# Revisiting the Monitoring Role of Sovereign Wealth Funds

Nico Lehmann
Assistant Professor
Faculty of Business and Economics
University of Goettingen
Platz der Goettinger Sieben 5
37075 Goettingen, Germany
Phone: +49-551-39 7427
Fax +49-551-39-9498
nico.lehmann@wiwi.uni-goettingen.de

Almasa Sarabi
Assistant Professor
School of Business and Economics
University of Erlangen-Nuernberg
Lange Gasse 20
90403 Nürnberg, Germany
Phone: +49-911-5302-108
almasa.sarabi@fau.de

**Abstract:** Using a shock in the expansion of the Norwegian Government Pension Fund Global (GPFG), we examine the long-term organizational consequences of sovereign wealth fund (SWF) investments. Findings from a difference-in-differences test show that firms improve in firm value following the inclusion to GPFG's U.S. equity portfolio. Cross-sectional tests document that this effect is stronger for firms with higher monitoring demand and higher likelihood to face passive monitoring pressure. Additional analyses indicate that GPFG engagement improves firms' governance quality, litigation risk, and myopic investment behavior. Our findings are generalizable to monitoring-sensitive SWFs and suggest that these investors create value for firms.

**Keywords**: Ownership / Control Structures, Institutional Domestic and Foreign Investors, Corporate Governance, Agency Theory, Market Value, Sovereign Wealth Funds, Norwegian Government Pension Fund Global, Monitoring.

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## 1. INTRODUCTION

This paper revisits the monitoring role of sovereign wealth funds (SWFs) by investigating their long-term organizational effects on portfolio firms. SWFs are state-owned investment organizations that constitute a specific type of institutional ownership. By 2009, institutional investors such as investment advisers, pension funds, mutual funds, and SWFs have been managing over USD 53 trillion of assets in the OECD area (OECD, 2011). This trend has been accompanied by a greater focus on corporate governance practices as an important factor in long-term value creation as well as greater regulatory pressure on institutional investors to actively exercise their stewardship responsibilities (Bebchuck & Weisbach, 2010; ESMA, 2012). As a result, institutional investors—with SFWs as the fourth largest investor group in terms of assets under management (OECD, 2013)—are among the most influential players on the capital markets steering business operations around the world.

While a rich academic literature examines the role of investment advisers, pension funds, or mutual funds (e.g., Aggarwal, Erel, Ferreira, & Matos, 2011; Ferreira & Matos, 2008), empirical evidence on SWFs is scarce, with little insight into whether and how SWFs engage with portfolio firms. Kotter and Lel (2011), Dewenter, Han, and Malatesta (2010), and Bortolotti, Fotak, and Megginson (2015), for example, document positive abnormal returns around the announcement of SWF investments indicating that the market perceives them as value increasing for portfolio firms. However, all three studies disagree on the potential long-term organizational consequences of SWF investments. Kotter and Lel (2011) do not find any long-term effects on portfolio firms' performance or corporate governance which suggests a rather passive role of SWFs. Bortolotti et al. (2015) find portfolio firms to exhibit decreasing return on assets and sales growth over a subsequent period of three years suggesting that the political influence at the fund's management level induces detrimental monitoring incentives. Dewenter et al. (2010), lastly, document events indicative of SWF monitoring activities for more than half of their portfolio firms concluding that SWFs pursue an active role as firm-level monitors.

Responding to these conflicting findings, Aguilera, Capapé, and Santiso (2016) provide a conceptual classification suggesting four distinct types of SWFs; shareholder activism, in-house capabilities, legitimacy and decoupling, and long-term learning. Each of these four types has distinct incentives and capabilities to affect and monitor portfolio firms. The shareholder activism SWF type, for example, refers to monitoring-sensitive SWFs as found in Dewenter et al. (2011), whereas the legitimacy and decoupling type primarily coincides with politically-sensitive as well as passive SWFs as found in Bortolotti et al. (2015) and Kotter et al. (2011), respectively.

At face value, the conceptual model put forward by Aguilera et al. (2016) seems to reconcile the inconclusive evidence on the long-term organizational consequences of SWF investments given their heterogeneous nature. However, a closer look into the samples and findings shows a more complex picture. First, Dewenter et al. (2011), Bortolotti et al. (2015), and Kotter et al. (2011) base their empirical tests on comparable samples including different types of SWFs and still reach different results. None of the three studies deliberately chooses monitoring-sensitive funds over politically-sensitive or passive funds, or vice versa, when constructing their samples. Second, cross-sectional analyses by Bortolotti et al. (2015: 3029) that aim at distinguishing between monitoring-sensitive and politically-sensitive SWFs, do not show positive long-term organizational consequences for the portfolio firms of monitoring-sensitive SWFs. Third, all three studies examine associations between SWF investments and the long-term organizational consequences of their portfolio firms which are prone to endogeneity concerns (e.g., Gillan & Starks, 2007).[1] Consequently, the monitoring capabilities of SWFs, particularly of those deemed to be monitoring-sensitive, are still a question of debate.

To extend this debate, we revisit the monitoring role of SWFs by choosing a single-fund over a multi-fund setting. Specifically, we investigate the long-term organizational consequences of U.S.

[1] One major research design challenge of this literature is the identification of causal effects and with that the mitigation of correlated omitted variable concerns. The same unobservable firm and management characteristics that lead to changes in the ownership structure (e.g., that attract SWFs) can also lead to monitoring, governance, and performance effects, resulting in a biased estimation of the actual SWF effect. Apart from short-term event study findings, the problem of correlated omitted variables remains pervasive in the literature and becomes especially relevant for studies addressing the long-term organizational consequences of SWFs.

portfolio firms held by Norway's SWF, the Government Pension Fund Global (GPFG). The GPFG constitutes the largest SWF in the world, belongs to the largest institutional investors in the market, and claims to be globally active in exercising both stewardship and monitoring responsibilities (NBIM, 2015). This design choice offers two main advantages to the SWF literature.

First, this approach accounts more directly for the heterogeneous nature of SWFs. As the GPFG is supposed to be a role model of an active and monitoring-sensitive SWF (Aguilera et al., 2016), our setting holds constant the (monitoring) incentives to engage with portfolio firms at the fund level. To that end, our setting should be able to isolate monitoring behavior within the heterogeneous group of SWFs. More importantly, the GPFG is considered to be one of the most transparent SWFs which allows us to exploit a rich dataset of investment activities that are not available for other funds. We thus gain in-depth insight into *how* monitoring-sensitive SWFs can discipline entrenched management.

Second, our single-fund setting plausibly improves the identification of causal effects. We exploit a sudden increase in GPFG's equity positions around the year 2007. In 2007, GPFG's equity portion increased from 40% to 60% while holding the country- and regional-level relative allocation of fund resources constant. At the same time, small-cap firms were added to the fund's investment universe. The reason behind these changes was a decision by the Norwegian Ministry of Finance to globally adjust the risk-return profile of the GPFG. In its largest market regarding equity ownership, the U.S. market, these changes resulted in an increase of almost 160% of firms that were included into GPFG's portfolio; from 892 U.S. portfolio firms in 2006 to 2,308 U.S. portfolio firms in 2007. We argue that GPFG's revision in terms of equity positions, and with that its large reallocation of fund resources over a rather short period of time, plausibly mitigates correlated omitted variable concerns. In essence, we expect the sudden increase in GPFG's equity positions to be exogenous to the preferences of individual fund managers and portfolio firms. In comparison, the day-to-day decisions of fund managers to invest in firms is endogenous and depends on observable and unobservable firm characteristics, such as the firm's membership in a stock index. As these characteristics are likely to be related to potential

organizational outcomes of SWF investments, OLS analyses of day-to-day investment decisions are likely to be biased.

To investigate the long-term organizational consequences of GPFG investments on portfolio firms, we use the difference-in-differences (DiD) methodology with one treatment, one control group, and firm- and year-fixed effects. We define treated firms as firms that were not part of GPFG's U.S. portfolio prior to 2007, and with that, prior to the changes in the fund's investment strategy, but that were consistently included in its portfolio afterwards. As control firms, we use firms that were consistently *not* part of GPFG's U.S. investment portfolio throughout our whole sample period.

We conduct three sets of empirical tests. In our first set of tests, we use a DiD analysis to investigate the effect of GPFG investment initiation on firm performance. In line with agency theory (Jensen & Meckling, 1976), and a monitoring role of SWFs (Aguilera et al., 2016), we predict that treated firms improve on average in terms of firm performance following the inclusion to the fund's portfolio in 2007. In our second set of tests, we investigate whether our estimated treatment effect from the first test exhibits plausible cross-sectional variation with respect to a firm-level *monitoring demand*. We predict that treated firms with ex-ante governance and monitoring deficiencies have a stronger monitoring demand, should experience stronger monitoring effects, and thus have higher firm performance benefits following the inclusion to GPFG portfolio. Finally, in our third set of empirical tests, and drawing on active and passive monitoring (Hirschman, 1970), we examine whether our average treatment effect exhibits plausible cross-sectional variation with respect to firm-level *monitoring pressure*. We predict that treated firms that face stronger monitoring pressure by GPFG have higher firm performance benefits following the inclusion to GPFG portfolio. We proxy active monitoring pressure by voting dissent and passive monitoring pressure by exit threat and the threat of voting dissent.

Drawing on comprehensive GPFG fund-level information comprising all U.S. investment positions between the years 2003 and 2010—which results in an initial U.S. dataset of over 12,000

firm-year portfolio observations—we provide evidence consistent with long-term monitoring benefits for the treated firms following GPFG investment. Our DiD analyses document that treated firms improve in terms of firm performance (proxied by Tobin's Q) over a four-year period following the inclusion to GPFG investment portfolio in 2007. Corroborating the perspective of monitoring-sensitive SWFs, our cross-sectional tests further document that firm performance improves particularly for treated firms with higher monitoring demand, that is, ex-ante governance and monitoring deficiencies, and for treated firms that face stronger passive monitoring pressure, that is, experience the threat of exit and the threat of public voting dissent.

To further gauge GPFG's monitoring activities, we conduct additional DiD analyses with alternative dependent variables. First, we re-estimate our main DiD analysis for an alternative proxy of firm performance, that is, operating profitability, and confirm our initial inferences. This finding mitigates concerns that our original Tobin's Q inferences are simply driven by a demand shock and a temporary increase in stock prices in 2007.[2] Second, we re-estimate our main DiD analysis with more direct proxies of firm-level monitoring effects. We predict and find that treated firms improve in terms of corporate governance quality, litigation risk, and myopic investment behavior following the inclusion to GPFG investment portfolio in 2007. These findings corroborate the monitoring perspective of our Tobin's Q inferences and suggest that GPFG's monitoring activities create firm performance through different channels.

To ensure the robustness of our findings, we execute a battery of sensitivity tests. One concern with our setting might be that GPFG's increased equity stake comprises primarily small-cap firms added to the fund's investable firm universe in 2007. Thus, treatment selection may relate to firm size mitigating the quality of control group choice. We address this concern by using standard econometric techniques, e.g., size-related time-variant control variables, firm fixed effects, propensity score

[2] Since Tobin's Q is a variant of a market to book ratio, its computation is prone to potential demand shocks. Demand shocks are intensively discussed as one explanation for temporary stock price increases around firms' inclusions to blue chip indices (e.g., Shleifer, 1986).

matching to minimize the pre-treatment distance between our treated and control firms, and alternative control group specifications. To validate the timing of our DiD effect and to gauge the parallel trends assumption in our setting, we further examine placebo ownership shocks prior to the original GPFG ownership increase in 2007. We find that our empirical results prevail only for our post-treatment period, thereby increasing confidence that our findings are attributable to the activities and engagement of the GPFG.

