength of the relationship studied and lead to undue conclusions about the level of consistency of the empirical evidence supporting it. This issue may be further compounded if researchers choose not to publish results that are inconsistent with prominent studies published in leading academic journals, which "set the tone" for the general understanding of the nature of the relationship. Prior research documents selective reporting of results in numerous research settings in economics (Blanco-Perez and Brodeur, 2020; Brown et al.,

2023; Campos et al., 2019; Ugur et al., 2018) and finance (Astakhov et al., 2019; Gric et al., 2021; Geyer-Klingeberg et al., 2018; Zigraiova and Havranek, 2016). Ioannidis et al. (2017) conclude that the results published in research journals in economics tend to suggest a magnitude of a relationship that is, on average, twice as large as the true effect.

We find it plausible to expect selective publication in empirical research on the impact of shareholder activism because researchers may view it as a vital disciplining force to overcome agency problems and promote economic efficiency. Hence, they may be skeptical about results suggesting that shareholder activism is ineffective or even detrimental in performing this essential economic role. They may also be reluctant to submit articles that contain results inconsistent with key studies in the field (e.g., Cunat et al., 2012; Gillan and Starks, 2000; Matsusaka et al., 2019). Our meta-analysis allows us to assess how much the pool of published empirical results is affected by selective reporting and to adjust the coefficients for the bias.

Following Egger et al. (1997), we start our analysis by examining the funnel plot depicted in Figure 4. The horizontal axis displays the values of the 1,973 reported price response estimates. The vertical axis displays the precision of these estimates, defined as the inverse of their standard errors. The graph should have the shape of an inverted funnel because the most precise estimates should be centered around the sample mean, whereas less precise estimates should be more dispersed. Absent any publication bias, it should be symmetric, as less precise estimates that deviate from the sample mean should be equally likely to be published regardless of whether they are high or low or even negative. In contrast, under selective publication, some of the imprecise estimates that are low or negative get discarded, which skews the figure. An asymmetric funnel plot thus suggests that estimates are reported selectively in some primary studies and that their mean value constitutes a biased estimate of the true effect.

Figure 4: Funnel Plot Suggests Publication Bias



Note: This figure shows a funnel plot of the short-term price responses to shareholder activism campaigns. On the horizontal axis, the funnel plot shows the value of the 1,973 reported price response estimates that constitute our sample. The vertical axis measures the precision of these estimates, defined as the inverse of their standard errors (1/*SE*). Absent any publication selection bias, the observations should form a symmetric inverted funnel centered around the most precise estimates. Estimates with a precision greater than 15 are excluded from the figure but included in further quantitative analysis.

A visual examination of Figure 4 suggests that the funnel plot is positively skewed. This indicates that imprecise estimates are more likely to get reported if they are high rather than low or negative. This finding provides initial suggestive evidence consistent with the proposition that the pool of empirical results on the value created by shareholder activism may be distorted by the absence of imprecise estimates that are low or negative. The mean value of these estimates may overstate the true impact activism has on enhancing company value.

4.2 Selectivity Tests

To formally test the proposition that empirical results on the impact of shareholder activism are published selectively, we follow Egger et al. (1997) and Stanley and Doucouliagos (2012) and estimate the following equation:

$$\hat{x}_{ij} = \beta_0 + \beta_1 \hat{SE}_{i,j} + e_{ij}, e_{ij} \sim N(0, \sigma^2), \tag{1}$$

where $\hat{x}_{ij}$ denotes the i-th estimate of the price response to shareholder activism in the j-th study and $\hat{SE}_{i,j}$ denotes the corresponding standard error. Equation 1 is based on the assumption that over-reporting of either high or low results induces a linear association between the reported estimates ($\hat{x}_{ij}$) and their standard errors ($\hat{SE}_{i,j}$). If imprecise estimates that happen to be low or negative tend to get discarded, then high estimates should be more likely to have larger standard errors than low or negative estimates. Selective reporting of higher estimates thus implies a positive slope coefficient β_1 in Equation 1. The intercept term β_0 in turn represents the "true" effect corrected for potential publication bias.

To evaluate the robustness of our findings, in Panel A of Table 2 we present our results based on six different conventional ways of estimating Equation 1. First, we use ordinary least squares (OLS) estimation with two-way clustering at the study and country level (following Cameron et al., 2011). The two-way clustering addresses the potential concentration of high or low estimates in specific countries or studies. Though commonly used in prior literature, OLS may produce spurious results when unobserved research design features are correlated with the reported estimates. Thus, we also run fixed effects (FE) and between effects (BE) regressions. Study-level FE absorb idiosyncratic study-level variation in research methodologies and data samples. In contrast, study-level BE account for the differences in the size of the 67 primary studies. Furthermore, we use estimation techniques that weight the observations by measures of study size and by the precision of the estimates (Stanley and Doucouliagos, 2012; Astakhov et al., 2019). In the next model (labeled "w(NOBS)") we weight the observations by the inverse of the number of estimates reported in a given study. This approach "levels the playing field" for studies that report more or fewer estimates and makes each of the 67 primary studies equally important in shaping our results. In another model (labeled "w(1/SE)") we weight the observations by their precision, i.e., by the inverse of their standard error, i.e., $1/SE(r_{ij})$. This approach assigns more weight to more precise estimates, which helps us adjust for the potential heteroskedasticity of our sample.

All the five tests discussed so far assume that selective reporting induces a linear association between $\hat{x}_{ij}$ and $\hat{SE}_{i,j}$. While this assumption is plausible in most settings, in some cases, the relationship between the coefficients and their standard errors may be endogenously determined by specific study characteristics (Stanley, 2005; Havranek, 2015). To address this issue, Havranek et al. (2023) propose to instrument $\hat{SE}_{i,j}$ by the inverse of the square root of the number of observations. This

instrument is likely to be valid because, by construction, the number of observations is correlated with the standard error. At the same time, the number of observations is unlikely to be related to the methods used and other potential confounding study characteristics. Hence, assuming that the number of observations is quasi-randomly distributed across the primary studies is reasonable. Thus, following Astakhov et al. (2019) and Zigraiova and Havranek (2016), in the last model of Panel A in Table 2 (labeled "IV") we report our results from this estimation approach.

Panel A of Table 2 provides evidence of publication selection bias in the empirical literature on shareholder activism. All six β_1 coefficients are positive, which is consistent with under-reporting of low or negative price responses to shareholder activism campaigns. Five out of six of these results are statistically significant at the conventional 5% level and the FE estimate is significant at the 10% level (coef. 0.178, std. err. 0.104). Furthermore, Panel A of Table 2 also shows that the intercept terms β_0 are positive regardless of the estimation approach. Again, five out of six of these results are statistically significant at the conventional 5% level. These results suggest that, on average, shareholder activism is associated with positive price responses even after controlling for selective publication. Nevertheless, the magnitude of the β_0 coefficients is lower than what is commonly suggested in the prior research literature, ranging from 0.008% to 1.473%.

In Panel B of Table 2 we complement the conventional approaches for testing for publication selection bias with four recently developed techniques that do not require the assumptions of independence and linearity to be satisfied. The first method, labeled "Top10" and developed by Stanley et al. (2010), estimates the "true effect" based on the 10% most precise observations collected from primary studies, which are unlikely to be severely affected by selective reporting. The second method, the stem-based method (labeled "Stem") by Furukawa (2019), builds on Stanley et al. (2010) but aims to limit the loss of sample variation by optimizing the trade-off between bias and variance. Instead of discarding the 90% less precise estimates, it discards only those that do not add value in the light of this trade-off. The "true effect" is then computed as the average value based on the remaining estimates. The third method, the endogenous kink model ("Kinked") by Bom and Rachinger (2019), assumes the existence of an endogenously determined threshold at which the relationship between an estimate and its standard error changes, and aims to detect this "kink". The fourth model, the selection model ("Selection") by Andrews and Kasy (2019), assumes that the probability of an estimate being published depends on its statistical significance. The model identifies the likelihood of an estimate falling into different intervals determined by critical values of the *t*-statistics. The model assigns more weight to intervals that are under-represented.

These non-linear techniques lead us to similar conclusions. The estimated "true effect" ranges from 0.000% for the kink method to 1.062% for the selection model, which is broadly comparable to the interval of (0.008%, 1.473%) that we observe for the linear approaches. Furthermore, three out of the four results reported in Panel B of Table 2 are statistically significant at the conventional 5% level. This suggests that our results based on linear techniques are unlikely to be severely affected by the potential violation of the independence assumption and a linear association between the price response estimates and their standard errors. Our results thus suggest that shareholder activism creates value, but, after controlling for selective publication, its magnitude is more modest than commonly thought.

4.3 *P*-Hacking

In this section, we complement our analysis of selective publication by examining the role of the statistical significance of the empirical results (rather than their sign or magnitude). The tendency

Table 2: Tests Indicate Publication Bias

Panel A – Linear Estimation Methods				
	OLS	FE	BE	IV
Effect beyond bias (β_0)	0.590***	1.256***	1.473***	0.657***
	(0.202)	(0.296)	(0.318)	(0.208)
	[0.249, 0.956]			
Publication bias (β_1)	0.686***	0.178*	0.233**	0.635***
	(0.126)	(0.104)	(0.104)	(0.159)
	[0.456, 0.917]			
#Observations	1,973	1,973	1,973	1,973
#Studies	67	67	67	67
			w(NOBS)	w(1/SE)
Effect beyond bias (β_0)			0.713***	0.008
			(0.239)	(0.010)
			[0.324, 1.100]	[-0.003, 0.095]
Publication bias (β_1)			0.836***	1.130***
			(0.148)	(0.158)
			[0.597, 1.098]	[0.851, 1.399]
#Observations			1,973	1,973
#Studies			67	67

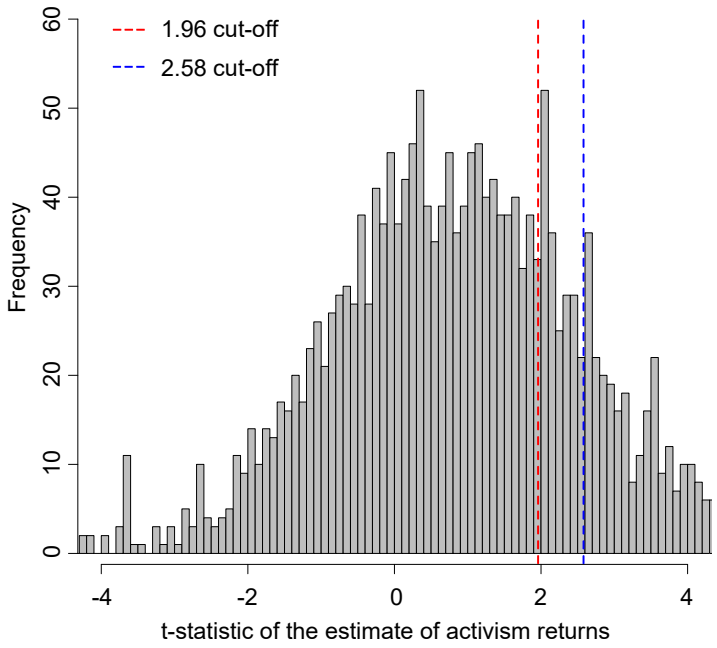
Panel B – Nonlinear Estimation Techniques				
	Top10	Stem	Kinked	Selection
Effect beyond bias	0.196**	0.021***	0.000	1.062***
	(0.079)	(0.006)	(0.001)	(0.024)
#Observations	1,973	1,973	1,973	1,973
#Studies	67	67	67	67

