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Finance Working Paper N° 625/2019
August 2019

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ECGI Working Paper Series in Finance

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Abstract

In 2012, Norway's sovereign wealth fund (NBIM) unexpectedly announced that it would foster specific corporate governance practices in its portfolio firms. We use this sudden change in aggregate governance preferences as a natural experiment to understand shareholder influence among active investors. We show how the fund re-balanced its portfolio to achieve this governance objective and how firms reacted to it. We also examine the heterogenous response of firms to this institutional pressure. This paper advances existing research on active owners' influence on firms, and particularly on how systemic governance changes can be achieved through universal investor's policies.

Keywords: Corporate Governance; Institutional Ownership; Sovereign Wealth Funds

JEL Classifications: F30, G32, G34

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August 13, 2019

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Institutional investors are becoming increasingly influential on firm policies. The raise in intermediated investment, coupled with growing investors' demand for engagement has fueled institutional shareholder activism. Among institutional investors, those with universal holdings are of particular interest. Their investment policies and preferences can affect investee firm policies in a *systemic* way affecting the broad population of firms in their portfolio. This global influence can go beyond the specific needs of a given firm and, instead, coordinate firms into new standards or a new equilibrium. In particular, large *active institutional owners* (pension funds, mutual funds and sovereign wealth funds) tend to hold broad, diversified, long-term oriented portfolios, with infrequent re-balancing akin to index funds when it comes to the scope of shareholder engagement (called "quasi-indexers" in Bushee, 1998). However, active owners also have generally the ability to deviate from their stated investment benchmark, thus sharing some characteristics of activist investors. In particular, they have the potential of entry, augment the shareholder stake, and present a reasonable "threat of exit," all of which represent engagement tactics to influence firm policies. As such, their preferences about corporate governance practices can affect firms in a systemic way, shaping entire portfolios rather than focusing on firm-specific interventions.[1]

While there is a growing literature exploring the preferences and interactions between active owners and firms, isolating the direct systemic influence of active owners on firms' policies has proved difficult, given that both the investors' decisions and firms' policies are jointly co-determined.[2] A correlation between investor preferences and firm policies could be driven by the investment policy of the investor, by firms catering to the specific preferences of the investor or by the adjustment of the investor expectations to the characteristics of each firm. This creates an inherent problem of endogeneity. To disentangle the causal impact of the investor's preferences on firm policies, one would need an unexpected change of investor preferences that operates across all firms in a systematic way.

[1] We therefore depart from the literature that focuses on specific firm interventions (as in Dimson, Karakas, & Li, 2015) or preferences that apply to groups of firms (as in Barber 2007).

[2] For example, Parrino, Sias, and Starks (2003) explore the entry and management strategies of institutional investors. Edmans and Manso (2011) and Duan and Jiao (2016) show theoretically how exit strategies that are incentive-compatible for investors can affect firms' actions. Bushee, Carter, and Gerakos (2014) and Aggarwal, Erel, Ferreira, and Matos (2011) provide evidence on how investors and firms match in terms of their policies and preferences. Dimson, Karakas, and Li (2015) find that institutional investor activism on specific firms leads to changes in firms' CSR policies and is followed by positive abnormal stock returns.

In this paper, we exploit a sudden change in the investment stance of Norway's sovereign wealth fund with respect to corporate governance practices to shed light on the systemic influence of active owners over investee firm policies. Sovereign wealth funds (SWFs) are a class of active owners. They are particularly useful to understand shareholder influence because they often have time-varying specific views about how to achieve returns or even investment preferences that go beyond pure financial returns.[3]

In November 2012, the Norges Bank Investment Management (hereafter NBIM), who manages the Norway's SWF, issued a note requesting all its portfolio firms to meet their new corporate governance expectations by focusing on several very specific managerial and control rights' dimensions.[4] This announcement reflects the culmination of discussions within the fund during autumn 2011 and early 2012 aimed to define a set of specific governance expectations that NBIM considered "good corporate governance" and believed were strongly aligned with sustainable long-term financial performance. The subsequent published note on the fund's governance priorities was unexpected before 2011, offering a useful quasi-natural experiment. Thereafter, the fund changed its preferences on governance practices, beyond financial returns. Some of these expected governance practices were not in place in NBIM portfolio firms and NBIM sought to modify its portfolio firms' corporate governance by requesting the adoption these new governance practices. Our findings demonstrate that NBIM was able to prompt changes in the governance practices of the firms they invest in by significantly shifting their overall stance on their "good corporate governance practices." This quasi-natural experiment is therefore an ideal setting to answer the broader question, namely, how do active owners affect firm governance policies in a systemic way.