This study contributes to the extant literature in several ways. First, our study adds to the growing literature on SWFs (e.g., Aguilera et al., 2016; Alhashel, 2015; Calluzzo, Dong, & Godsell, 2017; Johan, Knill, & Mauck, 2013; Megginson & Fotak, 2015; Meng, 2015; Vasudeva, 2013; Vasudeva, Nachum, & Say, 2018). Existing studies on SWFs have mainly adopted a macroeconomic, international law, or financial perspective, while neglecting the potential influence of SWFs on an organizational level (Aguilera et al., 2016). Although recent studies have started examining the role of SWFs as strategic investors, they only show conclusive evidence on short-term market reactions of SWF investments. Conclusive evidence on the long-term organizational consequences of SWF investments is still missing. In their recent literature survey on SWFs, Aguilera et al. (2016) call for more research on the strategic role and organizational implications of SWFs. Our paper directly responds to this call examining whether and how a specific type of SWFs, that is, active and monitoring-sensitive SWFs, disciplines entrenched management and thus eventually improves firm performance.

Second, our study provides contextual evidence on one of the largest non-U.S. institutional investors and SWFs with respect to market and industry concentration as well as portfolio compositions. Prior research has so far mainly concentrated on U.S. institutional ownership (Aggarwal et al., 2011; Bebchuk & Weisbach, 2010) with data constraints explaining the U.S. focus, as detailed fund-level ownership information for non-U.S. investors is commonly less available. In addition, we perceive contextual evidence on the GPFG to be timely and relevant since existing SWFs seem to have been recently adopting GPFG's investment and governance structure, and a number of countries, that

consider starting their own SWFs, intend to emulate GPFG's institutional design (Bortolotti et al., 2015).

Third, our study provides a plausibly tighter identification of causal effects on the long-term organizational consequences of SWFs than this has been the case in previous research. To that end, our paper directly responds to a general dearth in the empirical international business and governance literature to identify causal relationships (e.g., Bettis, Gambardella, Helfat, & Mitchell, 2014; Gow, Larcker, & Reiss, 2016; Reeb, Sakakibara, & Mahmood, 2012; Zellmer-Bruhn, Caligiuri, & Thomas, 2016). In two recent articles, Reeb, Sakakibara, and Mahmood (2012) and Zellmer-Bruhn, Caligiuri, and Thomas (2016) point out that natural experiments serve as state-of-the-art solutions to endogeneity concerns. In our paper, we introduce a setting that identifies a plausibly exogenous variation in one SWF's ownership positions—a variation that is plausibly exogenous to potential economic outcomes of SWF investments.

## 2. HYPOTHESES DEVELOPMENT

### 2.1 Institutional Investors and Agency Theory

Agency theory suggests that a firm's ownership structure plays a crucial role in the evolvement and monitoring of opportunistically motivated and entrenched managers (Jensen & Meckling, 1976). The theory posits that agency costs result from interest divergences and information asymmetries between shareholders (principal) and management (agent) in firms with separated ownership and control. Consistent with agency theory, institutional investors are expected to mitigate agency costs by monitoring managerial behavior (e.g., Aguilera et al., 2016; Cumming, Knill, & Syvrud, 2016; Edmans, 2009; Musteen, Datta, & Herrmann, 2009; Shleifer & Vishny, 1986).

Particularly, institutional investors might force their portfolio firms to adopt better governance by either using *active monitoring*, like voting at shareholder meetings, or *passive monitoring*, like threatening to sell shares (Hirschman, 1970). With respect to active monitoring, institutional investors

might improve portfolio firm monitoring by either supporting existing governance mechanisms, such as independent board members, or disciplining management to remove governance deficiencies, for example, by voting against management proposals at annual general meetings. Concerning passive monitoring, the threat of selling shares or the threat of the so-called "Wall Street Walk" might imply decreasing stock prices, and in turn negative effects on managerial compensation if tied to stock prices and job security (e.g., Admati & Pfleiderer, 2009). A recent survey on the monitoring preferences of institutional investors documents that "discussions with top management", "voting against management", and "selling shares because of dissatisfaction with performance" are the top three shareholder engagement measures (McCahery, Sautner, & Starks., 2016: 2912).

### 2.2 The Monitoring Role of GPFG

When it comes to SWFs, however, findings on the potential long-term organizational consequences are rather heterogeneous in nature (e.g., Johan et al., 2013). On the one hand, and consistent with the governance role of institutional investors (e.g., Edmans, 2009; Shleifer & Vishny, 1986), SWFs exhibit characteristics that are expected to amplify monitoring incentives to engage actively with portfolio firms and eventually improve firm performance by mitigating agency costs. These characteristics include, among other things, a lack of explicit liabilities, a rather long-term investment horizon, and low short-term liquidity needs (Bortolotti et al., 2015). In line with the monitoring perspective, Dewenter et al. (2010) document events indicative of SWF monitoring activities for more than half of their portfolio firms concluding that SWFs pursue an active role as firm-level monitors. In a similar vein, Fernandes (2014) shows empirically that firm performance and operating profitability increase following SWF investment.

At the same time, SWFs might also exhibit detrimental monitoring incentives. For example, SWFs, as state-owned investment organizations, might also adhere to non-financial or political objectives at the expense of shareholder value maximization. SWFs might further have incentives to

refrain from actively engaging with portfolio firms, especially when investing abroad, in an attempt to limit their liability of foreignness and to respond to host country concerns about potential political interference. Consistent with a political role of SWFs (or "state-induced investment distortion"), Bortolotti et al. (2015) document that SWFs' portfolio firms exhibit decreasing operating profitability and sales growth over a subsequent period of three years. Corroborating a rather passive role of SWFs, Kotter et al. (2011) do not find any effects on firm performance or corporate governance in the long-term for SWFs' portfolio firms.

Responding to the heterogeneous nature of SWFs, Aguilera et al. (2016) provide a conceptual classification of SWFs and suggest four distinct types of SWFs[3] each with distinct incentives and capabilities to affect and monitor portfolio firms. Consistent with the notion of shareholder activism (Aguilera et al., 2016), the GPFG claims to be globally active in exercising both stewardship and monitoring responsibilities (NBIM, 2015). The GPFG has, for example, evoked several guidelines, advisory bodies, and committees to improve exercising ownership rights and foster monitoring and strategic engagements. In 2004, the fund established ethical investment guidelines integrating various governance advisory groups and committees into its organizational structure (Vasudeva, 2013; Vasudeva et al., 2018). In addition, the GPFG is commonly seen as one of the most transparent, long-term, and governance-committed SWFs in the world (e.g., Chambers et al., 2012; Clark & Monk, 2010). Aguilera et al. (2016: 12-13) describe the fund as a role model of shareholder activism and note:

[3] *Shareholder activism* implies that SWFs adopt a strong monitoring role and improve corporate governance of its listed portfolio firms. Good examples for shareholder activism are the GPFG and Korean Investment Corporation (Aguilera et al., 2016: 12-13). *In-house capabilities* implies that SWFs pursue financial goals but invest in private firms. Besides different investment targets, SWFs under this category are, among other things, expected to build closer relationships to their portfolio firms to increase monitoring through increased trust and reduced information asymmetry. Illustrative examples of in-house capabilities are ADIA from Abu Dhabi and GIC from Singapore (Aguilera et al., 2016: 13-14). *Legitimacy and decoupling* imply that SWFs seek strategic (non-financial) goals and invest in listed firms. Strategic and non-financial goals might comprise, among other things, the intent to develop strong financial and political ties (and trust) with host country governments or to engage in 'institutional bonding', borrowing from the legitimacy of the host country's national institutions. Good examples for legitimacy and decoupling are SWF Qatar Holding (with the clear objective to promote its national brand) or Temasek from Singapore (Aguilera et al., 2016: 14-15). *Long-term learning* implies that SWFs seek strategic (non-financial) goals but invest in private firms. SWFs under this category are, among other things, expected to acquire know-how and technologies through co-operations (e.g., joint ventures) with leading international private firms. Illustrative examples of long-term learning are IPIC from Abu Dhabi or the Russia Direct Investment Fund (Aguilera et al., 2016: 15).

> Norway's GPFG is the best-known case among these investment organizations of an active shareholder and, in this case, is a clear example of strategic governance. [...] GPFG publishes its voting intentions ahead of general meetings for selected companies and for given issues it wants to highlight. The rationale is that GPFG seeks to express its voice in governance issues such as director nominations and remuneration policies.

In line with a shareholder activism role of the GPFG, we thus predict that increasing GPFG ownership leads to long-term firm performance improvements in portfolio firms. From an equity valuation perspective, where firm value equals the present value of the firm's expected future cash flows, GPFG ownership might add value to the firm by promoting external monitoring to the firm's management and thus improving performance. This leads to the first hypothesis.

*Hypothesis 1: The initiation of GPFG investment causes long-term improvements in firm performance.*

### 2.3 GPFG and Monitoring Demand

To glean further insights into our first hypothesis, we expect that the relative GPFG impact on firm performance is moderated by the portfolio firm's monitoring demand, that is, the firm's ex-ante governance and monitoring deficiencies. The latter are measured by firm-level corporate governance (including board, audit, compensation, and shareholder rights issues) and the presence of alternative monitoring institutions that provide monitoring through information revelation (financial analysts) and shareholder coordination (proxy voting advisors).[4]

We predict an increasing monitoring demand, and in turn increasing firm performance, with larger ex-ante monitoring and governance deficiencies. This line of argument includes that monitoring by GPFG provides discipline to management independently of traditional governance mechanisms, and thus acts as a substitute. In other words, we expect that if strong corporate governance and monitoring mechanisms are in place, monitoring by the GPFG should be less relevant for portfolio firms. This

[4] Prior research documents that financial analysts directly improve firms' corporate governance and exert monitoring (e.g., Irani & Oesch, 2013). Extant research also shows that proxy voting advisors exert monitoring by facilitating the investors' voting at shareholder meetings and thus by processing, synthesizing, and coordinating shareholders' voting and governance preferences (Calluzzo & Dudley, 2018; Ertimur et al., 2013; Hitz & Lehmann, 2018).

substitute role of the GPFG is generally consistent with recent evidence on the governance role of other outside monitoring institutions such as sell-side equity analysts or governance analysts (e.g., Irani & Oesch, 2013; Lehmann, 2018). Consequently, we formulate our second hypothesis as follows.

> *Hypothesis 2: Improvements in firm performance through the initiation of GPFG investment are stronger for portfolio firms with higher ex-ante governance and monitoring deficiencies.*

### 2.4 GPFG and Monitoring Pressure

We further expect the magnitude of the performance effect to vary with the monitoring pressure the GPFG exerts on portfolio firms. Consistent with the governance role of institutional ownership, we expect the GPFG to adopt different means of monitoring pressure vis-à-vis its portfolio firms distinguishing between active and passive monitoring.