Note: The uncorrected mean value creation by shareholder activism is 1.49%. The presented results are from regression $\hat{x}_{ij} = \beta_0 + \beta_1 S\hat{E}_{i,j} + e_{ij}$, where $\hat{x}_{ij}$ denotes the i-th value creation estimated in the j-th study, and $\beta_1 S\hat{E}_{i,j}$ denotes the corresponding standard error. Panel A – OLS: ordinary least squares estimation; FE: study-level fixed effects; BE: study-level between effects; w(NOBS): estimation that weights the individual estimates by the inverse of the number of observations reported in a given study; w(1/SE): estimation that weights the individual estimates by their precision, i.e., the inverse of their standard error, $1/SE(r_{ij})$; IV: estimation that uses the inverse of the square root of the number of observations as an instrument for the coefficient's standard error. This approach is also used by Astakhov et al. (2019) and Zigraiova and Havranek (2016) to address the potential endogeneity between an estimate and its standard error (Havranek, 2015; Stanley, 2005). Panel B – Top10: estimates the "true effect" in the studied relationship based on the 10% most precise estimates (Stanley et al., 2010); Stem: the stem-based model by Furukawa (2019) reflects the average of observations selected based on the optimization of the trade-off between bias and variance; Kinked: the endogenous kink model by Bom and Rachinger (2019); Selection: the selection model by Andrews and Kasy (2019) using clustered SEs. Standard errors reported in parentheses clustered at the level of studies and countries (Cameron et al., 2011), and 90% confidence intervals obtained using the wild bootstrap in square brackets (Roodman et al., 2018). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

to selectively publish empirical tests that just surpass common benchmarks for statistical significance is often referred to as "*p*-hacking" (e.g., Harvey, 2017). Statistically significant results may be considered more "attractive" for publication because they provide fairly clear support for the relationship of interest, which is quite straightforward to interpret. In contrast, insignificant results may arise due either to the absence of the proposed relationship or to insufficient power of statistical tests. Discriminating between the two explanations is challenging. Insignificant results are thus arguably less informative. Journal editors may prefer studies that include significant results, which may incentivize authors to select them for publication. Such a tendency would contribute to the bias in the pool of published estimates. Harvey (2017) argues that *p*-hacking is indeed rather prevalent in the asset pricing literature.

P-hacking is observable in the distribution of the published test statistics. Under selective reporting of significant results, *t*-statistics just exceeding the 5% level of significance threshold at 1.96 and the 1% threshold at 2.58 should be over-represented relative to those just below these thresholds. Figure 5 shows a histogram of the *t*-statistics that correspond to the price response estimates in our sample. As expected, the shape of the distribution resembles a normal distribution. Nevertheless, we observe discontinuities around two cut-off levels for statistical significance at 1.96 and 2.58. For both thresholds, the incidence of *t*-statistics just exceeding the threshold is more than 1.5 times greater than the number of *t*-statistics just below it. This pattern suggests that academic journals tend to over-report results that are statistically significant, which may distort readers' views about the strength and consistency of the empirical evidence on the positive value created by shareholder activism.

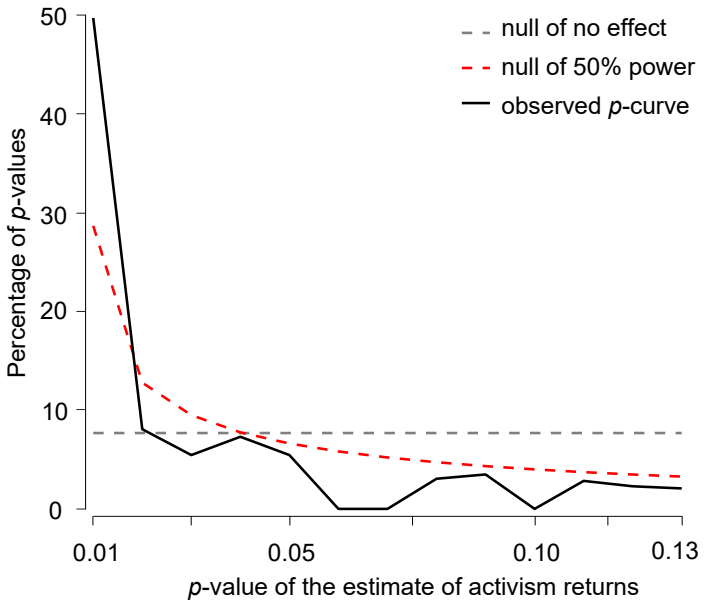
Figure 5: Visible Jumps at Critical T-statistic Values



Note: The figure shows the distribution of the *t*-statistics corresponding to the short-term stock returns surrounding shareholder activism campaigns. The vertical dashed lines indicate the boundary of 1.96, which corresponds to statistical significance at the 5% level, and 2.58, which corresponds to statistical significance at the 1% level. The figure is trimmed at the interval (-5, +5).

Unsurprisingly, we reach similar conclusions when observing the *p*-value curve depicting the distribution of the levels of significance of the reported value creation estimates (Simonsohn et al., 2014a,b). Figure 6 shows that estimates just below the 5% level are under-represented. In contrast, estimates that would potentially be significant at 5% or higher are under-represented. It is merely a convention to consider results below the 5% threshold significant. Thus, absent selective publication, there is no reason to expect *p*-values to be concentrated around this arbitrary threshold. The documented pattern is thus likely to have been generated by deliberate choices to report significant results.

Figure 6: Estimates Just Below 0.05 and 0.1 P-values Are Slightly Over-Represented



Note: The figure depicts selective publication depending on the level of statistical significance, i.e., the *p*-curve approach (Simonsohn et al., 2014a,b). The dashed curves show the expected uniform distribution of *p*-values under the null effect (the grey flat line, lighter in grayscale) and the expected right-skewed distribution with an effect of 50% power (the red dashed line, darker in grayscale). The solid line shows the observed *p*-curve representing the distribution of the levels of significance of the value creation estimates that we collected from the primary studies.

We use the caliper test (Bruns et al., 2019; Gerber et al., 2008; Gerber and Malhotra, 2008) to formally evaluate whether the patterns observed in Figure 5 and Figure 6 represent significant breaks in the distribution. The caliper test is based on a comparison of the proportion of results with corresponding *p*-values in narrow equal-sized intervals just above and just below the cut-off levels (referred to as "calipers"). In the case of no "*p*-hacking", the incidence of reported coefficients with *p*-values in the narrow interval just above the threshold ("over caliper") should be comparable to the incidence of reported coefficients with *p*-values just below the threshold ("under caliper"), i.e., the over-to-under caliper ratio is expected to be equal to 0.5 (50:50) (Clopper and Pearson, 1934). Ioannidis et al. (2017) argue that to detect "*p*-hacking" in economics and finance research, the cut-off level for the over-to-under caliper ratio should be adjusted for the fact that empirical tests in these fields tend to be underpowered. We follow Bruns et al. (2019), who suggest an over-to-under caliper ratio of 0.4 (60:40).

Table 3 presents our results based on four caliper widths (0.05, 0.1, 0.15, and 0.2). We observe consistent evidence on *p*-hacking at H1: $C \leq 0.4$ for both the 1.96 and the 2.58 levels. The lower

bounds of the 95% confidence interval for the over-to-under caliper ratio are all above the critical value of 0.4. Furthermore, for the narrowest caliper of 0.05, the entire 95% confidence interval is above the critical value of 0.5 even for the 2.58 significance level. These results suggest that estimates of price responses to shareholder activism that narrowly surpass the thresholds for statistical significance at 1.96 and 2.58 are more likely to be published compared to estimates that fall just short of the threshold. These results provide further support for the selective publication of empirical results in the shareholder activism literature.

Table 3: Caliper Tests Corroborate Some Bias in Reporting

t-statistic	Caliper size	Caliper ratio	5%CI
1.96	0.05	0.520	(0.411)
	0.10	0.491	(0.417)
	0.15	0.531	(0.469)
	0.20	0.522	(0.467)
2.58	0.05	0.633	(0.512)
	0.10	0.544	(0.457)
	0.15	0.520	(0.447)
	0.20	0.523	(0.458)

Note: The table shows the results of the caliper test for four different caliper sizes (0.05, 0.1, 0.15, and 0.2) around two significance thresholds: 1.96 and 2.58. The results present the share of the observations above and below a given threshold of statistical significance, i.e., the over-to-under caliper ratio. The numbers in parentheses represent the lower bound of the 95% confidence intervals. We follow Bruns et al. (2019) and interpret the lower bounds of confidence intervals above 0.4 as evidence of *p*-hacking.

5. Activism Characteristics

5.1 Possible Drivers of Heterogeneity

In the second part of this paper, we exploit the heterogeneity of our sample and examine how different characteristics of the individual estimates and research design choices influence the reported magnitude of the value shareholder activism creates. In Table A1, we provide definitions of these characteristics coded into explanatory variables used later in our analysis. Table 4 provides the descriptive statistics for selected dummy variables that represent different, mostly exclusive, subsamples of our data. For the continuous variables, we define additional indicators prefixed "Hi_" and "Lo_" that represent observations above and below the median of the full sample. Similarly, we define variables prefixed "Long_" and "Short_", as well as "Older_" and "Recent_".

Full sample. The first row of Table 4 reports the descriptive statistics for the full sample of 1,973 observations collected from 67 studies. As already discussed, the distribution of the estimates is positively skewed, and the mean value of 1.49% is higher than the median value of 0.50%. The skewness of the distribution can also be readily observed by comparing the distance between the median and the corresponding lower and upper percentiles. For example, the 5th percentile is 2.39 percentage points below the median, whereas the 95th percentile is 8.15 percentage points above the median. We observe a similar pattern for most of the individual subsamples, which suggests that the positive skewness is not restricted to specific subgroups of our observations. In addition to the simple mean, we report in Table 4 the mean value weighted by the inverse of the number of estimates reported in the individual studies, which gives all studies an equal impact on our results. For the full sample, the weighted mean (W.Mean) of 1.83% exceeds the simple mean of 1.49%,

implying that the reported estimates tend to be slightly higher in smaller studies. However, the difference is modest, so it is unlikely that a few large studies drive our results.