We start our analysis by selecting from the universe of indices provided by EIKON, the index that most closely captures the corporate governance dimensions requested in the 2012 NBIM's corporate governance announcement. The score in the index indicates the degree to which NBIM-defined "good corporate governance practices" are adopted, with

[3] In this paper, we focus on the Norwegian sovereign wealth fund's fostering of "good corporate governance" as part of our empirical strategy. Other examples are New Zealand's fund open stance towards environmentally friendly investments or Qatar's fund objective of improving the country branding.
[4] https://www.nbim.no/en/publications/discussion-notes/2012/corporate-governance/ 19 November 2012

higher index scores equating to closer adoption to the NBIM governance expectations. We then show using a difference-in-differences estimation strategy how, indeed, the overall governance index of NBIM's portfolio firms increased after the announcement, relative to that of firms outside the portfolio. Being agnostic on whether this is an enhancement in the "governance quality" of the fund, we document that the fund investments were more aligned with its new governance expectations. This increase in the overall governance index of NBIM can be analytically decomposed into three components: i) The change in the composition of the firms that integrate the fund's portfolio, ii) the increase in the governance index of those firms that were already present in the portfolio at the time of the announcement, and iii) the new correlation between changes towards a higher governance index and changes in the fund's investment weights.

This decomposition provides a useful roadmap to explore the consequences of the NBIM governance policies' announcement in a regression analysis. First, we analyze how the investment policy of the fund changed after the announcement. The fund increased its investments in firms that have a higher governance index (i.e., are inherently better governed according to the fund preferences), and decreased its investments in firms with a lower governance index (i.e., inherently worse governance). The effect is stronger on those components of the fund's investment in which the fund has more discretion, demonstrating that this was a deliberate shift in investment strategy. We also provide suggestive evidence of NBIM's change in preferences by showing that NBIM is willing to trade-off "good" governance and returns after 2012. Second, we examine how firms, which were part of NBIMs portfolio at the time of the announcement, changed their corporate governance to meet the fund's corporate governance expectations. Specifically, we find that firms increased their governance index value, aligning themselves better with the fund's new governance preferences. This effect is present both, in the extensive margin (i.e., firms inside versus outside of the portfolio) and in the intensive margin (i.e., different levels of importance within the portfolio). Both, the importance of a firm within the NBIM portfolio and the importance of NBIM as a fraction of the firm's shareholders, explain this reaction. We further explore the heterogenous reaction of firms according to different firm and institutional characteristics. Firms that do not react to the announcement tend to be larger, more liquid and have good financial performance. We also show that firms in countries with low pre-

existing quality of governance do not improve their governance index. Moreover, within each country, firms in the lowest preexisting governance index bracket do not react to the NBIM announcement. Finally, we explore the new correlations between changes in governance and changes in the investment stance of the fund and uncover that, after the 2012 announcement, changes in governance and changes in investment weights become more correlated. Taken together, our results illustrate that all three components are crucial to explain the overall improvement in the governance index of the fund. Quantitatively, the most important explanatory factor to the change in the governance index of NBIM is the portfolio firms' reaction to the announcement.

Our work contributes to the existing literature in several ways. First, by focusing on a systemic portfolio-wide change in preferences of a universal investor, we are able to causally estimate the firms' reaction to investor preferences that are somewhat exogenous to the firms' characteristics. Second, while most previous research is interested on the performance market outcomes from active and activist investors, we show how a stated change in the investment preferences of an active investor (NBIM) was followed by an systemic effective change in the corporate policies of the firms they own. Third, we demonstrate how this change in active investors' investment preferences can affect the composition of its portfolio within a short period of time. Fourth, we shed light on an understudied "principal" actor—SWFs—relevant among the heterogeneous matrix of institutional investors who currently own the majority of shares of listed companies worldwide. Finally, we explore how SWFs, with typically dual objectives of maximizing financial returns and increasing global influence, may act as "engaged shareholders" in the long run affecting global practices in a systemic way.