Active monitoring follows the notion of shareholder activism as put forward by Aguilera et al. (2016). The authors presume that monitoring-sensitive SWFs, such as the GPFG, actively engage with portfolio firm management through private meetings and public voting at shareholder meetings. Accordingly, GPFG publishes periodically information about its monitoring capacities, especially regarding voting activities and staffing policy. The fund had three international offices with over 178 employees in 2007, for example, and was actively voting for around 90% of its equity positions throughout the years 2007 to 2011 (see Table 1, Panel C). Anecdotal evidence further corroborates GPFG's shareholder activism. The *Sovereign Investor Institute*[5] reports about the GPFG's managing division:

> In an address to the Norwegian Parliament in April, Slyngstad [CEO of Norges Bank Investment Management (NBIM)] highlighted NBIM's [GPFG's managing division] engagement with nearly all of the 7,400 companies whose stock it owns. In 2012, NBIM voted "at more than 10,000 shareholder meetings," Slyngstad said, according to an official transcript. "We also engage in dialogue with a large number of companies and had 2,300 meetings with 1,300 companies last year," he added. […] The CEO's

[5] Article "Norway's NBIM flexes its activist muscle", by Sovereign Investor Institute, August 23, 2013.

> remarks highlighted a substantial increase in NBIM's shareholder activism since 2003, when it participated in just 150 of its listed portfolio companies' annual general meetings. Since then NBIM has introduced its own corporate governance principles and established an internal group responsible for shareholder voting and director nominations. This group has created a database of environmental, social responsibility and corporate governance developments at some 4,000 companies.

Consequently, we expect that the GPFG has both the incentives and the capabilities to actively engage in monitoring. Since private engagement with top management, so-called 'behind the scenes" engagement, is commonly unobservable, we follow prior literature (e.g., Gillan & Starks, 2007; Iliev et al., 2015) and focus on active monitoring through the voting dissent the GPFG exerts at shareholder meetings. This leads to the third hypothesis.

*Hypothesis 3: Improvements in firm performance through the initiation of GPFG investment are stronger for those firms for which the GPFG exerts active monitoring through voting dissent.*

Passive monitoring is less explicitly included in the notion of shareholder activism as put forward by Aguilera et al. (2016) and might presuppose a different investment strategy with, for example, smaller and more liquid equity positions (e.g., Edmans, 2009). Yet, we expect that exit threat, a passive monitoring means, plays a role for monitoring for at least three reasons. First, institutional investors commonly employ a set of monitoring mechanisms including private and public as well as voice- and exit-related shareholder engagement measures (McCahery et al., 2016). Second, the GPFG is invested in a large number of firms around the world (e.g., in over 9,100 firms in 2017) and holds quite different levels of ownership stakes across its portfolio firms. This investment structure might imply that the GPFG plausibly lacks the capacity to *directly* monitor each portfolio firm individually. Third, anecdotal evidence suggests that the GPFG engages in exit and exit threat mechanisms. Since 2004, the GPFG has been publishing an exclusion and 'red flag' list for exercised and intended exits. The exclusion and 'red flag' reasons commonly refer to non-financial investment risk comprising governance and corporate social responsibility deficiencies. In a similar vein, the *Sovereign Investor Institute*[6] adds to

[6] Article "Norway's NBIM flexes its activist muscle", by Sovereign Investor Institute, August 23, 2013.

its monitoring quote above the following assessment:

> Such engagement lets NBIM tackle ethical issues without resorting to divestment and exclusion, but it isn't afraid to invoke the latter. As of August 2013 the fund excluded 55 companies from its portfolio, mostly tobacco companies like British American Tobacco and nuclear weapons producers like U.S.-based Lockheed Martin Corp. […] Exclusion is highly visible. But it has its disadvantages […]. "When we exclude a company, we also lose the ability to exert influence through the exercise of ownership rights," Singsaas said. "Therefore exclusion should always be a measure of last report." […] As an engaged shareholder, the fund can also apply pressure through the mechanisms such as watch lists.

Given the visibility and transparency of the GPFG, we expect that the fund not only has the incentives but also the capabilities to engage in passive monitoring through exit (threat). To that end, the transparency and high visibility of GPFG's intended exit activities might increase (the threat of) shareholder coordination and thus play a crucial role in disciplining entrenched management. Anecdotal evidence, again, suggests that GPFG's investment and divestment decisions are highly visible and important for other institutional investors. *Seekingalpha*[7], a U.S. finance blog, for example, notes:

> Another blow for Pimco as Norwegian SWF cuts ties. The fund has about $830B in assets, and had investments with Pimco (OTCQX:AZSEY) dating back to 2013, according to the *FT*. 'Losing a mandate from an iconic investor like the Norwegian oil fund is like losing the main feather in your cap,' says one in the industry. 'It will raise many eyebrows among other sovereign wealth funds'.

Consequently, we formulate our fourth hypothesis as follows.

> *Hypothesis 4: Improvements in firm performance through the initiation of GPFG investment are stronger for those firms for which the GPFG exerts passive monitoring through exit threat.*

Finally, we predict a second channel through which the GPFG might exert passive monitoring. Besides active monitoring through voting dissent and passive monitoring through exit threat, we expect that the GPFG can additionally engage in passive monitoring through the *threat* of public voting dissent. The underlying line of argument follows our exit threat arguments, particularly the fund's potential lack of resources to monitor each portfolio firm directly and individually, and puts GPFG's transparency and visibility center stage.

[7] Under "Breaking News" at www.seekingalpha.com, search result for 'Norwegian sovereign wealth fund'.

The GPFG communicates its general voting guidelines and governance preferences publicly and on a regular basis, and does so ahead of each proxy season. In addition, the fund publishes actual voting decisions for all its voted portfolio firms.[8] Beside GPFG's transparency about its active interventions through voting, its visibility in the market is likely to increase GPFG's actual monitoring effectiveness through public shareholder coordination and media attention. Thus, we expect that GPFG's transparency and visibility not only increases exit threat but also disciplines portfolio firm management to avoid public voting dissent as well as increased shareholder coordination and 'bad press'.[9] Regarding the latter, anecdotal evidence shows that the business press regularly picks up on GPFG's disclosed voting guidelines and voting activities. For example, the *Financial Times* has recently reported about GPFG's voting and engagement activities in the following way:

> The world's largest sovereign wealth fund has stood up to some of the biggest names in technology at this year's annual meetings, sanctioning the likes of Apple, Alphabet and Facebook over issues from the idea of one share per vote to the gender pay gap. […] Norway's $975bn oil fund has voted against management proposals at the AGMs of seven of its 10 largest equity holdings, also targeting Amazon, Novartis, Roche, HSBC and Johnson & Johnson, according to a review of its voting records. […] Among the rest of its top 10 holdings, the fund voted against individual directors at bank HSBC and Johnson & Johnson — as well as in favor of an independent chairman at the healthcare group — while its votes against Swiss drug makers Roche and Novartis were more over technicalities related to what could be discussed at annual meetings. In all, the fund said it had voted on 80,000 AGM proposals in the second quarter.[10]

Consequently, we expect GPFG's impact on firm performance to be related to the extent of the fund's ability to exert passive monitoring through the threat of public voting dissent. This leads to the last hypothesis.

*Hypothesis 5: Improvements in firm performance through the initiation of GPFG investment are stronger for those firms for which the GPFG exerts passive monitoring through the threat of voting dissent.*

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[8] Since 2008, GPFG has been providing detailed voting information at the end of each proxy season, and since 2013, the fund has been disclosing this information directly after each voted shareholder meeting. For high-profile cases, GPFG even discloses its detailed voting intention ahead of the respective shareholder meetings. In its annual reports, the fund further provides detailed and periodical insights into its investment and monitoring activities.

[9] Alternatively, legitimacy concerns might explain GPFG's transparency level and need for visibility (Aguilera et al., 2016). As state-owned investment organizations, SWFs might need legitimacy in form of a social contract or social license to operate. In a similar vein, SWFs might use transparency to implicitly regulate domestic firms' investment behavior abroad (Vasudeva, 2013).

[10] Article "Norway's sovereign fund reveals interventionist streak", www.ft.com, August 22, 2017.

## 3. METHODS

### 3.1 Change in GPFG's Investment Strategy

In 1990, the Norwegian Ministry of Finance founded the GPFG as the former Government Petroleum Fund. Six years later, the GPFG received its first capital. Since 1998, GPFG's portfolio has been comprising international equities, with a 40% stake of the overall portfolio and a maximum ownership share of 5% per portfolio firm, and fixed income instruments, with a 60% stake of the overall portfolio. In February 2006, however, the Norges Bank recommended the Norwegian Ministry of Finance to substantially increase the allocation in its equity portfolio, from 40% to 50% or 60% (NBIM, 2007: 84). The reason behind this recommendation was the global adjustment of GPFG's risk-return profile. After governmental roundtables and hearings in 2006 and with parliamentary approval, the Norwegian Ministry of Finance decided to change GPFG's investment strategy in two ways:

a. GPFG's equity and fixed income ratio of 40% and 60% was reversed into 60% international equity holdings and 40% fixed income holdings.
b. Small-cap firms were added to the investment universe of GPFG's equity portfolio. Consequently, the strategic benchmark portfolio underlying GPFG's investment strategy replaced its index coverage. Until 2007, the benchmark portfolio had been comprising large and midcap positions following the composition of the FTSE All-World Index. From 2007 onwards, however, the benchmark portfolio comprised large, midcap, and *small cap* positions following the composition of the FTSE Global All Cap Index.

Both of these changes were implemented immediately in 2007. In the U.S. market, GPFG's revised investment strategy resulted in the increase of almost 160% of firms included into the fund's portfolio between the years 2006 and 2007. GPFG's U.S. equity portfolio comprised 892 U.S. firms in 2006 and increased to 2,308 U.S. firms in 2007. In comparison, the average changes in the periods between 1999–2006 and 2007–2015 were 4.99% and -1.03%, respectively. The changed investment

strategy was also reflected in a net increase of USD 23 billion in the market value of GPFG's U.S. equity portfolio between 2006 and 2007.

We argue that this revision, and with it the large reallocation of fund resources over a rather short period of time, plausibly mitigates correlated omitted variable concerns. We expect the sudden increase in GPFG's equity positions to be exogenous to the preferences of individual fund managers and target firms that were included in the fund's portfolio as the consequence of the revised investment strategy in 2007. In essence, GPFG's investment behavior responded to the change in the underlying strategic benchmark portfolio—when the FTSE All-World Index was replaced by the FTSE Global All Cap Index—and was thus effectively forced to include small cap firms listed in the FTSE SmallCap Index. In comparison, the day-to-day decisions of fund managers to invest in firms depend on both observable and unobservable firm characteristics, such as the inclusion to a blue-chip index, and are endogenous by nature. As these characteristics are likely related to potential organizational outcomes of SWF investments—for example, the firm's inclusion to a blue-ship index likely increases its visibility, liquidity, and subsequent firm performance—OLS analyses of the day-to-day investment decisions are likely to be biased.

We thus expect that the GPFG investment shock provides a useful setting to investigate the long-term organizational consequences of monitoring-sensitive SWFs. Table 1 provides an overview of GPFG equity holdings across countries (Panel A), over time for its U.S. equity portfolio (Panel B), and details about GPFG's holdings, exits, and investments in the years around 2007 (Panel C). Subsection *Additional analyses and robustness tests* discusses setting-related research design challenges.