Table 4: Descriptive Statistics for Different Subsamples

			Unweighted statistics		Weighted statistics	
Variable	Nobs	Articles	Mean	SD	W.Mean	W.SD
All	1,973	67	1.49	3.04	1.83	3.42
Activism sponsors						
Hedge_funds	467	15	2.42	3.72	3.10	3.51
Pension_funds	474	15	0.84	1.93	0.56	1.71
Institutional_investors	129	14	0.16	2.72	0.47	3.19
Individual_investors	66	9	2.99	4.21	4.17	4.69
Sponsor_na (*)	837	31	1.43	2.88	1.74	3.32
Activism approaches						
Shareholder_proposal	479	20	0.35	1.90	0.29	1.69
Direct_negotiation	98	10	1.85	3.06	2.11	3.48
Proxy_fight	432	17	2.37	3.53	2.57	4
Multiple_strategies	287	7	0.20	0.68	0.12	0.78
Media_pressure	103	4	1.12	2.64	3.20	4.46
Approach_na (*)	574	17	2.43	3.60	3.21	3.71
Activism objectives						
Performance	302	12	0.71	1.92	0.78	2.04
Governance	350	20	0.25	1.75	0.28	1.93
Board_seats	360	22	2.48	3.62	2.07	3.72
Remuneration	117	9	0.65	1.93	1.32	2.58
Capital_structure	54	5	2.48	3.18	2.33	2.67
Sale	210	19	3.59	4.25	4.12	4.35
Objective_na (*)	580	28	1.34	2.78	2.23	3.52
Activism success						
Successful	178	26	3.14	3.99	3.07	4.26
Unsuccessful	150	16	1.68	3.63	2.32	4.42
Outcome_na (*)	1,645	64	1.30	2.80	1.61	3.12
Geographic regions						
Europe	457	11	1.80	3.16	2.78	3.73
Asia	139	5	1.23	2.22	1.21	1.93
North_America (*)	1377	53	1.41	3.07	1.70	3.42
Institutional setting						
Lo_antidirector_rights	499	13	1.54	3.04	2.42	3.49
Hi_antidirector_rights	1,474	56	1.47	3.04	1.7	3.39
Lo_rule_of_law	787	29	1.16	2.55	1.41	3.05
Hi_rule_of_law	1,186	42	1.71	3.31	2.13	3.63
Lo_mrkt_cap	980	39	1.48	3.13	1.98	3.56
Hi_mrkt_cap	993	31	1.5	2.95	1.71	3.3
Event types						
Press_announcement	294	14	1.08	2.41	1.11	2.59
Proxy_mailing_date	134	10	-0.45	1.33	-0.27	1.35
Meeting_date	186	13	0.44	1.42	0.24	1.62
Filing	300	10	1.87	3.17	3.38	3.98
Decision_date	227	13	1.87	3.80	0.51	2.84
Letter_day	109	3	0.48	0.94	0.52	1.01

Continued on next page

Table 4: Descriptive Statistics for Different Subsamples (continued)

Variable	Nobs	Articles	Unweighted statistics Mean	SD	Weighted statistics W.Mean	W.SD
Threshold_reach	114	4	0.96	3.28	4.52	4.59
First_announcement (*)	609	27	2.39	3.36	2.91	3.60
Event windows						
Max_3_days	692	40	0.68	1.80	1.27	2.80
Max_7_days	203	19	1.02	2.28	0.63	2.28
Max_15_days	444	32	1.07	2.65	1.29	3.23
Max_31_days	293	30	2.17	3.92	2.61	4.29
Max_62_days	182	15	5.52	4.17	4.83	3.95
The_day (*)	159	17	0.92	1.81	1.51	2.21
Returns models						
Market_adjusted	663	23	2.23	3.54	1.99	3.35
Market_model	837	35	1.10	2.62	1.90	3.57
3F_&_4F	186	9	1.21	2.28	1.74	2.12
Other_model (*)	287	19	1.10	3.07	1.47	3.53
Index weighting						
Equally_weighted	690	29	1.18	2.91	1.42	3.28
Value_weighted	596	26	1.26	2.61	1.63	3.05
Weighting_na (*)	687	26	1.99	3.43	2.42	3.75
Estimation method						
Other_estim	123	4	1.11	2.43	1.49	2.97
OLS (*)	1,850	64	1.52	3.08	1.85	3.44
Sample characteristics						
Short_sample	974	34	0.86	2.41	1.40	3.06
Long_sample	999	37	2.10	3.45	2.20	3.66
Older_sample	889	34	1.15	2.78	1.27	3.08
Recent_sample	1,084	35	1.77	3.21	2.40	3.64
Publication characteristics						
Lo_imp_factor	808	33	1.51	3.20	2.03	3.61
Hi_imp_factor	1,165	34	1.48	2.93	1.64	3.21
Lo_cited	982	35	1.28	2.97	1.61	3.52
Hi_cited	991	32	1.70	3.10	2.08	3.28

Note: The table presents descriptive statistics for different subsamples of data, which are defined based on the shareholder activism characteristics we expect to affect the value activism creates. Nobs: number of estimates within each subsample. Mean and SD refer to the mean and standard deviation; W.Mean and W.SD refer to the mean and standard deviation weighted by the inverse of the number of estimates reported in each study. The asterisk (*) denotes a reference category for different groups of subsamples (dummy variables omitted from our later analyses). For a detailed description of all the variables see Table A1.

Activism sponsors. Prior literature suggests that the effectiveness of inducing value-enhancing changes varies across activism sponsors (e.g., Becht et al., 2017; Denes et al., 2017; Filatotchev and Dotsenko, 2015). Sponsors differ in the strength of their incentives to enhance value and their sensitivity to the risk of potential failure. For instance, individual sponsors typically keep much of their own wealth in the firms targeted, so they internalize much of the value potentially created by successful activism campaigns (e.g., Bassen et al., 2019; Holderness and Sheehan, 1985; Venkiteshwaran et al., 2010). Hence, they may pursue their goals more tenaciously than other investors. Among institutional investors, hedge funds have both the incentives and the flexibility to pursue aggressive activism campaigns. High-performance fees give hedge fund managers strong incentives to enhance firm value (Bebchuk et al., 2020; Bessler et al., 2015; Brav et al., 2008a; Klein and Zur, 2009; Krishnan et al., 2016). The asymmetric nature of pay-offs encourages them

to take risk (Stulz, 2007; Yang et al., 2022). Light regulation and limited disclosure requirements help hedge funds accumulate larger ownership stakes and maintain flexibility in pursuing their goals (Brav et al., 2008a). "Lock-up" periods may give them greater maneuvering space to launch and reap the benefits. Hedge funds also frequently coordinate activism campaigns supported by several rather than one hedge fund (in a so-called "wolf pack") (Becht et al., 2017; Coffee and Palia, 2016; Wong, 2020). Thus, they may be more effective activists.

Several prior studies distinguish between various activism sponsors (e.g., Filatotchev and Dotsenko, 2015; Renneboog and Szilagyi, 2011). Following this research, we categorize activists into individual investors and coalitions thereof, hedge funds (e.g., Brav et al., 2010; Weber and Zimmermann, 2013), and pension funds (e.g., Carleton et al., 1998; Del Guercio and Hawkins, 1999; English et al., 2004; Nelson, 2006). We group the remaining observations into a fourth category (e.g., Carleton et al., 1998; Caton et al., 2001; Wahal, 1996). Table 4 shows that both the simple mean of 1.43% and the weighted mean of 1.74% (as well as the median of 0.53%) for the 837 price response estimates in this category are very similar to the full sample values, which suggests that this group is unlikely to represent some specific unknown sponsor type.

Activism approaches. Prior research also suggests that the value created by shareholder activism depends on how it is conducted (e.g., Cunat et al., 2012; Denes et al., 2017; Ferri and Sandino, 2009; Filatotchev and Dotsenko, 2015; Karpoff et al., 1996; Prevost et al., 2012; Wahal, 1996). More confrontational approaches may have a greater impact on firm value. Denes et al. (2017) report a figure of 6.77% for the value created by proxy fights (arguably one of the most confrontational methods, often intended to overcome managerial resistance to proposed changes), as against much lower estimates for direct negotiations (0.26%) and shareholder proposals (0.06%). Our sample contains 432 shareholder proxy fights (e.g., Boyson et al., 2017; Mulherin and Poulsen, 1998). We define another category for 98 direct negotiations with firm management, which are arguably less confrontational than a proxy fight (e.g., Carleton et al., 1998; Smith, 1996). We also form a separate category of 479 shareholder proposals that typically advocate specific policy changes (e.g., Prevost and Rao, 2000; Strickland et al., 1996). Furthermore, we categorize media pressure as another method of shareholder activism (e.g., Bessler et al., 2015; Bassen et al., 2019). We set up another category for activism involving multiple methods (e.g., Del Guercio and Hawkins, 1999; Yang et al., 2012). We group the remaining observations, for which the method of shareholder activism is not specified, into the last category (e.g., Venkiteshwaran et al., 2010).

Activism objectives. The impact of shareholder activism may also depend on its objectives (Denes et al., 2017). They are not trivial to classify, because activists may pursue multiple interrelated objectives. Corporate governance improvements and/or greater board representation may help activists improve firm performance. We follow the classification commonly used in prior research (Brav et al., 2008a; Greenwood and Schor, 2009; Rose and Sharfman, 2014b). Rose and Sharfman (2014b) propose two primary objectives: (i) business strategy changes aimed at improving firm performance (Bebchuk et al., 2020; Bessler et al., 2015; Krishnan et al., 2016), and (ii) activism aimed at improving corporate governance (Karpoff et al., 1996; Mulherin and Poulsen, 1998). In addition, Brav et al. (2008a) and Greenwood and Schor (2009) study activism intended to generate value by forcing the firm to become an acquisition target.

We define a category for activism aimed at improving performance, including proposed business strategy changes. Second, we group together activism aimed at improving corporate governance, e.g., reforms of voting practices and constraints on defense tactics. Third, we classify activism aimed at obtaining greater board representation as a separate category, which we view as distinct from reforming corporate governance mechanisms as such. We group requested changes in

executive remuneration into another category. The following category includes activism aimed at increasing financial leverage, which can enhance firm value by shielding some of the firm's income from taxes, disciplining the management, and incentivizing them to cut down on wasteful activities. We define a separate category from activism aimed at forcing the company to become an acquisition target (Brav et al., 2008a; Greenwood and Schor, 2009). Finally, we again define a reference category for cases when the objective of shareholder activism is not specified in the primary study or is formulated in general terms.

Activism success. We further examine the importance of the success of activism (e.g., Boyson et al., 2017; Cunat et al., 2012; Mulherin and Poulsen, 1998). If activism is beneficial, it is natural to expect more value to be created when it succeeds in achieving its objectives (Boyson et al., 2017). Nevertheless, it is not obvious that success is essential for enhancing firm performance. If shareholder activism creates value by challenging inefficient managerial practices (Jensen and Meckling, 1976; Jensen, 1986), even unsuccessful campaigns may suffice to discipline the management and prompt performance improvements. Hence, investigating the importance of activism success offers additional insights into the nature of the underlying mechanism.

Several prior studies distinguish between successful and unsuccessful campaigns or only consider successful campaigns in their empirical analysis (e.g., Alexander et al., 2010; Becht et al., 2009; Bizjak and Marquette, 1998). Other studies provide information about the proportion of events considered successful, i.e., the proposal passed or board seats won (e.g., Bassen et al., 2019; Carleton et al., 1998; Caton et al., 2001). Even though the combined number of estimates in the successful and unsuccessful activism categories (178 and 150, respectively) constitute only 16% of our sample, they allow us to investigate whether and how much achieving the activism's intended goals matters. Our reference category comprises estimates that do not distinguish between successful and unsuccessful activism (e.g., Alexander et al., 2010; Becht et al., 2009; Bizjak and Marquette, 1998).

Geographic regions. We also investigate the relevance of the geographic regions where activism takes place. Traditionally, most shareholder activism research was based on data from the United States (U.S.), where shareholder activism is well established (e.g., Barber, 2009; Holderness and Sheehan, 1985; Morgan and Poulsen, 2001). Nevertheless, more recently an increasing number of studies use data from Europe (e.g., Bassen et al., 2016; Becht et al., 2009; Bessler et al., 2015; Filatotchev and Dotsenko, 2015) and Asia (e.g., Azizan and Ameer, 2012; Becht et al., 2017; Hamao and Matos, 2018; Yeh, 2014). Differences in institutional settings and stock market regulation may affect both the tools available to shareholder activists and their incentives. Only a limited number of prior studies examine the differences across geographic regions (e.g., Bassen et al., 2019; Becht et al., 2017; Cziraki et al., 2010; Maffett et al., 2022). Hence, we find it worthwhile to consider these differences. Conducting a meta-analysis allows us to examine this effect while controlling for several additional factors that may systematically differ across regions and may also affect the value activism creates.

We define three categories that mirror the three continents where most shareholder activism occurs: North America, Europe, and Asia. Our results for North America are dominated by estimates based on U.S. data. In our sample, 16 observations are based on Canadian data, relative to 1,361 based on U.S. data. Due to the economic proximity of Canada and the U.S., we include these observations in one category. Our European sample includes 317 estimates from Germany, 97 estimates from the United Kingdom (U.K.), and 43 additional estimates based on European data. Our Asian category comprises 64 observations from Malaysia, 39 from Japan, 20 from South Korea, and 16 from other Asian data.