I. RELATED LITERATURE

Institutional investors and their influence on corporations has been studied extensively for the last decades (Maug, 1998; Bushee, 2001; Gillan & Starks, 2007; Brav, Jiang, & Kim, 2010; Denes, Karpoff, McWilliams, 2017). Most of the attention has focused on highly visible institutional investors such as hedge funds accumulating substantive ownership and engaging in highly visible activists' campaigns (Bebchuk, Brav, & Jiang,

2015). The scholarly debate questions their impact on companies' stock and operating performance (Bebchuk, Cohen, & Ferrell, 2009; Brav, Jiang, Ma, & Tian, 2018). At the other end of the activism spectrum are institutional owners passively managed such as index funds who do not have the ability to discipline managers and hence are exposed to higher agency costs (Schmidt & Fahlenbrach, 2017). Appel, Gormley, & Keim (2016) suggest a point of interaction between these two forms of influence when passive investors can vote with activist investors to enact change. Somewhere in between these two poles are institutional investors holding minority positions in hundreds or thousands of companies (i.e., universal owners) and with the potential to exert an influential role on portfolio companies via *active institutional ownership* (Aghion, Van Reenen, & Zingales, 2013). These active owners often seek to enhance portfolio firms' corporate governance practices because it is believed to lead to better firm financial performance. Thus, we classify the universe of institutional investors in three categories: activist investors, active owners and passive owners.

The focus of our paper are active owners. These universal investors tend to have long-term mandates with diversified minority holdings, and as such, they are incentivized to monitor managers and strengthen minority protection rights in order to increase the value of their assets under management (Del Guercio & Hawkins, 1999). Given their widely diversified portfolios, and the impossibility to research every detailed firm policy choice, active owners benefit from setting best practice blueprints on corporate governance policies and monitor investees against these expectations (Appel et al., 2016; Barber, 2007; Black, 1999). Furthermore, active owners exercise "voice" strategies in various ways including formal engagements via proxy voting and informal behind-the-scenes conversations with managers and board members (Appel et al., 2016; Becht, Franks, Mayer, & Rossi, 2009; Dimson et al., 2015; McCahery, Sautner, & Starks, 2016).

If we turn to our empirical setting, NBIM utilizes both engagement strategies to influence its portfolio firms. Given its wide exposure to listed companies globally, in November 2012, NBIM put forward its own blueprint on corporate governance expectations with the aim of improving in a systemic way throughout its portfolio what NBIM defines as good corporate governance. This ambitious stewardship goal is complemented with mechanisms and processes that help NBIM to monitor and engage with specific companies using "voice" strategies (Briere, Pouget, & Ureche, 2018). Additionally, active owners,

including NBIM, can discipline managers using legitimate "exit" strategies, via selling their own blocks of shares or by persuading other investors to join the selling (Edmans & Manso, 2011).

Thus, institutional investors classified as active owners have focused their monitoring efforts on overseeing governance and management quality to strengthen corporate governance across their portfolio. The logic is that these institutional investors, rather than exiting multiple companies, could benefit more by targeting sets of companies underperforming in firm-level governance issues, and through engagement and voting power promote systemic governance enhancements. Either directly or through proxy advisors, active owners vote, coordinate and engage with portfolio managers and boards in order to improve corporate governance upgrading practices such as board independence, board diversity or minority shareholder protection (Gillan & Starks, 2000; Gompers, Ishii, Metrick, 2003; Bebchuk et al., 2009).

II. CONTEXT: NORGES BANK INVESTMENT MANAGEMENT

SWFs (Sovereign Wealth Funds) are government-owned investment funds without explicit pension liabilities that typically pursue long-term investment strategies (Aguilera et al., 2016). An important characteristic of SWFs is that they often follow multiple objectives (Clark, Dixon, & Monk, 2013). These include financial returns—similar to other institutional investors—but also broader economic and development returns for their countries often motivated by government's long-term policies (Bernstein, Lerner, & Schoar, 2013; Megginson & Fotak, 2015).