[Table 1 about here]

### 3.2 DiD Analysis

To test our predictions, we employ standard DiD methodology. We use all firm-year observations that were continuously part of GPFG's equity portfolio after the investment shock in 2007 as our

treatment sample. Our indicator variable measuring GPFG ownership initiation (*Post×Treated*) takes the value of one if the firm belongs to the treatment group in the period after 2007 and zero otherwise. To control for time-series trends in the treatment group that do not result from the treatment itself, we employ a control group. We use all firms that were continuously not part of GPFG's equity portfolio throughout the sample period between 2003 and 2010. To minimize the pre-treatment distance between our treated and control firms along observable firm characteristics, we use propensity score matching to select control firms.[11]

Empirically implemented in a regression model, the DiD design underlying the indicator variable (*Post×Treated*), combined with firm- and year-fixed effects and time-variant firm controls, ensures proper identification of the GPFG ownership effect. The model below summarizes the empirical approach to address Hypothesis 1.[12]

$$VI = \beta_1 + \beta_2 Post \times Treated + \sum \beta_j Controls_j + \sum \beta_k Fixed\ Effects_k + \varepsilon \qquad (1)$$

To further examine the cross-sectional variation in our average treatment effect (Hypotheses 2 to 5), we extend Eq. (1) with a total effect model approach (e.g., see Christensen, Hail, & Leuz, 2013 for a similar approach). We split the DiD estimator (*Post×Treated*) into two non-overlapping variables that indicate the above– and below–median values of the respective moderating variable. This median split is either based on values taken from the pre-period (for monitoring demand) or the post-period (for monitoring pressure). The DiD regression model below summarizes our empirical approach to address Hypotheses 2 to 5.[13]

[11] Propensity score matching further mitigates concerns that non-random and particularly size-related treatment selection confounds our inferences.

[12] The idea behind the regression model is to compare for a given variable of interest (VI) the changes in the treatment group around the treatment event to the corresponding changes in the non-treated control group (e.g., Clair & Cook, 2015). The coefficient estimate on *Post×Treated* reflects the DiD effect. Our fixed effect structure controls for the underlying main effects (Post and Treated). In all regressions, we use standard errors that are robust (White, 1980) and one-way clustered at the firm-level (Gow et al., 2010; Petersen, 2009).

[13] Our fixed effect structure controls for the three underlying main effects: Treated, Post, and Mhigh.

$$VI = \beta_1 + \beta_2 Post \times Treated\_Mhigh + \beta_3 Post \times Treated\_Mlow + \sum \beta_j Controls_j + \sum \beta_k Fixed\ Effects_k + \varepsilon \quad (2)$$

### 3.3 Sample Selection

The data in this study are collected from two main sources. GPFG equity ownership data are provided by Norges Bank Investment Management for the years between 1998 and 2017. This dataset comprises all equity (and fixed income) investment positions of the GPFG during the 20-year period. As outlined in Table 1, GPFG's equity portfolio included over 9,100 unique firms across 67 countries in 2017 with the U.S. as the largest market in terms of number of equity investments (with 1,946 unique firms), followed by Japan (with 1,507 unique firms) and China (with 567 unique firms). Our second main dataset is drawn from the Thomson Reuters Worldscope database comprising accounting, finance, and market-related information at firm level. The Worldscope database is commonly perceived as the largest international database for publicly quoted companies. For the purpose of our study, we merge both datasets to identify Worldscope firms both with and without GPFG investment positions.

For our empirical analyses, we focus exclusively on the U.S. market. In terms of sample selection, we thus start with all listed firms available in the U.S. Worldscope database. The sample period covers a four-year period around the investment shock in 2007 (i.e., 2003-2010)[14]. After eliminating observations with missing data, we obtain a balanced sample of 5,272 firm-year observations with 659 unique firms, of which 205 (454) are treated (control) firms. Table 2 summarizes the sample selection procedure and provides further details on the sample composition across each year and across both treated and control firms.

[Table 2 about here]

[14] Our findings are generally consistent when using shorter DiD sample periods (e.g., only two- or three-year post treatment periods). This mitigates concerns that a survivorship bias in our treatment firms drives our findings.

### 3.4 Variable Measurement

*Firm performance (H1-H5).* We follow Ferreira and Matos (2008) and Aggarwal et al. (2011) and use (the natural logarithm of) Tobin's Q (*Ln(TQ)*) as our main proxy for firm performance.[15] Tobin's Q has widely been used in finance and economics as a firm performance measure reflecting growth opportunities and investment possibilities from a capital market perspective (e.g., Adam & Goyal, 2008; Aggarwal et al., 2009; Bebchuk, Cohen, & Ferrell, 2009; Daines, Gow, & Larcker, 2010; Gompers et al., 2003; Servaes & Tamayo, 2013). Specifically, we measure Tobin's Q as the market value of assets divided by book value of total assets, where the market value of assets is calculated as the book value of assets plus the market value of common stock less the sum of book value of common stock. To control for outliers, we winsorize Tobin's Q at the upper and lower 1% level (e.g., Aggarwal et al., 2011).

We perceive this variable as suitable for our DiD research design for the following three reasons. First, Tobin's Q incorporates performance effects on a timely basis due to the market expectation component of this measure. Second, and in contrast to operating profitability measures, Tobin's Q captures long-term firm performance through its market value component, whereas profitability rather reflects short-term value generation (e.g., Servaes & Tamayo, 2013).[16] Third, using Tobin's Q as an aggregated measure of firm performance might mitigate concerns that the monitoring activities of GPFG do not produce observable changes in more direct proxies of firm monitoring. For example, monitoring by GPFG could improve how the board and managers do their jobs, which in turn could increase firm performance but not necessarily translate into observable changes in specific governance proxies, such as the number of independent directors or CEO/chairman duality. Nevertheless, to gauge the sensitivity of our firm performance measure, we use operating profitability and more direct monitoring proxies as alternative dependent variables in subsection *Additional analyses and robustness*

[15] The log form of Tobin's Q is frequently used to statistically correct for the commonly left-skewed distribution of this firm valuation proxy (e.g., Daines, 2001; Bebchuck et al., 2009).

[16] In fact, it is possible that organizational and strategic changes (e.g., changes in the firm's corporate governance structure) as the result of ownership changes might reduce profitability in the short run but pays off in the long-term.

*tests*.

*Governance and monitoring deficiencies (H2).* To assess firm-level corporate governance quality, we use an aggregated governance index (*CorpGov*) developed by Aggarwal et al. (2011). This measure includes a broad range of governance topics such as board, audit, compensation, and shareholder rights issues. To assess firms' monitoring environments, we use the log of financial analysts following *(Ln(AF)*) and the log of proxy voting coverage (*Ln(PV)*).[17] Financial analysts following is a common proxy for external monitoring and the quality of corporate information environment (e.g., Irani & Oesch, 2013). Governance research suggests that proxy advisors likewise exert firm-level monitoring by processing, synthesizing, and coordinating shareholders' voting and governance preferences (Calluzzo & Dudley, 2018; Ertimur, Ferri, & Oesch, 2013).

*Monitoring pressure through voting dissent (H3).* We use a firm-level measure (*Dissent*) that comprises the percentage of GPFG's 'vote against' proposals. For example, if a portfolio firm puts 8 management proposals to vote at its shareholder meeting, and GPFG votes in favor of 5 proposals but opposes 3 proposals and thus votes against them, our measure would be 0.375 (=3/8). We expect higher voting dissent with higher values of *Dissent*.[18]

*Monitoring pressure through exit threat (H4).* We use an industry-level measure (*ExitThreat*) that comprises the percentage of GPFG exits, that is, complete terminations of investment positions. For example, if GPFG holds 100 portfolio firms in a given industry and year and sells 20 of them within this year, our measure would be 0.2 (=20/100) for all portfolio firms falling into this industry-year group. The underlying idea is to measure exit threat based on GPFG's industry-year specific exit activities. We expect higher exit threat with higher values of *ExitThreat*.[19]

[17] Following recent analyst research, financial analyst following is defined based on the number of recommendations issued by financial analysts (e.g., Booth et al., 2014; Dubois et al., 2014; Li & You, 2015). Proxy voting coverage includes the firm-level coverage by Institutional Shareholder Services (ISS) and Glass Lewis (GL).

[18] For the distribution of GPFG's U.S. portfolio holdings, investments, and exits, see Panel C of Table 1.

[19] To gauge the validity of our industry-level measurement approach, we use a placebo variable (*PlaceboExitThreat*) that is defined as *ExitThreat* but allocates each portfolio firm into a randomly chosen industry group. If GPFG's industry specific exit activities provide an industry specific exit threat, our placebo variable should produce insignificant inferences. In line with this expectation, the corresponding results (untabulated) based on *PlaceboExitThreat* produce insignificant inferences.

*Monitoring pressure through the threat of public voting dissent (H5).* We use an industry-level measure (*DissentThreat*) that comprises the average percentage of GPFG's voting dissent per industry and year. For example, if GPFG holds 100 portfolio firms for a given industry and year and exerts an average voting dissent of 0.375 (based on firm-level data of *Dissent*), our measure would be 0.375 for all portfolio firms *without* the actual voting dissent that fall into this industry-year group. Portfolio firms with actual voting dissent are set to zero to exclusively account for spillover effects to peer firms in the same industry and year. The underlying idea is to measure the threat of voting dissent as potential spillover effects of actual voting dissent to peer firms for a given industry and year. We expect higher threat of voting dissent with higher values of *DissentThreat*.[20]

DiD estimation commonly improves with the inclusion of control variables, as these variables mitigate concerns that observable differences in firm characteristics across treated and control firms in the pre-treatment period affect the estimated average treatment effect. Thus, we follow prior literature that also employs Tobin's Q as a dependent variable (e.g., Ferreira & Matos, 2008; Aggarwal et al., 2011) and consider the following control variables: firm size as log of total assets (*Ln(TA)*), financing structure (*LEV*), dividends per share (*DPS*), asset structure (*PPE_TA*), financial analyst following (*Ln(AF)*), and ownership structure (*FF*).

Appendix A provides detailed definitions of all variables used in this study. Table 3 provides summary statistics for our variables. Although we employ a matched control sample, we still observe sample differences across several observable dimensions. In subsection *Additional analyses and robustness tests*, we further discuss and address these sample differences. Among other things, we show that our DiD inferences are not sensitive to a specific control group selection or matching strategy (e.g., unmatched control firms or alternative control firms).

[20] To gauge the validity of our industry-level measurement approach, we use a placebo variable (*PlaceboDissentThreat*) that is defined as *DissentThreat* but allocates each portfolio firm into a randomly chosen industry group If GPFG's industry specific voting activities provide industry specific threats of voting dissent, our placebo variable should produce insignificant inferences. In line with this expectation, the corresponding results (untabulated) based on *PlaceboDissentThreat* produce insignificant inferences.

[Table 3 about here]

## 4. RESULTS

### 4.1 Average Treatment Effect

Panel A of Table 4 provides the univariate results. In line with Hypothesis 1, we observe that the univariate DiD estimator—comparing relative firm performance changes in the treatment group to changes in the control group—is positive and significant at conventional levels (coefficient = 0.10 and p-value < 0.01). The regression results in Panel B of Table 4 corroborate these inferences. Specifically, we estimate three different regression specifications: (a) regression without firm- and year-fixed effects and without control variables, (b) regression with fixed effects but without control variables, and (c) full specified regression with fixed effects and control variables (as defined in Eq. (1)).