Institutional setting. Besides comparing the value created by shareholder activism across geographic regions, we explore the impact of differences in the institutional setting across countries. We suggest that a better institutional framework may affect the value created by shareholder activism because it may empower activists and help them achieve their goals. It may also promote corporate transparency and help activists better assess what companies constitute suitable activism targets. Prior meta-analyses in finance successfully exploit cross-country differences to analyze the importance of the institutional framework (e.g., Holderness, 2018).

We consider several institutional setting quality measures. First, we use the anti-director rights index (*Antidirector_rights*) developed by La Porta et al. (1997, 1998), which reflects the strength of shareholder protection in negotiations with management. The index is based on an aggregation of six indicators that capture various aspects of shareholder rights protection. These include shareholders' ability to mail their proxy vote to the firm, the absence of a requirement to deposit their shares prior to the general meeting, the possibility for cumulative voting or proportional representation of minority shareholders in the board of directors, the presence of mechanisms to protect minority shareholders, a relatively low threshold for aggregate ownership that is needed to call an extraordinary meeting, and the existence of shareholders' preemptive rights. All these measures strengthen shareholders' bargaining position vis-à-vis the company and improve their ability to influence how the company is run. We thus expect shareholder activism to be more effective in enhancing firm value in settings with a higher-quality institutional framework.

Second, we use the index of law and order tradition (*Rule_of_law*) as specified in the Worldwide Governance Indicators (WGI) provided by the World Bank (WB). Third, following Djankov et al. (2008) and Holderness (2018), we use the ratio of the stock market capitalization of publicly listed companies to the country's gross domestic product (GDP) (*Mrkt_Cap*) as specified in the World Federation of Exchanges database provided by the WB. This measure captures the relative importance of stock markets in a given economy.

Event types. We consider the type of event used to identify when the information on shareholder activism reaches the stock market. Most of the estimates in our sample (609) are based on the first announcement of shareholder activism, which we group into the "First_announcement" category. We define a separate category for estimates measured around the date activist investors register with the regulator their intention to pursue significant changes in the target company. We form another category for estimates based on the press announcement date. Press announcements probably attract more investors' attention and so may result in a stronger price response. Our next category includes observations based on dates when a certain ownership threshold is reached, which typically makes the activists "blockholders" in the target company. Our next category comprises estimates measured around the "letter day" when activists inform the company that it is being targeted. We form another category for proxy mailing dates when a specific shareholder proposal is sent out. This event informs investors in greater detail about the intended activism campaign. We also group together estimates based on the meeting dates when activism proposals are discussed. Price changes at meeting dates may be attenuated because the markets already know about activists' intentions. Uncertainty about the outcome of an activism campaign gets resolved at the decision date, as the decision turns potential changes into an approved plan. We group these dates into our final category.

Event windows. Our next set of variables captures the length of the event window over which the price response is measured. We expect the event window length choices in the primary studies to optimize the signal-to-noise ratio. Shorter windows may be better focused on the specific campaigns and less contaminated by potential confounding events. In contrast, longer windows may better

capture potential price run-ups resulting from rumors reaching the market and better cover the time when the markets process the information. Thus, it is not *a priori* obvious whether shorter or longer windows are preferable. Shareholder activism research routinely reports returns adjusted for the normal (or expected) rate of return, which implies that the length of the event window *per se* may not matter.

Indeed, some studies, such as Gillan and Starks (2000) and Wahal (1996), observe little difference in stock returns measured over shorter and longer event windows. However, the choice of event window length may vary systematically across the primary studies. Performing a meta-analysis allows us to identify general patterns while controlling for a multitude of other characteristics that may affect this research design choice. We define a set of indicator variables that capture various event window lengths. The shortest event window consists of the announcement day only. Our next category includes estimates that are measured over a maximum of 3 days, which typically include the day before the announcement day and the day after it. We define additional categories for maximum window lengths of 7 days, 15 days, 31 days, and 62 days.

Returns models. We also code variables that characterize the model of normal returns used in the primary studies. We observe that most of the primary studies use fairly simple models, perhaps because the event windows are typically fairly short, which limits the impact of any particular risk adjustments in computing the price response. Our sample comprises 663 estimates based on market-adjusted returns, i.e., the simple difference between the stock returns and the market returns (e.g., Becht et al., 2017; Boyson et al., 2017; Matsusaka et al., 2019). We include these estimates in one category. We define another category for 837 estimates based on the market model where the abnormal return is represented by the intercept term "alpha" in a regression of the asset returns on the market returns (e.g., Del Guercio and Hawkins, 1999; Smith, 1996). Our next category comprises 186 estimates (e.g., Cai and Walkling, 2011; Hamao and Matos, 2018; Matsusaka et al., 2019) based on factor pricing models, such as the three-factor model (3-F) (Fama and French, 1995, 1996) and the four-factor model (4-F) (Carhart, 1997). We group the remaining estimates into the final category. The estimates included in this category typically involve more sophisticated ways of adjusting for systematic risk.

Index weighting. We further differentiate between primary studies that use an equally weighted and a value-weighted index in computing abnormal returns. Prior research has produced conflicting findings on the importance of this choice. On the one hand, Denis and Serrano (1996), Nelson (2006), and Chen et al. (2020) detect no meaningful differences in empirical results based on the two indices. On the other hand, Brown and Warner (1985) and Campbell and Wesley (1993) argue that an equally weighted index leads to more precise detection of abnormal returns in event studies. Consistent with this argument, Ikenberry and Lakonishok (1993) conclude that price response estimates based on equally weighted indices tend to be lower than those based on value-weighted indices. Lee and Park (2009) suggests that small stock returns mainly drive the differences. We define an indicator variable for 690 price response estimates that use equally weighted indices and another indicator variable for 596 estimates based on value-weighted indices. We group the remaining 687 observations into the last category, for which the index choice is unknown or irrelevant.

Estimation method and sample characteristics. For the sake of completeness, we also classify the estimation methods. Prior research shows that estimation methods may have an impact on the magnitude of the reported coefficients (Bajzik et al., 2020; Ehrenbergerova et al., 2022). Most of the estimates in our sample, specifically 1,850 out of the total of 1,973, are estimated based on OLS. We classify these coefficients into one category. We group the remaining 122 observations based

on weighted least squares (WLS), fixed effects (FE), and instrumental variables (IV) into another category. Consistent with our expectations, we do not observe dramatic differences between the two subsamples. We further consider two data set characteristics: the sample period length in years and the midpoint year, which proxies for the recency of the sample period. Both of these measures can be seen as proxies for data set quality.

Publication characteristics. Finally, we consider two characteristics related to publication quality: the impact factor of the journal in which the article is published and the number of citations. Specifically, we use the discounted recursive journal impact factor provided by Research Papers in Economics (RePEc). Furthermore, we use the natural logarithm of the number of citations in Google Scholar normalized by the number of years since the first version of the study appeared on Google Scholar. Some prior studies suggest that publication quality proxies matter for the reported results, (e.g., Gric et al., 2021; Bajzik et al., 2020), while others observe few differences (e.g., Cazachevici et al., 2020; Matousek et al., 2021).

5.2 Bayesian Model Averaging

In this section, we formally examine the importance of the explanatory variables in combination. We face the "model uncertainty" problem, because prior literature on the impact of shareholder activism does not provide clear guidance on the set of conceptually grounded determinants. Including all potentially relevant variables as a single regression may be problematic due to multi-collinearity. To address this problem, we use Bayesian Model Averaging (BMA), which considers various combinations of potential determinants and evaluates how consistently they explain the variation in the dependent variable (e.g., Moral-Benito, 2015). BMA weights alternative regression specifications by their posterior model probability (PMP), which measures their "goodness of fit".[3] BMA evaluates the relevance of "candidate" explanatory variables by their posterior inclusion probability (PIP), which represents the likelihood that a given variable is included in the "true" model. To interpret our results, we follow Jeffreys (1961) and Raftery (1995), who suggest that variables with PIP greater than 0.99 should be seen as "decisive" for explaining the variation in the dependent variable, those with PIP greater than 0.95 should be interpreted as having a "strong" effect, those with PIP greater than 0.75 should be seen as having a substantial effect, and those with PIP greater than 0.50 should be viewed as having a "weak" effect.

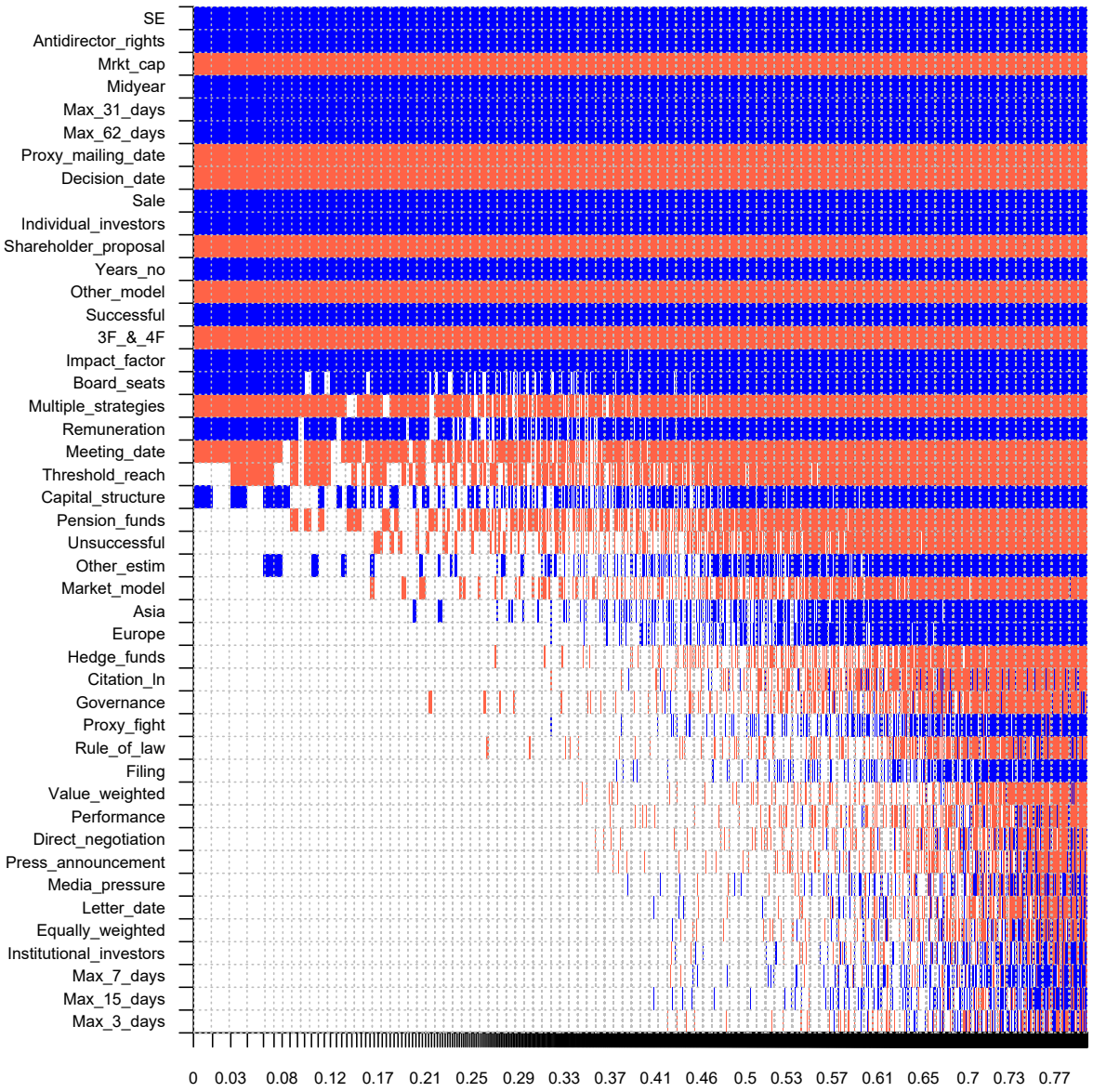
Since it would be technically cumbersome to evaluate all possible combinations of potential explanatory variables, we employ the Markov Chain Monte Carlo (MCMC) process with the Metropolis-Hastings algorithm (Zeugner et al., 2015) to identify the most probable regression specifications. In our baseline specification, we employ the unit information g-prior (Eicher et al., 2011), which sets all the regression coefficients to zero and attributes to them the weight of one data point, which implicitly assumes the absence of *a priori* knowledge about the importance of the individual characteristics. We use the dilution model prior proposed by George (2010) because it gives models with highly collinear variables less weight in the overall evaluation. We examine the robustness of our findings to these parameters in subsection 5.3.