[Table 4 about here]

The findings offer three main insights. First, the estimated average treatment effect, *Post*×*Treated*, is positive and significant for each specification (coefficients between 0.098 and 0.162 and p-values < 0.10). Second, moving from the first model to a fully specified model increases the economic and statistical significances of the inferences while, at the same time, improving the explanatory power of the models. This finding underlines the importance of our fixed-effect structure and time-variant firm control variables. Third, the main effect ("treated") of the DiD estimator in Column 1 (Panel B) shows that treated firms have a comparable firm performance to control firms in the pre-treatment period (t-stat: 0.96). This finding supports our propensity-score matching approach. Overall, the baseline results suggest that GPFG's initiation of investment positions in 2007 relates to firm-level performance improvements. At face value, these inferences are consistent with a monitoring role of GPFG.

### 4.2 Cross-sectional Variation in Average Treatment Effect

Table 5 provides the findings from cross-sectional tests designed to explore the underlying mechanisms of the average treatment effects (Eq. (2)). We predict that monitoring demand—that is, ex-ante firm-level governance and monitoring deficiencies (H2)—and monitoring pressure—that is, voting dissent (H3), exit threat (H4), and threat of public voting dissent (H5)—explain the cross-sectional variations in our average treatment effect.

[Table 5 about here]

Panel A of Table 5 turns to the moderating role of monitoring demand. Consistent with Hypothesis 2, Panel A (Columns 2-3) shows that ex-ante monitoring deficiency significantly moderates our treatment effect (p-values = 0.028 and 0.066). Although weak ex-ante governance quality correlates with a higher treatment effect, this moderation remains insignificant (p-value = 0.114).

Turning to monitoring pressure, Panel B (Column 1) shows that high direct voting dissent does not translate into higher firm performance. Instead, and in contrast to Hypothesis 3, we see that firms with lower direct voting dissent appear to have stronger improvements in firm performance (p-value = 0.084). Next, we observe in Panel B (Column 2) that—consistent with Hypothesis 4—high exit threat significantly moderates our treatment effect (p-value = 0.01). Panel B (Column 3) further shows that the threat of public voting dissent significantly moderates our treatment effect (p-value = 0.003).

In sum, the cross-sectional inferences in Panel B provide empirical support for passive monitoring through exit threat (Hypothesis 4) as well as the threat of public voting dissent (Hypothesis 5). Surprisingly, active monitoring through voting dissent (Hypothesis 3) does not seem to explain our baseline performance effect. One reason for this finding might be that GPFG might only resort to employing actual voting dissent at shareholder meetings if its preceding monitoring interventions, such as private meetings or passive monitoring, fail. Voting dissent might thus be related to a peculiar set of firms, e.g., monitoring-resistant firms with entrenched management. This would be consistent with prior research which shows that shareholder proposals by institutional investors often receive negative

market reactions (e.g., Gillan & Starks, 2000). Although a shareholder proposal is good news to the market, it also signals that preceding (behind-the-scenes) mechanisms have failed (McCahery et al., 2016). One reason why GPFG might remain invested in these firms could be that the fund uses these firms to "showcase" their monitoring willingness, which in turn might exert monitoring threat to other portfolio firms.

## 5. ADDITIONAL ANALYSES

In this section, we address alternative explanations and conduct robustness tests. First, we address the concern that our dependent variable (Tobin's Q) might be driven by a demand shock in 2007. Second, we use more direct proxies of monitoring effects as alternative dependent variables to gauge the monitoring perspective of our firm performance regressions. Third, we test whether the inferences are robust to the use of alternative control samples. Fourth, we use placebo treatment dates to test the validity of the parallel trends assumption. Next, we discuss stock picking activities as an alternative explanation of our inferences. Finally, we assess GPFG's marginal monitoring capacities around the year 2007.

### 5.1 Operating Profitability

We address the concern that our dependent variable (Tobin's Q) might be driven by a demand shock in 2007. Demand shocks are commonly discussed as one explanation for temporary stock price increases around firms' inclusions to blue-chip indices (e.g., Shleifer, 1986). Following the same logic, the sudden increase of GPFG's demand for new equity positions in 2007 might increase stock prices, particularly for smaller and less liquid portfolio firms. Since Tobin's Q includes market capitalization in its numerator, demand shocks might artificially increase its values. We thus re-estimate our main analyses for an alternative proxy of firm performance which is unaffected by potential demand shocks (i.e., operating profitability, *ROA*).

In Table 6, we re-estimate our (three) baseline DiD regressions with *ROA* as the dependent variable. The results show that the estimated average treatment effect, *Post*×*Treated*, is positive and significant for each specification (coefficients between 0.042 and 0.046 and p-values < 0.05). Our ROA findings are thus consistent with the notion that GPFG improves operating profitability through monitoring activities. More importantly, the findings further mitigate concerns that our Tobin's Q findings are biased due to a potential demand shock in 2007 and a subsequent (mechanically-driven) increase in stock prices.

[Table 6 about here]

**5.2 Direct Proxies of Monitoring Effects**

We next re-estimate our baseline DiD model with alternative dependent variables that aim to capture more directly the firm-level monitoring effects by GPFG. We predict and test three non-mutually exclusive channels through which GPFG's monitoring activities might create firm performance, that is, corporate governance quality, litigations risk, and myopic investment behavior. Table 7 reports the corresponding results.

[Table 7 about here]

First, we expect that GPFG improves firm-level corporate governance quality. Prior governance literature, for example, documents that institutional investors as well as financial and non-financial information intermediaries exert monitoring by improving firms' governance structures (e.g., Aggarwal et al., 2011; Chung & Jo, 1996; Irani & Oesch, 2013; Lehmann, 2018). We thus re-estimate our main DiD analysis with a proxy of corporate governance quality as our dependent variable. To assess firm-level corporate governance quality, we use an aggregated governance index (*CorpGov*) developed by Aggarwal et al. (2011). Panel A of Table 7 shows that our treatment effect obtains the predicted positive sign and becomes significant at conventional levels across all three specifications.

Second, we expect the GPFG's monitoring activities to reduce portfolio firms' litigation risk.

Prior auditing literature, for example, suggests that internal control deficiencies and audit complexity are important determinants of litigation risk, and that litigation risk in turn affects audit pricing and audit fees (e.g., Simunic, 1980; Simunic & Stein, 1996; Hoitash et al., 2007; Kim et al., 2012; George et al., 2013; Yen et al., 2018). Since monitoring activities and governance improvements should translate into higher quality of the internal control and audit function, we predict decreasing litigation risk for firms following the inclusion to the GPFG equity portfolio. To measure firm-level litigation risk, we follow prior auditing literature and use the log of audit fees as our proxy; with higher values of audit fees indicating higher litigation risk. Panel B of Table 7 documents that our treatment effect obtains the predicted negative sign and becomes significant at conventional levels across all three specifications.

Third, we expect that GPFG's long-term investment strategy mitigates managerial short-termism and myopic investment behavior of its portfolio firms. Prior accounting literature, for example, suggests that the price pressure from short-term oriented investors promotes myopic investment decisions (e.g., Cohen et al., 2008; Ernstberger et al., 2017; Gigler et al., 2014; Irani & Oesch, 2016; Roychowdhury, 2006; Zang, 2012). In addition, this literature also indicates that myopic investment behavior harms the firm's long-term competitive advantages and curtails its future growth and profitability. We follow this literature and use a measure of real earnings management (REM) to assess myopic investment decisions.[21] We thus re-estimate our DiD analysis with REM as our dependent variable and predict decreasing REM following the inclusion to the GPFG equity portfolio. Panel C of Table 7 weakly supports our expectation documenting a significant and negative treatment effect only for the fully specified model (Column 3).

In sum, we find that treated firms improve in terms of corporate governance quality, litigation risk, and myopic investment behavior following the inclusion to the GPFG investment portfolio in 2007. These findings corroborate the monitoring perspective of our main Tobin's Q inferences and

[21] See Appendix A for the computation of real earnings management.

suggest that GPFG's monitoring creates firm performance in different ways.

### 5.3 Alternative Control Samples

Next, we test whether our main firm performance inferences are robust to the underlying control group composition. So far, we defined control firms as firms that were constantly not part of the GPFG equity portfolio during our sample period. We additionally used propensity score matching to minimize the pre-treatment distance between our treated and control firms. In Appendix B, we re-estimate our baseline DiD analyses for the following three alternative control group compositions: (1) unmatched firms that were constantly *not* part of the GPFG equity portfolio during our sample period (Panel A), (2) unmatched firms that were *constantly* part of the GPFG equity portfolio during our sample period (Panel B), and (3) matched firms that were either *continuously* part or *not* part of the GPFG equity portfolio during our sample period (Panel C). The corresponding findings across all three alternative control group compositions are fully in line with our original findings documented in Table 4.[22]

### 5.4 Parallel Trends Assumption

Next, we use placebo treatment dates to assess the timing of our treatment effect and the validity of the parallel trends assumption. We re-estimate our baseline DiD regressions with yearly-based DiD estimators. The model below summarizes our empirical approach.

[22] The alternative control group specifications might offer three advantages: First, our two unmatched control samples assess the sensitivity of the findings regarding our matching strategy. Second, both unmatched control samples consider different "types" of control firms. In Panel A of Appendix B, we effectively employ the *smallest* firms in the market as control firms (firms that were constantly *not* part of the GPFG equity portfolio during our sample period). In contrast, in Panel B of Appendix B, we effectively employ the *largest* firms in the market as control firms (firms that were constantly part of the GPFG equity portfolio during our sample period). The consistent findings across both "types" of control firms further mitigate the concern that a size-related treatment selection bias might drive our inferences. Third, by using matched control firms based on both "types" of control firms (Panel C of Appendix B), we are able to provide an improved matching 'fit' between our treated and control firms (e.g., treated and matched control firms do not differ in terms of firm performance and size).

$$L(TQ) = \beta_1 + \beta_2 2004 \times Treated + \beta_3 2005 \times Treated + \beta_4 2006 \times Treated + \beta_5 2007 \times Treated + \beta_6 2008 \times Treated + \beta_7 2009 \times Treated + \beta_8 2010 \times Treated + \sum \beta_j Controls_j + \sum \beta_k Fixed\ Effects_k + \varepsilon \quad (3)$$

Since we leave out *2003×Treated*, our model considers the year 2003 as the baseline year. Consequently, each yearly-based DiD estimator uses the year 2003 as its pre-treatment period. The underlying idea is to estimate placebo GPFG investments to validate the timing of the actual treatment event. Given that the parallel trends assumption holds between treatment and control firms, we expect the coefficient estimates on the DiD estimators in the actual pre-treatment period (2004-2006) to remain insignificant. The results presented in Appendix C are consistent with the parallel trends assumption indicating that the pre-treatment placebo effects remain insignificant (t-stats ranging between -0.63 and 1.35).

The corresponding findings for the post-treatment period (2007-2010) suggest that the strongest firm performance improvements appear to show up in the years 2008 and 2009. This might be consistent with the notion that GPFG's monitoring activities translate rather gradually (over a period of two to three years) into firm performance improvements. Taken together, our placebo tests corroborate the expected timing of our treatment effects and do not suggest that the parallel trends assumption is violated.

**5.5 Treatment Selection and Stock Picking**

Our next concern is that stock picking rather than monitoring explains our inferences. The common idea of stock picking is that the observed value creation by institutional ownership is not so much a consequence of the investors' monitoring involvement as it is a reflection of institutional investors' ability to select firms that are expected to outperform the market (e.g., Greenwood & Schor, 2009; Voussem, Schaeffer, & Schweizer, 2015). Although it is difficult to empirically rule out that

stock picking explains our findings, particularly in the absence of an experimental ideal where the treatment assignments are fully random, we provide two test designs that offer descriptive evidence in favor of our monitoring perspective.

First, we re-estimate our baseline firm performance model with the lagged dependent variable as an additional control variable. Following prior literature, this test design aims to mitigate concerns that reverse causality (i.e., stock picking based on past performance) confounds the inferences (e.g., Brown & Caylor, 2006, 2009; Klein, 1998). The results in Panel A of Appendix D corroborate our main inferences and monitoring perspective. Although lagged Tobin's Q becomes highly significant across each specification (t-stats between 7.22 and 13.77), we still obtain a significant and positive treatment effect in the fully specified DiD model (coefficient = 0.143 and t-stat = 3.52).

Second, we investigate whether the treatment effect from our original firm performance regressions exhibits plausible cross-sectional variation with respect to stock picking activities. We test whether treated firms for which GPFG acquired higher voting and ownership rights exhibit stronger performance effects. The rationale behind this test is as follows. Stock picking activities would suggest that GPFG chooses its investment level by allocating more investments in firms with a higher performance and growth outlook.[23] Thus, following stock picking, we would expect to find stronger performance effects for treated firms for which GPFG acquired higher voting and ownership rights. Yet, the cross-sectional prediction based on our monitoring perspective is ex ante less clear. Although active monitoring such as voting dissent would predict a similar cross-sectional variation, passive monitoring through, for example, exit threat in turn would predict the opposite, namely stronger performance effects for treated firms for which GPFG acquired smaller and more liquid equity positions (e.g., Edmans, 2009). Thus, we perceive this test design as suitable to separate between stock picking activities and monitoring activities. The results in Panel B of Appendix D corroborate again our

[23] This implies a twofold selection problem. Although GPFG is limited in its discretion to select treated firms (because GPFG is forced by the revised investment strategy to include small cap firms in its portfolio), it might have discretion to choose the level of investment (e.g., to only acquire either a small ownership stake or a larger ownership stake).

monitoring perspective. Particularly, we find that two out of three proxies of GPFG voting and ownership rights remain insignificant and do not seem to explain the cross-sectional variation in our average treatment effect.

### 5.6 GPFG's Marginal Monitoring Capacities

Our last concern is that the fund's marginal monitoring capacities might decrease with the sudden increase in portfolio holdings. In other words, the sudden change in the fund's investment strategy in 2007 might be too sudden for the fund to retain its monitoring capabilities. Although it is difficult to empirically assess the fund's marginal monitoring capacities, we provide some anecdotal evidence based on a manual search of the fund's annual reports for the years around 2007. Appendix E documents that GPFG's voting activities at shareholder meetings, its total number of employees, and the corresponding management costs increase with the implementation of the revised investment strategy in 2007. At face value, these findings mitigate concerns that GPFG's marginal monitoring capacities might decrease with an increase in its equity portfolio holdings.

## 6. CONCLUSION

Based on a shock in the U.S. investment strategy of the GPFG, we find that firms improve in terms of portfolio firm performance following the inclusion into GPFG's U.S. portfolio. Cross-sectional tests further show that firm performance improves particularly for firms with ex-ante monitoring demand, that is, governance and monitoring deficiencies. In terms of monitoring pressure, we find that while active monitoring—voting dissent at shareholder meetings—yields no explanatory power, passive monitoring—exit threat and the threat of voting dissent—explains our performance improvements. Our findings are generalizable to active and monitoring-sensitive SWFs, as conceptualized by Aguilera et al. (2016) suggesting that these investors create value for portfolio firms by disciplining entrenched management. The findings provide three key implications for the literature.

First, they corroborate the monitoring findings by Dewenter et al. (2011) and deviate from the inferences by Bortolotti et al. (2015) and Kotter et al. (2011). Particularly, Bortolotti et al.'s (2015: 3029) long-term performance and growth findings do not point towards a beneficial monitoring role of monitoring-sensitive SWFs such as the GPFG. Our study suggests that monitoring-sensitive SWFs, as conceptualized by Aguilera et al. (2016), create value for portfolio firms in various ways. To that end, our study also contrasts the undifferentiated fear towards state-owned investments as frequently raised in public debates. Rose (2008: 104), for example, notes:

> Many U.S. firms welcome SWF money, and a number of distressed financial firms have desperately sought SWF investment: SWFs invested nearly $40 billion in U.S. financial institutions in 2007 alone. But desperation invites opportunism, and while many find SWF investment merely humbling and regrettable, others fear it is politically perilous. As the overseers of Norway's SWF observed, recipient nations such as the United States 'don't like us, but they need our money'.

At face value, our findings on the long-term monitoring benefits of GPFG portfolio firms call at least for a more constructive and differentiated discussion on the promise and peril of SWF investments, especially for the U.S. market.

Second, our findings provide detailed insights into the monitoring of GPFG. While prior empirical research on SWFs implicitly equates monitoring with active intervention (e.g., Bortolotti et al., 2015), our findings suggest two alternative and passive monitoring channels: the threat of exit and the threat of voting dissent. These passive monitoring channels reconcile with the particular exposition of monitoring-sensitive SWFs such as the GPFG. For one reason, the GPFG is globally invested in a large number of portfolio firms, which plausibly impedes active monitoring for each portfolio firm. In addition, SWFs—even monitoring-sensitive SWFs such as the GPFG (Rose, 2008: 104)—might have incentives to refrain from actively engaging with portfolio firms, especially when investing abroad, in an attempt to limit their liability of foreignness and to respond to host country concerns about potential political interference.

Third, large institutional investors such as the GPFG become more and more transparent regarding voting and exit intentions and thus publicly visible, which increases—in a rather subtle way—the effectiveness of alternative and passive monitoring means. The latter might come in form of, for example, increased shareholder coordination or scrutiny through business press coverage. Thus, transparency seems to play a key role in this regard. On the one hand, it might limit the liability of foreignness in host countries as well as increase home country legitimacy (Aguilera et al., 2016; Vasudeva, 2013). On the other hand, it might increase the effectiveness of passive monitoring means.

The results are subject to several limitations. First, the inferences rely on the parallel trends assumption, which is crucial for DiD analyses. Although our placebo tests do not suggest a violation of the parallel trends assumption, we cannot completely rule out that confounding effects might affect our inferences. Yet, our firm- and year-fixed effects as well as the alternative use of three different control groups increases our confidence that our identification strategy mitigates time-trend and event-related confounding effects in our setting. Second, the treatment assignments in this setting are not random. GPFG's increasing equity stake has targeted primarily small-cap firms as this class of firms was added to the fund's investable firm universe in 2007. Although analyses using propensity-score matching and alternative control group compositions do not support the concern that observable differences in treated and control firms affect the results, we cannot rule out the possibility that *unobservable* differences might affect our inferences. Third, we only investigate the investment consequences of one particular SWF, for one particular market, for a specific time period. Although we perceive our single-fund setting to be informative for the SWF literature, our findings have to be interpreted carefully in the light of limited generalizability.

Overall, our findings create various research opportunities. First and foremost, future research might address more explicitly the role of transparency for institutional ownership, particularly in the context of public shareholder coordination and proxy voting effectiveness (Kim et al., 2018; McCahery et al., 2016). In addition, and in the spirit of the conceptual model developed by Aguilera et al. (2016),

future research might examine other types of SWFs in well-identified settings to provide more detailed and contextual evidence on investment incentives and portfolio firms' organizational consequences. To that end, cross-country differences between home and host countries—such as cultural distance or language differences (e.g., Cumming & Walz, 2010; Johan et al., 2013), or more generally investor protection standards (e.g., Aggarwal et al., 2011)—as well as target characteristics (listed versus private target firms) might play a crucial role in setting investment incentives and stimulating shareholder engagement.

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## Table 1

Identification Strategy

**Panel A.** GPFG's equity holdings across countries as of 2017

| *Country* | *Rank* | *Market Value (MV, Mio. $)* | *MV (%)* | *Number of firms* | *N (%)* |
|---|---|---|---|---|---|
| United States | 1 | 249,667 | 35.9 | 1,946 | 21.3 |
| United Kingdom | 2 | 67,069 | 9.7 | 408 | 4.5 |
| Japan | 3 | 63,217 | 9.1 | 1,507 | 16.5 |
| Germany | 4 | 42,124 | 6.1 | 197 | 2.2 |
| France | 5 | 35,366 | 5.1 | 230 | 2.5 |
| Switzerland | 6 | 31,930 | 4.6 | 129 | 1.4 |
| China | 7 | 24,781 | 3.6 | 567 | 6.2 |
| Canada | 8 | 15,641 | 2.3 | 224 | 2.4 |
| Australia | 9 | 15,027 | 2.2 | 315 | 3.4 |
| South Korea | 10 | 13,503 | 1.9 | 464 | 5.1 |
| 57 remaining countries | 11-67 | 136,172 | 19.6 | 3,159 | 34.5 |
| Total | | 694,496 | 100.0 | 9,146 | 100.0 |

**Panel B.** GPFG's total U.S. equity holdings over time between 1998 and 2017

| *Year* | *MV (Mio. $)* | *No. of firms* | *Delta (%) in No. of firms* |
|---|---|---|---|
| Average: 1998-2002 | 5,625 | 578 | -0.93 |
| 2003 | 18,558 | 756 | 26.21 |
| 2004 | 24,344 | 865 | 14.42 |
| 2005 | 30,237 | 854 | -1.27 |
| 2006 | 33,867 | 892 | 4.45 |
| **2007** | **51,357** | **2,308** | **158.74** |
| 2008 | 47,226 | 2,266 | -1.82 |
| 2009 | 83,263 | 2,186 | -3.53 |
| 2010 | 97,614 | 2,105 | -3.71 |
| Average: 2011-2017 | 168,683 | 2,014 | -0.95 |

**Panel C.** GPFG's U.S. holdings, investments, and exits

| **Year** | **Holdings** | **Voting activities** | **Investments** | **Exits (voluntary)** | **Residual** |
|---|---|---|---|---|---|
| 2003 | 612 | | 182 | 46 | |
| 2004 | 710 | | 141 | 41 | 3 |
| 2005 | 705 | | 58 | 58 | -22 |
| 2006 | 743 | | 106 | 46 | -10 |
| 2007 | 1977 | | 1278 | 12 | 2 |
| 2008 | 1893 | 1801 | 87 | 100 | -159 |
| 2009 | 1856 | 1821 | 77 | 106 | -14 |
| 2010 | 1823 | 1746 | 60 | 65 | 13 |
| *Sum* | *10319* | *5368* | *1989* | *474* | *-187* |

Notes: Panel C shows only GPFG's U.S. holdings, investments, and exits for which ISIN and industry information is available for each holding (thus, the number of U.S. holdings values vary across Panels B and C). Based on Panel C data, we constructed our GPFG-based moderating variables, that is, voting dissent (*DirDiss*), exit threat (*ExitThreat*), and threat of voting dissent (*IndDiss*). Information about GPFG's voting activities is only available from 2008 onwards. Residual includes IPOs, delistings, and bankruptcies.