Figure 7 provides a visualization of our BMA results. The alternative regression specifications in the columns are ordered based on their PMP, represented by each column's width. The individual explanatory variables in the rows are sorted based on their PIP, with the most relevant variables listed at the top. Blue cells (darker in grayscale) represent a positive association between a given

[3] In Bayesian econometrics, PMP roughly corresponds to the R^2 measure in frequentist econometrics.

explanatory variable and the dependent variable and red cells (lighter in grayscale) denote a negative association.

Figure 7: Bayesian Model Averaging Visualization



Note: This figure provides a visualization of our unweighted BMA results. On the vertical axis, the explanatory variables are sorted by their PIP, from the highest at the top to the lowest at the bottom. On the horizontal axis, the individual regression models are ordered based on their PMP, with the models with the best fit on the left. A blue color (darker in grayscale) means that the corresponding explanatory variable has a positive effect on the dependent variable in a given regression specification. A red color (lighter in grayscale) means that the variable has a negative effect. No color means that the variable is not included in the model. We report the corresponding numerical results in Table 5. We provide the definitions of the variables in Table A1.

Figure 7 shows that about one-half of the variables we consider are included in the best fit regression models. The BMA identifies four models with PMP considerably above the remaining models. These four models share 20 explanatory variables. It is reassuring to observe that the associations between all of these 20 variables and the dependent variable are consistent across all the models

considered in the BMA. Such consistency implies that the inclusion of other variables does not affect the nature of the association identified.

To assess the importance of the individual explanatory variables, we tabulate our BMA results in Table 5. The left panel of the table shows the PIP, the posterior mean (P. mean), and the posterior standard deviation (P. SD) for each explanatory variable. The latter two measures are computed from the distribution of the slope coefficients from the various regression specifications considered in the BMA. The posterior mean represents the typical value a particular coefficient has, and its standard deviation shows how the estimated coefficients vary in different combinations of explanatory variables.

We interpret our findings primarily based on the BMA estimates. Nevertheless, for the sake of comparison with frequentist econometric approaches, the right panel of Table 5 also shows OLS results from a regression model that includes all variables with PIP greater than 0.75 (denoting a "substantial" effect based on Jeffreys, 1961, and Raftery, 1995). We report the slope coefficients (Coef.), their standard errors (SE), and the corresponding *p*-values.

Publication bias. Consistent with our univariate statistics reported in Table 2, the multivariate results in Table 5 also provide strong evidence of a positive association between the price response estimates and their standard error (SE), which is consistent with selective reporting of empirical results in this stream of literature. As is apparent from the ordering of the variables in Figure 7, the SE has the highest PIP of all the explanatory variables considered. Table 5 shows that its posterior mean is positive at 0.264% and its PIP approaches 1.000. This result is corroborated by the OLS model, where the slope coefficient is equal to 0.270% (which is very close to the estimate based on BMA) and statistically significant at a level lower than 1% (*p*-value 0.007). Thus, even in a multivariate setting, we observe strong support for the proposition that reporting of empirical results on the value created by shareholder activism suffers from publication selection bias. In other words, our earlier results on selective publication are robust to the inclusion of various activism characteristics. This bias leads to a distortion in the pool of published results, which may affect the established understanding of the impact of shareholder activism on firm value. It is consistent with the findings from Bajzik (2023) studying the long-run effects of shareholder activism.

Table 5 also identifies 13 additional variables with PIP greater than 0.99 (conventionally interpreted as "decisive" for explaining the variation in the dependent variable; see, for example, Jeffreys, 1961, and Raftery, 1995). These relate to the type of activism sponsors, their objectives, their approaches to achieving their goals, and the nature of the institutional setting within which the activism takes place. We also find that the reported estimates are affected by research design choices and data set characteristics, such as the types of events around which the impact of activism is measured, the length of the event windows, the choice of model for normal returns, and the length and recency of the data sample used in the primary studies. We discuss these results below.

Activism sponsors. Consistent with our univariate results, Table 5 shows that stock prices respond more favorably to announcements of activism conducted by individuals rather than institutional investors. The posterior mean for *Individual_investors* of 1.729 is numerically rather close to the slope coefficient in the OLS regression of 1.761. This suggests that the price response to announcements of individual investors' activism is, on average, more than 1.5 percentage points higher. The result generated by BMA is strongly statistically significant, with PIP approaching 1.000. The slope coefficient based on OLS approaches the conventional level of statistical significance at 5% (*p*-value 0.062). These findings are consistent with our earlier proposition that individual investors have strong incentives to engage in value-enhancing changes and may be

better positioned to withstand any temporary increases in stock price volatility that the conflict with the firm's management may involve. This result is also consistent with prior research by Bassen et al. (2019), who discuss the prominent role of individual shareholder activists, but it differs from Filatotchev and Dotsenko (2015), who report little or negative value creation by the activism of individual shareholders. In addition, Bajzik (2023) shows that in the long run there is no difference between different sponsor groups.

Interestingly, the stock price responses to activism by the three remaining types of sponsors, i.e., hedge funds, pension funds, and other institutional investors, do not seem to differ from the reference group, for which the sponsor type is not specified. We observe PIP below 0.5 for all three variables representing these investor types. This result is particularly interesting for hedge funds. Much of the prior research suggests that hedge funds are strongly incentivized and better equipped to conduct effective activism campaigns. Becht et al. (2017) and Denes et al. (2017) quantify the value created by hedge fund activism at around 5% to 6%.

Table 5: Why Activism Returns Vary

	Bayesian Model Averaging			**Frequentist Check (OLS)**		
	P. mean	P. SD	PIP	Coef.	SE	p-value
Constant	−5.181	NA	1.000	−5.133	1.508	0.001
SE (Publication bias)	0.264	0.043	1.000	0.270	0.098	0.007
Activism sponsors						
Hedge_funds	−0.068	0.198	0.131			
Pension_funds	−0.237	0.320	0.407			
Institutional_investors	0.003	0.045	0.017			
Individual_investors	1.729	0.338	1.000	1.761	0.928	0.062
Activism approaches						
Shareholder_proposal	−1.319	0.225	1.000	−1.241	0.299	0.000
Direct_negotiation	−0.001	0.041	0.016			
Proxy_fight	0.010	0.070	0.033			
Multiple_strategies	−0.575	0.338	0.811	−0.735	0.249	0.004
Media_pressure	0.003	0.051	0.018			
Activism objectives						
Performance	−0.002	0.035	0.019			
Governance	−0.005	0.058	0.028			
Board_seats	0.522	0.262	0.870	0.577	0.359	0.112
Remuneration	0.681	0.495	0.726			
Capital_structure	0.367	0.511	0.390			
Sale	1.612	0.258	1.000	1.545	0.621	0.015
Activism success						
Successful	0.803	0.269	0.964	0.840	0.529	0.117
Unsuccessful	−0.214	0.324	0.353			
Geographic regions						
Asia	0.050	0.201	0.084			
Europe	0.023	0.138	0.043			
Institutional setting						
Antidirector_rights	0.552	0.096	1.000	0.528	0.169	0.003
Rule_of_law	−0.016	0.119	0.038			

(continued on next page)

Table 5: Why Activism Returns Vary (continued)

	Bayesian Model Averaging			**Frequentist Check (OLS)**		
	P. mean	P. SD	PIP	Coef.	SE	p-value
Mrkt_cap	−0.020	0.003	1.000	−0.018	0.004	0.000
Event types						
Press_announcement	−0.002	0.031	0.018			
Proxy_mailing_date	−1.615	0.317	1.000	−1.333	0.625	0.037
Meeting_date	−0.515	0.440	0.647			
Filing	0.003	0.039	0.018			
Decision_date	−1.675	0.238	1.000	−1.616	0.505	0.002
Letter_date	−0.002	0.044	0.016			
Threshold_reach	−0.487	0.450	0.602			
Event windows						
Max_3_days	0.0005	0.016	0.013			
Max_7_days	0.0003	0.022	0.013			
Max_15_days	−0.00003	0.018	0.013			
Max_31_days	0.859	0.176	1.000	0.829	0.568	0.149
Max_62_days	3.026	0.237	1.000	3.106	0.570	0.000
Returns models						
Market_adjusted	1.281	0.215	0.997	1.240	0.348	0.001
Market_model	0.929	0.204	0.997	0.916	0.353	0.012
3F_&_4F	−0.010	0.079	0.030			
Index weighting						
Equally_weighted	0.0001	0.019	0.014			
Value_weighted	−0.002	0.024	0.017			
Estimation method						
Other_estim	0.300	0.446	0.356			
Sample characteristics						
Years_no	0.072	0.017	0.999	0.071	0.037	0.062
Midyear	0.122	0.017	1.000	0.114	0.024	0.000
Publication characteristics						
Impact_factor	0.210	0.095	0.910	0.200	0.124	0.112
Citation_ln	0.000	0.034	0.044			
#Observations		1,973			1,973	
#Studies		67			67	

Note: The table shows the results of the multivariate analysis of value creation determinants. The dependent variable is the price response to shareholder activism campaigns collected from 67 primary studies. The left part of the table includes results based on BMA estimation. BMA employs the uniform model prior (Eicher et al., 2011) and the dilution prior suggested by George (2010), which accounts for potential multi-collinearity among variables. The right part presents the results of the "frequentist check" based on an OLS regression that includes the 20 explanatory variables that BMA identifies as most relevant for explaining the variation in the dependent variable that have PIP higher than 0.5. *PIP* denotes the posterior inclusion probability of a given variable in the "true" explanatory model. *P. mean* shows the posterior mean of the distribution of regression coefficients. *P. SD* represents the posterior standard deviation of the distribution of regression coefficients. *Coef.* denotes the slope coefficient based on OLS estimation. *SE* shows the standard error of the slope coefficient in the OLS regression model. *P-value* shows the probability of obtaining the result for a given explanatory variable under the assumption that the variable has no explanatory power (i.e., the null hypothesis is correct). Definitions of all the variables are given in Table A1.

Our conditional descriptive statistics reported in Table 4 indeed show fairly high unconditional mean price responses to hedge fund activism. Nevertheless, in our multivariate analysis, which takes into consideration other characteristics of shareholder activism, we observe a slightly negative posterior mean of -0.068 and a negligible PIP of 0.131. Our evidence thus suggests that the value generated

by hedge fund activism does not substantially differ from the value generated by activism sponsored by other types of institutional investors. This finding underscores the importance of considering the multitude of activism characteristics and adjusting for potential publication selection bias. Even though unconditionally, the stock price response to hedge fund activism is rather positive, hedge funds seem to engage in a type of activism that would be rewarded comparably if it were performed by other types of institutional investors.