## Table 2

Sample Composition

**Panel A.** Sample selection

| **Selection criteria** | **GPFG portfolio observations** | **Overall sample observations** |
|---|---|---|
| GPFG U.S. holdings (2003-2010) | 12,232 | |
| ISIN unavailable | 12,024 | |
| Worldscope / Datastream data unavailable | 8,587 | 37,398 |
| Governance data unavailable | 3,946 | 14,160 |
| Balanced panel: Unmatched | 1,760 | 5,120 |
| Exclude firms which are constantly part of GPFG portfolio | 824 | 4,184 |
| Balanced panel: Matched (with replacement) | 820 | 5,272 |
| **Final Sample (firm-years)** | | **5,272** |

**Panel B.** Sample distribution

| *Number of firms* | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **Sum** |
|---|---|---|---|---|---|---|---|---|---|
| **Full sample** | | | | | | | | | |
| – all firms | 659 | 659 | 659 | 659 | 659 | 659 | 659 | 659 | 5,272 |
| – with GPFG ownership | 0 | 0 | 0 | 0 | 205 | 205 | 205 | 205 | 820 |
| **Treatment group (TG)** | | | | | | | | | |
| – Treated firms | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 205 | 1,640 |
| – with GPFG ownership | 0 | 0 | 0 | 0 | 205 | 205 | 205 | 205 | 820 |
| **Control group (TG)** | | | | | | | | | |
| – Control firms | 454 | 454 | 454 | 454 | 454 | 454 | 454 | 454 | 3,632 |
| – with GPFG ownership | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Notes: Control group comprises matched control firms. We employ a propensity score matching procedure to minimize the potential pre-treatment distance between our control firms and our treatment firms along observable firm characteristics. We match treatment and control firms based on pre-treatment period values of firm size, firm performance (Tobin's Q), free float, and industry membership. Compared to unmatched control firms, our matching procedure results in control firms which are more similar to our treatment firms along observable firm characteristics and thus mitigates biased estimates due to functional form misspecification (Shipman, Swanquist, and Whited, 2017).

## Table 3

Summary statistics for the treatment and control samples

| *Sample period: 2003-2006* | **Treated firms** (N=820) | | | Diff. Mean | **Control firms** (N=1,816) | | |
|---|---|---|---|---|---|---|---|
| | *Mean* | *Min* | *Max* | *t-stat* | *Mean* | *Min* | *Max* |
| **Firm performance variables** | | | | | | | |
| Ln(TQ) | 0.68 | -0.53 | 2.33 | *2.84* | 0.61 | -0.77 | 4.05 |
| ROA | 0.05 | -0.77 | 0.43 | *4.08* | 0.02 | -2.18 | 0.43 |
| **Governance variables** | | | | | | | |
| CorpGov | 0.59 | 0.32 | 0.85 | *6.36* | 0.57 | 0.32 | 0.83 |
| Ln(AF) | 1.54 | 0.00 | 3.09 | *3.57* | 1.41 | 0.00 | 2.94 |
| Ln(PV) | 0.53 | 0.00 | 0.69 | *14.79* | 0.32 | 0.00 | 0.69 |
| **Main control variables** | | | | | | | |
| Ln(TA) | 19.90 | 16.79 | 23.70 | *3.15* | 19.73 | 14.44 | 23.90 |
| LEV | 0.19 | 0.00 | 1.07 | *-6.37* | 0.28 | 0.00 | 1.66 |
| PPE_TA | 0.18 | 0.00 | 5.60 | *-6.45* | 1.09 | 0.00 | 18.85 |
| DPS | 0.26 | 0.00 | 0.95 | *1.21* | 0.25 | 0.00 | 0.95 |
| FF | 81.36 | 0.00 | 100.00 | *2.62* | 79.04 | 0.00 | 100.00 |
| **GPFG variables (for total effect models in Table 5)** | | | | | | | |
| Dissent | 0.03 | 0.00 | 0.35 | | - | - | - |
| ExitThreat | 0.04 | 0.01 | 0.06 | | - | - | - |
| DissentThreat | 0.04 | 0.01 | 0.06 | | - | - | - |

Notes: This table provides summary statistics for our treated and control firms in the period prior to the change in the GPFG investment strategy (prior to 2007). The GPFG variables are based on post investment years and are used to calculate the moderator effects in Table 5. For variable definitions, see Appendix A. For the underlying sample selection, see Table 2.

## Table 4

Baseline Results: Change in GPFG investment strategy and Tobin's Q

**Panel A.** Univariate DiD analysis

| | **Treatment group** (N=1,640) | | | **Control group** (N=3,632) | | | |
|---|---|---|---|---|---|---|---|
| | Pre-Treatment Mean | Post-Treatment Mean | Difference (Post-Pre) | Pre-Treatment Mean | Post-Treatment Mean | Difference (Post-Pre) | Diff. in Diff. |
| Ln(TQ) | 0.68 | 0.59 | -0.09*** | 0.61 | 0.42 | -0.19*** | 0.10*** |

**Panel B.** DiD regressions

| *Dependent variable* | (1) Ln(TQ) | (2) Ln(TQ) | (3) Ln(TQ) |
|---|---|---|---|
| *DiD estimator* | | | |
| Post | -0.194*** | | |
| | (-3.94) | | |
| Treated | 0.072 | | |
| | (0.96) | | |
| Post×Treated | 0.098* | 0.098* | 0.162*** |
| | (1.82) | (1.76) | (2.80) |
| *Control variables* | | | |
| Ln(TA) | | | -0.322*** |
| | | | (-6.39) |
| LEV | | | -0.245** |
| | | | (-2.39) |
| PPE_TA | | | 0.015*** |
| | | | (2.75) |
| DPS | | | -0.168 |
| | | | (-0.50) |
| FF | | | 0.002 |
| | | | (1.31) |
| Ln(AF) | | | 0.146*** |
| | | | (3.80) |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 2.80% | 78.22% | 80.70% |
| N | 5272 | 5272 | 5272 |

Notes: The coefficient on *Post×Treated* captures the DiD effect. Firm and year fixed effects control for the underlying main effects in columns 2 and 3 (*Post* and *Treated*). Tobin's Q (*Ln(TQ)*) is the dependent variable and measures firm performance. Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF)*). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the _firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## Table 5

Cross-Sectional Variation in Average Treatment Effect

**Panel A.** Firm-level *Monitoring Demand*

| *Dependent variable* | (1) Ln(TQ) | (2) Ln(TQ) | (3) Ln(TQ) |
|---|---|---|---|
| *Conditional variable* | Low Corporate Governance (1 = CorpGov below median 0 = above median) | Low Analyst Following (1 = Ln(AF) below median 0 = above median) | Low Proxy Voting Coverage (1 = Ln(PV) below median 0 = above median) |
| Post×Treated×Conditional var. (=1) | 0.198*** | 0.218*** | 0.311*** |
| | (3.01) | (3.33) | (2.94) |
| Post×Treated×Conditional var. (=0) | 0.130** | 0.115* | 0.150*** |
| | (2.25) | (1.92) | (2.61) |
| F-test for diff. [p-value] | [0.114] | [0.028] | [0.066] |
| Control variables | Included | Included | Included |
| Firm & year fixed effects | Included | Included | Included |
| Adj. $R^2$ | 80.7% | 80.8% | 80.7% |
| N | 5272 | 5272 | 5272 |

**Panel B.** Firm-level *Monitoring Pressure*

| *Dependent variable* | (1) Ln(TQ) | (2) Ln(TQ) | (3) Ln(TQ) |
|---|---|---|---|
| *Conditional variable* | High Voting Dissent (1=Dissent above median 0 = below median) | High Exit Threat (1=ExitThreat above median 0 = below median) | High Threat of Voting Dissent (1=DissentThreat above median 0 = below median) |
| Post×Treated×Conditional var. (=1) | 0.112* | 0.193*** | 0.201*** |
| | (1.70) | (3.24) | (3.37) |
| Post×Treated×Conditional var. (=0) | 0.190*** | 0.067 | 0.060 |
| | (3.21) | (0.98) | (0.91) |
| F-test for diff. [p-value] | [0.084] | [0.010] | [0.003] |
| Control variables | Included | Included | Included |
| Firm & year fixed effects | Included | Included | Included |
| Adj. $R^2$ | 80.7% | 80.8% | 80.8% |
| N | 5272 | 5272 | 5272 |

Notes: Results from estimating an extended version of the baseline DiD model. In comparison to the baseline DiD model, the models in Table 5 include additional interaction terms based on different conditional variables to assess the cross-sectional variation in the baseline treatment effect. Firm and year fixed effects control for the underlying main effects (*Post*, *Treated*, and Conditional var. (=1)). Tobin's Q (*Ln(TQ)*) is the dependent variable and measures firm performance. Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF*)). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## Table 6

Operating Profitability

| *Dependent variable* | (1)<br>ROA | (2)<br>ROA | (3)<br>ROA |
|---|---|---|---|
| Post | -0.050** | | |
| | (-2.41) | | |
| Treated | 0.029* | | |
| | (1.83) | | |
| Post×Treated | 0.046** | 0.046** | 0.042** |
| | (2.12) | (2.06) | (2.58) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 0.25% | 58.6% | 62.5% |
| N | 5272 | 5272 | 5272 |

Notes: This table provides results from estimating our baseline DiD model with operating profitability (*ROA*) as the dependent variable. Firm and year fixed effects control for the underlying main effects (*Post* and *Treated*). Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF*)). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## Table 7

Direct Proxies of Monitoring Effects

**Panel A.** Corporate Governance (composite measure)

| *Dependent variable* | (1) CorpGov | (2) CorpGov | (3) CorpGov |
|---|---|---|---|
| Post | 0.055*** | | |
| | (7.51) | | |
| Treated | 0.027* | | |
| | (1.74) | | |
| Post×Treated | 0.015* | 0.015* | 0.015** |
| | (1.77) | (1.69) | (1.99) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 8.8% | 88.2% | 88.9% |
| N | 3954 | 3954 | 3954 |

**Panel B.** Litigation Risk (log of audit fees)

| *Dependent variable* | (1) AuditFees | (2) AuditFees | (3) AuditFees |
|---|---|---|---|
| Post | 0.001** | | |
| | (2.17) | | |
| Treated | -0.000 | | |
| | (-0.15) | | |
| Post×Treated | -0.001*** | -0.001*** | -0.001*** |
| | (-3.75) | (-3.62) | (-2.43) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 2.3% | 73.7% | 76.9% |
| N | 4016 | 4016 | 4016 |

**Panel C.** Myopic Investment Behavior (real earnings management)

| *Dependent variable* | (1) REM | (2) REM | (3) REM |
|---|---|---|---|
| Post | 0.008 | | |
| | (0.24) | | |
| Treated | -0.025 | | |
| | (-0.35) | | |
| Post×Treated | -0.014 | -0.014 | -0.080** |
| | (-0.38) | (-0.37) | (-1.98) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 0.1% | 80.4% | 83.9% |
| N | 3504 | 3504 | 3504 |

Notes: This table provides results from estimating our baseline DiD model with alternative proxies of monitoring as the dependent variable, i.e., corporate governance (*CorpGov*), audit fees (*AuditFees*), real earnings management (*REM*). As indicated, firm and year fixed effects control for the underlying main effects (*Post* and *Treated*). Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF)*). In the REM test, we additionally include discretionary accruals (*DAC*) as a control variable (e.g., Ernstberger et al., 2017). For variable definitions, see

Appendix A. Since the alternative dependent variables are not available for all of our treated and control firms, we estimate the models on balanced subsamples. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

# APPENDIX A

Variable Definitions

**Panel A.** Main dependent, control, and moderating variables

| Variable | Description | Data source |
|---|---|---|
| *Dependent variables* | | |
| Ln(TQ) | Log of average fiscal year's market value (*dwta+mv-dwse*) to average fiscal year's total assets (*dwta*). | Datastream |
| ROA | Net income before extraordinary items (*wc04001*) to total assets (*wc02999*). | Worldscope |
| *Control and moderating variables* | | |
| Ln(TA) | Log of the average fiscal year's total assets (*dwta*). | Datastream |
| Ln(AF) | Log of number of analyst following a firm (recno). | I/B/E/S |
| LEV | Long-term debt (*wc03251*) to total assets (*wc02999*). | Worldscope |
| PPE_TA | Property, plant, and equipment (*wc02501*) to total assets (*wc02999*) | Worldscope |
| DPS | Dividends per share (*wc05101*). | Worldscope |
| FF | Percentage of shares in free float (*noshff*). | Worldscope |
| CorpGov | Aggregated measure of corporate governance including board, audit, compensation, and shareholder rights issues (available from 2004-2008). | Aggarwal et al. (2011) |
| Ln(PV) | Log of number of proxy voting analysts per firm (including ISS and Glass Lewis proxy voting coverage information). | ISS/GL |
| Dissent | Percentage of GPFG 'vote against' annual general meeting proposals (GPFG voting data is available from 2008 to 2012) | Constructed/ GPFG |
| ExitThreat | Percentage of GPFG exits (complete termination of investment position) per industry and year. | Constructed/ GPFG |
| DissentThreat | Percentage of GPFG voting dissent (Dissent) per industry and year. Firms with actual voting dissent are set to zero to exclusively account for spillover effects to peer firms in the same industry and year. | Constructed/ GPFG |
| *Additional variables* | | |
| AuditFees | Log of audit fees (wc01801). | Worldscope |
| RAM | Real earnings management is summary measure based on abnormal production costs and abnormal discretionary expenses (see Panel B). | Constructed/ Worldscope |
| DAC | Discretionary accruals are the residuals from a cross-sectional modified Jones model based on the cash flow approach and total accruals (e.g., Jones, 1991; Botsari and Meeks, 2008; Lehmann, 2016). Total accruals are defined as net income (wc01751) – cash from operations (wc04860). To estimate the modified Jones model, we use net sales of revenues (wc01001), receivables (wc02051), and property, plant & equipment (wc02301). | Constructed/ Worldscope |
| GPFG_OW | Log of GPFG's ownership stake (% in shareholdings) | GPFG |
| GPFG_IR | Log of GPFG's investment risk (market value of investment in USD) | GPFG |

## APPENDIX A (*continued*)

**Panel B.** Real earnings management

Following prior accounting and finance literature (e.g., Roychowdhury, 2006; Cohen et al., 2008; Zang, 2012; Irani and Oesch, 2016; Ernstberger et al., 2017), we use a summary measure based on abnormal production costs and abnormal discretionary expenses to assess real earnings management activities. To estimate abnormal production costs, we use the following regression model for each 12-factor Fama & French industry group and year:

$$\mathrm{PROD}_{it}/\mathrm{TA}_{it-1} = \delta_1 + \delta_2(1/\mathrm{TA}_{it-1}) + \delta_3(\mathrm{SALES}_{it}/\mathrm{TA}_{it-1}) + \delta_4(\Delta\,\mathrm{SALES}_{it}/\mathrm{TA}_{it-1}) + \delta_5(\Delta\,\mathrm{SALES}_{it-1}/\mathrm{TA}_{it-1}) + \varepsilon_i \quad \text{(a)}$$

The dependent variable PROD stands for production costs and is measured as the sum of costs of goods sold and the change in inventory during the respective year. SALES stands for firm's net sales. The residuals of regression model (a) are the abnormal production costs (APROD) with higher values indicating more severe real earnings management.

To estimate abnormal discretionary expenses, we use the following regression model for each 12-factor Fama & French industry group and year:

$$\mathrm{DEXP}_{it}/\mathrm{TA}_{it-1} = \varphi_1 + \varphi_2(1/\mathrm{TA}_{it-1}) + \varphi_3(\mathrm{SALES}_{it-1}/\mathrm{TA}_{it-1}) + \varepsilon_i \quad \text{(b)}$$

The dependent variable DEXP represents discretionary expenses and is defined as the sum of selling, general & administrative (SG&A) expenses, R&D expenses, and advertising expenses. SALES is defined as for model (i). The residuals of regression model (b) are the abnormal discretionary expenses (ADEXP) with lower values indicating more severe real earnings management. Following prior literature, we aggregate the two variables into one proxy (REM) to measure real earnings management activities (e.g., Zang, 2012; Ernstberger et al., 2017). We thus define REM as the sum of APROD and (-1*ADEXP), with higher values of REM indicate more severe real earnings management.

Notes: All continuous dependent and control variables in are winsorized at the 1% (99%) level to control for outliers.

## APPENDIX B

Alternative Control Groups

**Panel A.** Firms constantly not part of the GPFG equity portfolio (unmatched)

| *Dependent variable* | (1)<br>Ln(TQ) | (2)<br>Ln(TQ) | (3)<br>Ln(TQ) |
|---|---|---|---|
| Post×Treated | 0.073**<br>(2.28) | 0.073**<br>(2.13) | 0.111***<br>(3.40) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 2.3% | 69.6% | 72.4% |
| N | 4184 | 4184 | 4184 |

**Panel B.** Firms constantly part of the GPFG equity portfolio (unmatched)

| *Dependent variable* | (1)<br>Ln(TQ) | (2)<br>Ln(TQ) | (3)<br>Ln(TQ) |
|---|---|---|---|
| Post×Treated | 0.068*<br>(1.93) | 0.068*<br>(1.80) | 0.069*<br>(1.84) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 3.4% | 74.3% | 77.2% |
| N | 2584 | 2584 | 2584 |

**Panel C.** Firms constantly part and constantly not part of the GPFG equity portfolio (matched)

| *Dependent variable* | (1)<br>Ln(TQ) | (2)<br>Ln(TQ) | (3)<br>Ln(TQ) |
|---|---|---|---|
| Post×Treated | 0.064*<br>(1.96) | 0.064*<br>(1.88) | 0.109***<br>(3.41) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 1.3% | 79.9% | 82.1% |
| N | 5760 | 5760 | 5760 |

Notes: This appendix replicates our baseline DiD analyses for a sample comprising an alternative control group Tobin's Q (*Ln(TQ)*) is the dependent variable and measures firm performance. Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF*)). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the _firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## APPENDIX C

Timing of the Treatment Event and Parallel Trends Assumption

| *Dependent variable* | (1) Ln(TQ) | |
|---|---|---|
| | Coefficient | T-Stat. |
| Post (year=2004) × Treated | -0.042 | (-0.63) |
| Post (year=2005) × Treated | 0.023 | (0.36) |
| Post (year=2006) × Treated | 0.095 | (1.35) |
| Post (year=2007) × Treated | 0.154* | (1.74) |
| Post (year=2008) × Treated | 0.202** | (2.28) |
| Post (year=2009) × Treated | 0.209** | (2.24) |
| Post (year=2010) × Treated | 0.167* | (1.79) |
| Control variables | Included | |
| Firm- & year-fe | Included | |
| Adj. $R^2$ | 80.8% | |
| N | 5272 | |

Notes: Replication of baseline model (Table 4) with yearly placebo treatments. Since *2003×Treated* is excluded, the regressions consider the year 2003 as the baseline year. Consequently, each yearly-based DiD estimator uses the year 2003 as its pre-treatment period. Firm and year fixed effects control for the underlying main effects (*years* and *Treated*). Tobin's Q (*Ln(TQ)*) is the dependent variable and measures firm performance. Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF)*). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## APPENDIX D

Stocking Picking

**Panel A.** Baseline DiD analyses with lagged dependent variable as additional control

| *Dependent variable* | (1) Ln(TQ) | (2) Ln(TQ) | (3) Ln(TQ) |
|---|---|---|---|
| Post×Treated | 0.030 | 0.068* | 0.143*** |
| | (1.33) | (1.89) | (3.52) |
| Lag_Ln(TQ) | 0.808*** | 0.382*** | 0.352*** |
| | (13.77) | (7.22) | (7.26) |
| Control variables | None | None | Included |
| Firm & year fixed effects | None | Included | Included |
| Adj. $R^2$ | 69.0% | 81.9% | 83.5% |
| N | 5261 | 5261 | 5261 |

**Panel B.** Cross-sectional variation regarding GPFG's acquired ownership and voting rights

| *Dependent variable* | (1) Ln(TQ) | (2) Ln(TQ) | (3) Ln(TQ) |
|---|---|---|---|
| *Conditional variable* | High GPFG Ownership Rights (1=GPFG_OW above zero 0 = below zero) | High GPFG Voting Rights (1=GPFG_VR above zero 0 = below zero) | High GPFG Investment Risk (1=GPFG_IR above median 0 = below median) |
| Post×Treated×Conditional var. (=1) | 0.148** | 0.144** | 0.220*** |
| | (2.36) | (2.31) | (3.67) |
| Post×Treated×Conditional var. (=0) | 0.175*** | 0.179*** | 0.105* |
| | (2.88) | (2.94) | (1.67) |
| F-test for diff. [p-value] | [0.535] | [0.419] | [0.007] |
| Control variables | Included | Included | Included |
| Firm & year fixed effects | Included | Included | Included |
| Adj. $R^2$ | 80.7% | 80.7% | 80.8% |
| N | 5272 | 5272 | 5272 |

Notes: Panel B reports results from estimating an extended version of the baseline DiD model. In comparison to the baseline DiD model, they include additional interaction terms based on different conditional variables to assess the cross-sectional variation in the baseline treatment effect. Firm and year fixed effects control for the underlying main effects (*Post*, *Treated*, and Conditional var. (=1)). Tobin's Q (*Ln(TQ)*) is the dependent variable and measures firm performance. Control variables include firm size (*Ln(TA)*), financing structure (*LEV*), dividend per share (*DPS*), asset structure (*PPP_TA*), ownership structure (*FF*), and financial analyst following (*Ln(AF*)). For variable definitions, see Appendix A. For the underlying sample selection, see Table 2. All regression models have standard error that are heteroskedasticity robust and one-way clustered at the firm level. Reported values: coefficient (t-value) *** (**) (*) indicates significance levels at 1% (5%) (10%), two-tailed.

## APPENDIX E

GPFG's Global Voting and Staffing Policy around 2007

| | ***GPFG's global voting activities*** | | | ***GPFG's global staffing policy*** | | |
|---|---|---|---|---|---|---|
| *Year* | *All meetings* | *Voted meetings (abs.)* | *Voted meetings (%)* | *International offices* | *Total employees* | *Costs (Mio. NOK)* |
| 2005 | 3452 | 2705 | 78 | 2 | 128 | 1,239 |
| 2006 | 3797 | 2928 | 79 | 2 | 132 | 1,526 |
| 2007 | 4731 | 4202 | 89 | 3 | 178 | 1,789 |
| 2008 | 8800 | 7871 | 89 | 3 | 217 | 2,164 |
| 2009 | 11221 | 10095 | 90 | 3 | 249 | 3,228 |
| 2010 | 11518 | 10948 | 95 | 4 | 278 | 2,959 |
| 2011 | 11666 | 11300 | 97 | 4 | 315 | 2,539 |

Notes: Information on GPFG's ownership positions, voting policies, and staffing activities is taken from GPFG's annual reports (accessible online on the GPFG's website). Costs stand for GPFG's total management costs (including internal and external costs and compensation expenses for the fund's equity and fixed income management. Global voting activities (Panel C) include annual general meetings and special meetings.