Activism approaches. We next examine how the price responses to shareholder activism differ across the individual approaches used by the sponsors. We observe more attenuated price responses to shareholder proposals. The posterior mean of -1.319 resulting from BMA is somewhat more negative than the slope coefficient of -1.241 based on OLS. Nevertheless, both of these results are clearly statistically significant, with PIP approaching 1.000 and a p-value approaching 0.000. It thus seems that due to the non-confrontational nature of shareholder proposals and the uncertainty over whether they will ultimately be approved, the stock price response to this type of activism is less positive. This finding is consistent with Denes et al. (2017), who report a weak impact of shareholder proposals and strong market responses to announcements of proxy fights.

Our results also provide weaker evidence on less positive price responses to activism using multiple strategies. Both the posterior mean in BMA of -0.575 and the slope coefficient in OLS of -0.735 are smaller in magnitude than the corresponding figures for shareholder proposals. Furthermore, the PIP of 0.811 surpasses only the 0.75 threshold for a "substantial" effect. In OLS, the numerically smaller slope coefficient is still strongly statistically significant, with a p-value of 0.004. The individual phases of these multiple strategies may have been initiated at different points in time after the preceding attempts failed to deliver the desired results. We conjecture that the gradual release of information about the individual steps in multiple strategies may attenuate the price response to any single announcement.

Prior research documents strong price responses to announcements of proxy fights (e.g., Mulherin and Poulsen, 1998; Boyson et al., 2017). Our univariate results presented in Table 4 also show fairly large positive price responses to announcements of proxy fights. Nevertheless, contrary to the univariate results, we do not observe stronger price responses to proxy fights after controlling for other characteristics. The posterior mean of 0.010 is small in magnitude, and its PIP of 0.033 is well below all the cut-offs for the relevant variables. Hence, we conclude that price responses to announcements of proxy fights, as well as those related to direct negotiations and media pressure, do not differ substantially from the price responses observed for the generic category of activism approaches. We presume that this generic category probably includes many of the more aggressive shareholder activism approaches, which may explain why we do not observe a statistically important difference between the two groups.

Overall, our results are broadly consistent with prior research that suggests that more confrontational approaches are more likely to affect firm value than less assertive ones (e.g., shareholder proposals or direct negotiations as in Cunat et al., 2012; Denes et al., 2017; Filatotchev and Dotsenko, 2015; Karpoff et al., 1996; Prevost et al., 2012; Wahal, 1996). Most notably, we observe weaker price responses for shareholder proposals. To make our conclusion more comprehensive, we note again that Bajzik (2023) shows that in the long run there is no difference between the different activism approaches.

Activism objectives. Prior research also suggests that the value created by shareholder activism varies with its objectives at least in the short run (Bajzik, 2023; Denes et al., 2017; Greenwood and Schor, 2009; Mulherin and Poulsen, 1998). Consistent with the descriptive statistics presented

in Table 4, we observe more positive price responses to activism intended to make the company a takeover target. Again, the magnitude of the posterior mean in BMA of 1.612 is very close to the OLS regression coefficient of 1.545. Both findings are statistically significant, with PIP approaching 1.000 and a *p*-value of 0.015. These findings are consistent with Greenwood and Schor (2009), who single out potential prospective takeovers as the main underlying reason for the positive price response to activism announcements.

We also observe weaker evidence on stronger price responses to activism aimed at obtaining greater board representation (*Board_seats*). Both the BMA posterior mean of 0.522 and the OLS slope coefficient of 0.577 are smaller than those for *Sale*. Although the simple OLS estimation with a *p*-value of 0.112 deems the result insignificant, in the BMA estimation (and all its robustness checks reported in Table A2), a PIP consistently above 0.8 suggests the effect is "substantial".

We find only weak evidence on differential price responses to announcements of activism that pursues other goals. The PIP of none of the remaining indicator variables categorizing activism objectives exceeds the cut-off level of 0.75. We thus conclude that our multivariate analysis does not identify differential price responses to shareholder activism pursuing objectives other than company sales and greater board representation.

Activism success. Our conditional descriptive statistics reported in Table 4 also distinguish between activism campaigns that are identified in the primary studies as successful in achieving their stated objectives and those that are not. Prior research that examines the importance of activism success typically concludes that success indeed matters for the value activism creates (e.g., Mulherin and Poulsen, 1998; Cunat et al., 2012; Boyson et al., 2017). Our multivariate analysis supports this conjecture. As expected, the posterior mean for the indicator variable denoting successful activism is positive (0.803) and the one representing unsuccessful activism is (small but) negative (-0.214). The PIP of the variable for successful activism is 0.964, which is slightly below that of the most relevant variables that we consider in our analysis, but still well above the threshold of 0.95 commonly used to denote a "strong" effect. In the OLS estimation, the slope coefficient for successful activism of 0.840 is also positive and approaches statistical significance with a corresponding *p*-value of 0.117. On the other hand, the slope coefficient for the variable representing unsuccessful campaigns is negative, but its PIP of 0.353 is below the threshold for the variable's relevance. Hence, in our sample, we do not observe a significant difference in value creation by unsuccessful campaigns and campaigns that are not classified in terms of their success.

These results are consistent with our expectations and with the conclusions of a study of shareholder activism in the long run (Bajzik, 2023). They also convey a clearer message than the pattern in the descriptive statistics that we report in Table 4. Controlling for other activism characteristics leads to an intuitive order of results, where the price response is most positive for successful activism, less positive for activism for which the level of success is not classified, and weakest for activism identified as unsuccessful. Thus, we conclude that our evidence suggests that success in achieving the goals of activism is positively associated with the value it creates for shareholders.

Geographic regions. The heterogeneity of our data set also allows us to compare the impact of shareholder activism across various regions. Our conditional descriptive statistics reported in Table 4 show only minor differences across regions. Consistent with our univariate results, Table 5 shows no significant differences between Asia and Europe relative to the U.S. The posterior means for both *Asia* and *Europe* are positive but very small in magnitude (0.050 and 0.023, respectively). As expected, these results do not pass the conventional cut-offs used to evaluate the relevance of

these variables. The PIP for *Asia* is 0.084 and the one for *Europe* is 0.043, both of which are below the lowest threshold of 0.5 for a "weak" effect. We conclude that our evidence does not identify major differences in price responses to shareholder activism across geographic regions.

Institutional setting. We document that the quality of the institutional setting in which shareholder activism takes place matters for how much value it creates. This conclusion holds not only for short-run value creation by shareholder activism, but even in the long run (Bajzik, 2023). Table 5 shows that the price response to activism is stronger when shareholder rights are better protected. The posterior mean for the anti-director rights index (*Antidirector_rights*) of 0.552 is numerically very close to the slope coefficient based on the OLS regression of 0.528. Both of these results are strongly statistically significant, with PIP approaching 1.000 and a *p*-value of 0.003.

We consider this finding remarkable for several reasons. First, it underscores the importance of institutional framework quality for the effectiveness of corporate governance mechanisms. Local regulatory authorities have considerable discretion in how they shape the institutional framework. Our results are thus highly relevant for policymakers, as they provide evidence of the merits of the quality of the country-level regulatory framework. Specifically, our study documents that firm-level application of one of the key corporate governance mechanisms, namely, shareholder activism, may be more or less effective in enhancing firm value depending on the quality of the country-level regulatory framework.

Second, we note that it would be impossible to obtain this result in a study based on a data set from a single institutional setting. Our meta-analysis thus goes beyond synthesizing prior empirical results and adjusting them for publication selection bias. Our methodological approach allows us to reach new conclusions based on comparing a diverse pool of estimates reported in many primary studies. Our approach is similar to Holderness (2018), who performs a meta-analysis of price responses to firms' announcements of new equity issues. He exploits the variation in the country-level requirements for mandatory shareholder approvals of equity issues and documents their vital role in explaining how much value they create.

Our research complements a recent paper by Maffett et al. (2022), who examine shareholder activism with the use of a large international sample and exploit differences in the institutional framework. They construct an index that captures the transparency of firm-level governance processes and document a higher incidence of shareholder activism in settings where it is high. They also show that changes in this measure affect outcomes in firms that are not themselves targeted by activists but that may be threatened by activism in the future. We complement these findings by providing additional evidence in support of the proposition on the importance of regulatory framework quality using a different methodological approach and examining price responses to shareholder activism rather than its incidence. In particular, we show that after controlling for a wide range of potentially relevant explanatory factors, better shareholder protection makes activism more effective (rather than more frequent) even in firms that are targeted by activists (rather than being threatened by potential future activism). Our findings thus support and extend the empirical evidence presented in Maffett et al. (2022).

The second measure that we observe to be systematically related to the value created by shareholder activism is the aggregate stock market capitalization relative to a country's GDP (*Mrkt_Cap*). Table 5 shows that *ceteris paribus* shareholder activism is more effective in settings where stock markets are smaller relative to the size of the economy. Again, we clearly observe this result using both BMA and OLS estimation. The posterior mean of -0.020 is very close to the OLS regression slope coefficient of -0.018. Both of these results are strongly statistically significant,

with PIP approaching 1.000 and a *p*-value approaching 0.000. The correlation between the two institutional setting measures is 0.436 (not tabulated), which implies that these results are not driven by multi-collinearity between them.

Controlling for the shareholder protection quality, larger stock markets typically imply better benchmarking possibilities across individual companies. In larger stock markets, best practices may spread more easily from stronger to weaker firms. Therefore, greater inefficiencies may arise in markets that are smaller. Addressing these inefficiencies by shareholder activism campaigns may have a greater potential to enhance firm value, which may explain why it is associated with particularly large price responses. Furthermore, it is also possible that investors spend more resources on monitoring potential targets in large and liquid markets, where they have greater opportunities to accumulate a sufficiently large ownership stake, which may be important to make their activism campaign successful. Hence, in smaller markets, greater inefficiencies may be needed to pass the threshold that triggers activist action.

Our BMA analysis also identifies several additional characteristics related to research design, data sets, and publication quality relevant to the documented price responses. These findings help researchers compare and contrast prior empirical results and inform them about the likely impact of their own research design choices.

Event types. Table 5 shows that the magnitude of the reported price responses is affected by the type of events around which they are measured. The descriptive statistics reported in Table 4 show that the reported results are most positive when measured around the first announcement day, which constitutes the reference category in our BMA analysis. The posterior means are negative for all event types with the exception of the regulatory filing date (for which we observe a posterior mean very close to zero, i.e., 0.003). The posterior mean for the *Proxy_mailing_date* is -1.615, and the one for the *Decision_date* is -1.675. In both cases, PIP approaches 1.000 and the results are also statistically significant at the conventional 5% level in the OLS estimation. The latter result is somewhat surprising in the light of prior literature that suggests substantial value creation at the decision date (Bizjak and Marquette, 1998; Karpoff et al., 1996).

Event windows. We also observe that the reported magnitude of the value created by shareholder activism increases with the length of the estimation window. Using the 1-day window as a reference category in our BMA analysis, we document more positive price responses for the two longest windows, namely, the one up to 31 days and the one up to 62 days. For the longest event window category up to 62 days, we observe a posterior mean of 3.026, which is again very close to the slope coefficient from the OLS regression of 3.106. Both of these results are strongly statistically significant, with PIP approaching 1.000 and a *p*-value approaching 0.000. By comparison, for the second-longest window of up to 31 days, we observe a posterior mean of 0.859 and an OLS slope coefficient of 0.829, both of which are smaller in magnitude. Furthermore, only the result based on BMA estimation is statistically significant, with PIP approaching 1.000. The slope coefficient based on the OLS estimation has a *p*-value of 0.149. In contrast to the more positive price responses that we observe for the two longest event windows we consider, the PIPs for the remaining three windows (up to 3, 7, and 15 days) are all close to zero. This indicates that after controlling for activism characteristics, the reported estimates based on these windows do not differ materially from the estimates measured over the default 1-day window.

However, comparing these results with the findings from Bajzik (2023) studying the long-run effects of shareholder activism, one will realize that the upsurge of abnormal returns created in broader

windows (Max_31_days, Max_62_days) does not continue in the long run, where the value created by shareholder activism is not affected by the length of the observed window. This leads to the conclusion that shareholder activism creates the most value at the edge of the short- and medium-term horizons, i.e., about 14 or 30 days after the event.

Returns models and other estimation characteristics. Our results also show that researchers' choices of models used to measure the normal rate of return affect the reported estimates. Specifically, price response estimates based on the three-factor (3F) and four-factor (4F) models do not differ materially from the estimates in our reference category, which typically also involves more sophisticated ways of adjusting for systematic risk. In contrast, we observe more positive estimates of the price response to shareholder activism in the studies based on market-adjusted returns and on the market model. For market-adjusted returns, we observe a posterior mean of 1.281 and a slope coefficient in our OLS regression of 1.240. Both of these results are strongly statistically significant, with PIP of 0.997 and a *p*-value of the regression coefficient in OLS of 0.001. Similarly, for the market model, we observe only a slightly lower posterior mean of 0.929 and an OLS regression slope coefficient of 0.916. Again, both of these results are statistically significant, with PIP of 0.997 and a *p*-value of 0.012.

Nelson (2006) suggests that the choice of returns model is unlikely to affect the results substantially. In contrast, our results suggest that empirical studies that use simpler ways of adjusting for the normal rate of return are more likely to report stronger price responses to shareholder activism. We find this result intuitive, since market-adjusted returns and the market model might not fully control for the differences in the exposure of the targeted companies to systematic risk. The results reported in the studies may thus overstate the *true effect* due to insufficient risk adjustment. Indeed, reported results based on more sophisticated returns models are probably more convincing than those that use simpler ways of adjusting for the normal rate of return.

In contrast to the importance of the returns models, we do not observe any meaningful differences between estimates that use equally weighted and value-weighted market returns. This finding is consistent with Denis and Serrano (1996), Nelson (2006), and Chen et al. (2020). Similarly, we do not observe meaningful differences between estimates based on various estimation methods.

Sample characteristics. Our results also show that data sample characteristics matter for the magnitude of the reported estimates. Table 5 shows that primary studies that use longer and more recent data samples report more positive price responses to shareholder activism. The posterior mean of *Years_no* of 0.072 is positive and its PIP of 0.999 indicates that data sample length is highly relevant for explaining the variation in price responses to shareholder activism. We observe a similar, albeit statistically slightly weaker, result based on OLS. The slope coefficient of 0.071 is numerically very similar to the posterior mean based on BMA and, with a *p*-value of 0.062, approaches statistical significance at the 5% level. We also observe more positive price responses to shareholder activism in studies that are based on more recent data sets. The posterior mean *Midyear* is equal to 0.122, and the slope coefficient in our OLS estimation is equal to 0.114. Both of these results are strongly statistically significant, with PIP approaching 1.000 and a *p*-value approaching 0.000. We verify that these two results are distinct and are not driven by the correlation between the two variables (which is actually slightly negative at -0.205, not tabulated). Given that both the length of the sample period and the recency of the data set may be seen as proxies for data quality, our results suggest that prior studies based on higher-quality data report larger estimates of the value created by shareholder activism.

Publication characteristics. Lastly, we consider proxies for publication quality, namely, the impact factor of the journal in which the study is published and the normalized number of citations. We observe that studies published in more influential journals report more positive estimates. The posterior mean of *Impact_factor* is equal to 0.210 and its corresponding PIP of 0.910 indicates that the journal's impact factor has a *substantial* effect in explaining the variation in price responses to shareholder activism. In OLS, we observe a numerically similar slope coefficient of 0.200. Nevertheless, the p-value of 0.112 implies that this result is just below the 10% level of statistical significance. In contrast to the documented relevance of academic journal quality, the insignificant results for *Citation_ln* suggest that the estimates of the value generated by shareholder activism reported in the primary studies are not systematically related to the number of citations in Google Scholar. A similar conclusion holds for activism studied in the long-run window (Bajzik, 2023).

5.3 Sensitivity Analysis

We use Bayesian approaches to obtain our main results, because the Bayesian framework has important advantages in the analysis of heterogeneity. It allows us to consider a wide range of potentially relevant explanatory variables and avoid issues of multi-collinearity. However, it may be affected by the priors used as a point of departure. Given that our sample is quite large, we do not expect the choice of these priors to have a dramatic impact on our results. Nevertheless, in this subsection, we examine the sensitivity of our results to the priors we use. Specifically, we recompute our results using several different priors proposed in prior literature, and we examine whether these modifications affect our inferences about the explanatory power of the individual variables.

We visualize the results of our sensitivity analysis in Figure 8.[4] Our baseline model (UIP and dilution) follows George (2010). This approach modifies the model probabilities by multiplying them by the determinant of the correlation matrix of all the explanatory variables. Matrix determinants for models with low multi-collinearity between the explanatory variables will be close to one, and so the models will receive a high weight. In contrast, models that include highly multi-collinear variables have determinants close to zero, and accordingly they receive little weight. As a robustness check, we use three additional sets of priors that reflect various *a priori* expectations about the relevance of individual explanatory variables.

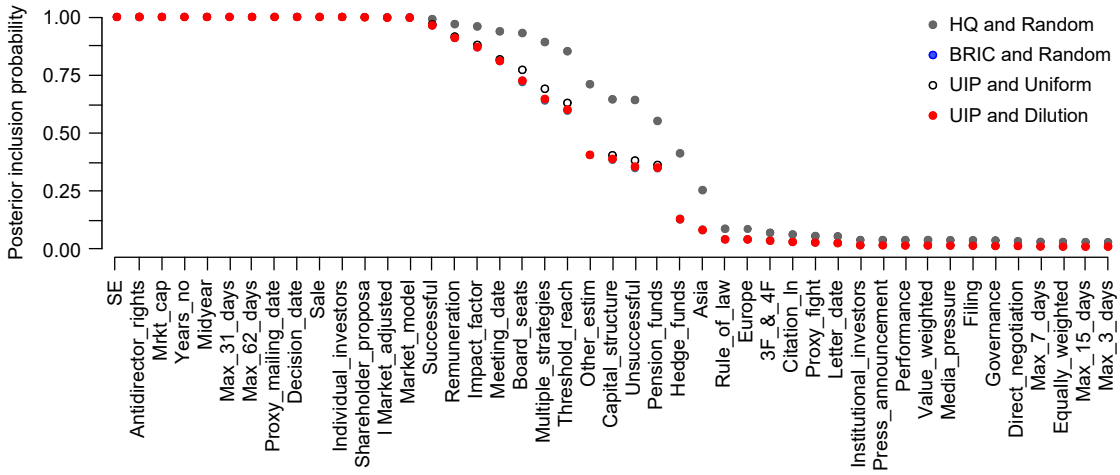
Following Eicher et al. (2011), we use the uniform prior on the models. The uniform prior gives each estimated model the same weight. Furthermore, we apply the unit information g-prior (UIP) on the coefficients, which is based on the assumption that all the regression coefficients are zero. The UIP, on the other hand, has the same weight as one observation in our data. Both priors reflect the absence of any *a priori* expectations about the relevance of the individual model or any individual explanatory variable, which is typical for meta-analysis. In addition, we use the BRIC g-prior with the random model prior proposed by Fernandez et al. (2001), and the Hannan-Quinn (HQ) g-prior with the random model prior (Fernandez et al., 2001; Ley and Steel, 2009).

Figure 8 depicts the PIPs for the individual explanatory variables based on the different priors. The variables are sorted based on their estimated relevance in our main test. We note that the "UIP and Dilution", "UIP and Uniform", and "BRIC and Random" priors yield virtually identical estimates.[5] Our baseline prior "UIP and Dilution" mostly produces slightly lower PIPs than the remaining two

[4] We provide the numerical results of our robustness checks in Table A2 in the Appendix.

[5] The robustness checks for different winsorization levels, such as (2%, 98%) and (5%, 95%), do not affect the results substantially, so these are not included in the paper.

Figure 8: Sensitivity of the Results to Different Priors



Note: This figure summarizes the PIPs of the explanatory variables considered depending on the various g-priors and model priors used in BMA. In our baseline model, we follow Eicher et al. (2011) and use a unit information g-prior and a uniform model prior (UIP and Uniform) that *a priori* remains agnostic about the relevance of the individual explanatory variables. As a robustness check, we use the dilution model prior (George, 2010), which accounts for potential multi-collinearity between the explanatory variables considered. We also use a combination of the Hannan-Quinn (HQ) g-prior and the random model prior (HQ and Random) that adjusts the data quality. Finally, we use a combination of the BRIC g-prior and the random model prior (BRIC and Random) that minimizes the prior effect on the results.

priors, which suggests that our baseline results tend to be conservative. In comparison, "HQ and Random" indicates somewhat higher PIPs for variables in the middle of the relevance spectrum. However, the order of importance of the explanatory variables remains mostly unchanged. Furthermore, all variables that we identify as relevant using our baseline prior are also considered such when estimated with the use of the "HQ and Random" priors. "HQ and Random" suggests greater relevance of *Board_seats*, *Multiple_strategies*, *Remuneration*, and *Meeting_date*. Overall, these findings suggest that, consistent with our expectations, our inferences about the explanatory power of the individual variables are robust to the choice of priors we use in the BMA.[6]

6. Conclusions

Shareholder activism may be beneficial by curbing economic inefficiency. It may also harm firms by stifling innovation and capital-intensive projects that enhance firm value in the long run. An optimal regulatory framework should be based on understanding how much value activism creates and the relevant conditioning characteristics. A systematic examination of this question is complicated by the fragmentation of the underlying data and the use of many methodological approaches, which limits the comparability of the reported results. We perform a meta-analysis of 1,973 estimates of price responses to activism campaigns in the short run reported in 67 research articles. This allows us to correct the results for publication selection bias and to examine the importance of relevant activism and research design characteristics.

[6] This section is usually followed by a discussion of the "true effect" or the "implied estimates". In our case, however, there are many aspects of shareholder activism, such as sponsor type, activism approach, event type, and objective, so it is impossible to say which approach would be the best practice. It depends on various aspects and situations. We therefore omit this section on purpose.

We find that the pool of reported estimates overstates the "true effect" of shareholder activism. Adjusting for publication selection bias, the price response estimates range from 0% to 1.5%. In addition, we observe that stock prices respond more positively to activism exercised by individual investors, activism conducted through more confrontational approaches, activism aimed at selling the target company, and activism successful in achieving its objectives. Estimates based on longer measurement periods, simpler approaches to risk adjustment, and more recent and longer data sets, and estimates published in more reputable academic journals tend to be higher. Our results provide valuable insights to regulators in designing an optimal framework for regulating investor activism, and to researchers in interpreting prior results and making research design choices in future studies.

On the other hand, we are aware that, due to data limitations, we cannot capture characteristics about the targeted firms' specific industries or about their performance and governance quality before the activism. All of these are factors that might affect the results significantly. Another potentially important aspect to study is the institutional setting of the countries concerned on the primary study level. For the future, we suggest studying the medium-term horizon of activism, as we believe that any regulatory changes should be based solely on the behavior of activists and targeted firms in the medium term.

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Appendix A

Table A1: Definition of Variables

Variable	Definition
Estimate	The value of the estimate of interest (the impact of activism on abnormal returns).
SE	The value of the SE related to the estimate of interest.
Activism sponsors	
Hedge_Funds	= 1 if the activist is a hedge fund.
Pension_Funds	= 1 if the activist is a pension fund (Calpers, CALSTRS, TIAA-CREFF, etc.).
Institutional_investors	= 1 if the activist is an institution other than a pension fund.
Individual_investors	= 1 if the activist is an individual investor.
Sponsor_na (*)	= 1 if the sponsor is not specified (reference category).
Activism approaches	
Shareholder_proposal	= 1 if the activism is conducted via shareholder proposals.
Direct_negotiation	= 1 if the activism is conducted via direct negotiations with managers.
Proxy_fight	= 1 if the activism is conducted via proxy fights.
Multiple_strategies	= 1 if the activism is conducted via a combination of proposals, negotiations, and proxy fights.
Media_pressure	= 1 if the activism is conducted via media pressure such as open letters or media campaigns.
Activism_approach_na (*)	= 1 if the activism approach is not mentioned (reference category).
Activism objectives	
Performance	= 1 if the objective of the activism is to improve the performance of the targeted firm.
Governance	= 1 if the objective of the activism is some governance issue in the targeted firm.
Board_seats	= 1 if the objective of the activism is to gain board seats.
Remuneration	= 1 if the objective of the activism is to change remuneration.
Capital_structure	= 1 if the objective of the activism is to change the capital structure of the targeted firm.
Sale	= 1 if the objective of the activism is the sale of the company.
Objective_general (*)	= 1 if the objective of the activism is not specified (reference category).
Activism success	
Successful	= 1 if the activism achieved its stated goal (at least partially).
Unsuccessful	= 1 if the activism did not achieve its goal.
Outcome_na (*)	= 1 if successful and unsuccessful events are not distinguished (reference category).
Geographic regions	
Europe	= 1 if the country of the activism is in Europe.
Asia	= 1 if the country of the activism is in Asia.
North_America (*)	= 1 if the country of the activism is the U.S. or Canada (reference category).
Institutional setting	
Antidirector_rights	An index aggregating shareholder rights we labeled as "antidirector Company law or commerrights" as in La Porta et al. (1998).
Rule_of_law	An assessment of the law and order tradition in the country, source WGI.
Mrkt_Cap	The average ratio of stock market capitalization to gross domestic product for the period, source WDI.
Event types	
Press_announcement	= 1 if the activism is announced by the press (e.g., Wall Street Journal).
Proxy_mailing_date	= 1 if the activism is announced by a proxy mailing date (i.e., by the mailing of a proxy statement containing the shareholder proposal).

Continued on the next page

Table A1: Definition of Variables (continued)

Variable	Definition
Meeting_date	= 1 if the activism is around the shareholder meeting date.
Filing	= 1 if the activism is announced by a 13D filing.
Decision_date	= 1 if the event date is around the decision date.
Letter_day	= 1 if the event date is measured around the date when the letter indicating that the firm had been targeted was sent to the targeted firm.
Threshold_reach	= 1 if the event date is measured around the date when the notification threshold was reached.
First_announcement (*)	= 1 if the event might be announced by any of the ways (reference category).
Event windows	
Max_3_days	= 1 if the cumulative abnormal returns are measured for no longer than four days around the event, i.e., (-1;0), (0;+1), (-1;+1), (-3;0), (0;3), where 0 is the day of the announcement.
Max_7_days	= 1 if the cumulative abnormal returns are measured for no longer than eight days around the event, i.e., (-3;+3), (-7;0), (0;+7), measured in calendar days.
Max_15_days	= 1 if the cumulative abnormal returns are measured within two weeks around the event, i.e., (-14;0), (0;+14), measured in calendar days.
Max_31_days	= 1 if the cumulative abnormal returns are measured within one month around the event, i.e., (-31;0), (0;+31), (-15;+15), measured in calendar days.
Max_62_days	= 1 if the cumulative abnormal returns are measured within two months around the event, i.e., (-31;+31), measured in calendar days.
The_day (*)	= 1 if the estimates relate only to the day of the announcement (reference category).
Returns models	
Market_model	= 1 if the abnormal returns are measured by the market model.
Market_adjusted	= 1 if the abnormal returns are measured by market-adjusted returns.
3F_&_4F	= 1 if the abnormal returns are measured by the FF three-factor or Carhart four-factor model.
Other_model (*)	= 1 if the abnormal returns are measured by a different model (reference category).
Index weightings	
Equally_weighted	= 1 if the abnormal returns are equally weighted.
Value_weighted	= 1 if the abnormal returns are value-weighted.
Not_eq_nor_value (*)	= 1 if the abnormal returns are not weighted (reference category).
Estimation method	
Other_estim	= 1 if the panel FE or IV estimator is used to estimate the abnormal returns.
OLS (*)	= 1 if the OLS estimator is used to estimate the abnormal returns (reference category).
Sample characteristics	
Years_no	The length of the primary dataset in years.
Midyear	The median year of the time period of the primary data that was used to estimate the abnormal returns to shareholder activism.
Publication characteristics	
Impact	The recursive discounted impact factor from the RePEc database.
Citation_ln	The logarithm of the number of Google Scholar citations normalized by the number of years since the first draft of the paper appeared in Google Scholar.

Note: Mean = mean value of the given variable, SD = standard deviation. The capital-to-GDP ratio was obtained from the World Development Indicators (WB, 2022) and the market concentration index from World Integrated Trade Solution (WB-WITS, 2022). For ease of exposition, we group the variables according to their characteristics into sponsor type, activism type, success, country of origin, type of event, event window, methodology, and other publication characteristics. An asterix (*) denotes the reference category for the various groups of dummy variables.

Table A2: What Drives the Heterogeneity of the Estimates Collected – Robustness Checks

	UIP and Uniform			**BRIC and Random**			**HQ and Random**		
	PIP	P. mean	P. SD	PIP	P. mean	P. SD	PIP	P. mean	P. SD
Constant	1.000	-5.182		1.000	-5.182		1.000	-5.184	
SE	1.000	0.263	0.043	1.000	0.264	0.043	1.000	0.257	0.043
Activism sponsors									
Hedge_funds	0.133	-0.069	0.199	0.128	-0.066	0.196	0.414	-0.237	0.327
Pension_funds	0.406	-0.235	0.319	0.406	-0.237	0.320	0.553	-0.305	0.323
Institutional_investors	0.017	0.003	0.046	0.017	0.003	0.045	0.041	0.007	0.070
Individual_investors	1.000	1.733	0.338	1.000	1.728	0.338	1.000	1.710	0.343
Activism approaches									
Shareholder_proposal	1.000	-1.320	0.226	1.000	-1.318	0.225	1.000	-1.431	0.259
Direct_negotiation	0.016	-0.001	0.042	0.015	-0.001	0.041	0.036	-0.002	0.058
Proxy_fight	0.035	0.010	0.072	0.032	0.009	0.070	0.058	0.012	0.081
Multiple_strategies	0.817	-0.577	0.334	0.809	-0.575	0.339	0.892	-0.592	0.288
Media_pressure	0.019	0.003	0.053	0.018	0.003	0.051	0.040	-0.002	0.077
Activism objectives									
Performance	0.019	-0.003	0.035	0.018	-0.002	0.034	0.040	-0.001	0.047
Governance	0.027	-0.004	0.054	0.028	-0.005	0.058	0.039	0.002	0.048
Board_seats	0.880	0.529	0.258	0.869	0.522	0.263	0.931	0.544	0.230
Remuneration	0.773	0.727	0.478	0.719	0.673	0.496	0.969	1.017	0.352
Capital_structure	0.405	0.382	0.516	0.385	0.363	0.509	0.646	0.599	0.528
Sale	1.000	1.617	0.256	1.000	1.611	0.258	1.000	1.690	0.245
Activism success									
Successful	0.968	0.807	0.265	0.963	0.803	0.269	0.991	0.804	0.234
Unsuccessful	0.364	-0.220	0.326	0.349	-0.212	0.323	0.643	-0.407	0.362
Geographic regions									
Europe	0.044	0.023	0.139	0.043	0.022	0.138	0.088	0.040	0.173
Asia	0.087	0.052	0.203	0.082	0.049	0.199	0.255	0.172	0.366
Institutional setting									
Antidirector_rights	1.000	0.551	0.097	1.000	0.552	0.096	1.000	0.549	0.101
Rule_of_law	0.040	-0.018	0.122	0.037	-0.016	0.118	0.089	0.003	0.258
Mrkt_cap	1.000	-0.020	0.003	1.000	-0.020	0.003	1.000	-0.022	0.004
Event types									
Press_announcement	0.018	-0.002	0.032	0.017	-0.002	0.031	0.041	-0.004	0.047
Proxy_mailing_date	1.000	-1.631	0.315	1.000	-1.613	0.317	1.000	-1.694	0.292
Meeting_date	0.691	-0.552	0.434	0.640	-0.509	0.440	0.938	-0.808	0.330
Filing	0.019	0.003	0.040	0.018	0.003	0.039	0.040	0.005	0.054
Decision_date	1.000	-1.681	0.237	1.000	-1.674	0.238	1.000	-1.689	0.229
Letter_date	0.016	-0.002	0.043	0.015	-0.002	0.043	0.057	-0.017	0.112
Threshold_reach	0.630	-0.511	0.449	0.596	-0.482	0.451	0.853	-0.700	0.387
Event windows									
Max_3_days	0.014	0.000	0.016	0.013	0.0004	0.016	0.032	0.001	0.024
Max_7_days	0.013	0.000	0.023	0.013	0.0003	0.022	0.033	0.002	0.036
Max_15_days	0.013	-0.000	0.018	0.013	-0.000	0.017	0.032	0.000	0.027
Max_31_days	1.000	0.860	0.176	1.000	0.858	0.176	1.000	0.877	0.175
Max_62_days	1.000	3.022	0.236	1.000	3.027	0.237	1.000	2.988	0.235
Returns models									
Market_model	0.997	-0.928	0.204	0.997	0.929	0.205	0.999	0.899	0.200
Market_adjusted	0.997	1.282	0.215	0.997	1.281	0.215	0.999	1.299	0.213
3F_&_4F	0.032	-0.011	0.082	0.030	-0.010	0.078	0.073	-0.025	0.120
Index weighting									
Equally_weighted	0.014	0.000	0.019	0.013	0.000	0.019	0.033	-0.000	0.029
Value_weighted	0.018	-0.002	0.025	0.017	-0.002	0.024	0.040	-0.004	0.036
Estimation method									
Other_estim	0.383	0.323	0.455	0.350	0.294	0.443	0.711	0.606	0.466
Sample characteristics									
Years_no	0.999	0.072	0.017	0.999	0.072	0.017	1.000	0.074	0.016
Midyear	1.000	0.122	0.017	1.000	0.122	0.017	1.000	0.127	0.018
Publication characteristics									
Impact_factor	0.916	0.211	0.094	0.909	0.209	0.095	0.959	0.220	0.083
Citation_ln	0.045	0.000	0.034	0.043	0.000	0.034	0.065	-0.002	0.035

Note: The tables report results from BMA robustness checks. First, we employ the UIP g-prior with the uniform model prior (Eicher et al., 2011). Second, we employ the BRIC g-prior and the random model prior. And third, we use the Hannan-Quinn (HQ) g-prior with the random model prior (Gechert et al., 2022). The variables are described in Table A1.

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