In this paper, we focus on NBIM, which manages the world's largest SWF, the Government Pension Fund – Global, by assets under management. In spite of the term "pension" in its name, it does not pay pensions but instead it preserves and builds financial wealth for future generations to prepare for the time when oil and natural gas reserves are depleted. As of May 2019, NBIM has assets under management worth 8,938 billion Kroner (US$ 1.1 trillion), and has minority positions in more than 9,000 companies in 73 countries. Equity investments represent more than 65% of its portfolio and it owns on average 1.3% of all equities listed globally. NBIM fits nicely in the above description of an active owner as it lacks the capacity nor has incentives to initiate costly and resource-consuming shareholder

campaigns with portfolio companies underperforming yet is able to engage in a systemic way by setting global corporate governance expectations.

NBIM has an explicit publicly disclosed investment strategy and uses the FTSE Global Cap index as its benchmark. Norwegian firms are excluded from the index and the fund also applies time-invariant country corrections that re-weight each country to account for its links with the Norwegian economy. However, the fund can deviate from this investment benchmark by including, excluding, overweighting, or underweighting any firm in the portfolio. Moreover, there are two additional reasons for which a given firm may be dropped from the NBIM portfolio: lack of engagement with the fund or non-compliance with fund's ethical principles.

More formally, the investment of NBIM in a given firm i, from country c, at time t can be represented as:

$$Investment_{ict} = I(Ethics_{it}=1) \times I(Engage_{it}=1) \times (FTSE\ Global_{it} \times Country_c + Stance_{it})$$

where $I(Ethics_{it}=1)$ indicates that the firm fulfills the NBIM' s Council on Ethics requirements, $I(Engage_{it}=1)$ indicates that the firm has not been excluded due to lack of engagement with the fund, $FTSE\ Global_{it}$ would be the investment on the firm according to the FTSE Global Cap index and $Country_c$ are time-invariant factors that correct the index at a country level. $Stance_{it}$ is the specific stance (overinvestment or underinvestment) that the fund may have on a given firm relative to the benchmark. Fund weights are defined as the relative weight of each of these investments: $Weight_{it} = Investment_{it} / \sum_{i=1}^{i=I}(Investment_{it})$.

This rich, well-defined investment strategy helps us to understand the logic behind NBIM decision making. Moreover, the information released by the fund allows us to identify why a firm is included/excluded as well as which changes in investment emanate from discretionary elements ($Ethics_{it}$, $Engage_{it}$ or $Stance_{it}$) or from mechanical rebalancings of the fund ($FTSE\ Global_{it} \times Country_c$). We use this discretionary and automatic elements of NBIM's investment strategy as part of our identification strategy since it reveals the changes in investment that are exogenous or endogenous to NBIMs preferences.

II.A. A natural experiment: NBIM changes focus on corporate governance in 2012

NBIM's initial shareholder engagement as an active owner focused on the activities of the Council on Ethics, established in 2004, that defined "ethical guidelines" to recommend the exclusion of companies from the fund's investment portfolio or to place them under observation. The monitoring role of NBIM centered around the "negative screening" of companies involved in harmful production or wrong-doing: companies producing cluster munitions, nuclear weapons, tobacco or those involved on other conduct-based violations, such as severe environmental damage or serious violations of human rights. Yet, the 2012 announcement is of a completely different nature in its focus (corporate governance practices), and portrays an explicit universal expectation applicable every single firm in which NBIM is investing.

As noted, on November 19, 2012, NBIM published a critical discussion note titled "Corporate Governance" ("Note" hereinafter) stating that effective corporate governance has a positive, direct and long-term impact on the value of companies. In this public announcement, NBIM explicitly declared that from that point onwards, it would request its portfolio companies to meet certain "corporate governance expectations." This heightened active ownership role was based on the belief that long-term diversified investors "need to pursue better market standards and practices in order to promote behavior which enhances returns and reduces risk in the companies they invest in" (NBIM, 2012: 7).[6] Three elements of the announcement are worth highlighting. First, the Note marks a critical turning point in NBIM's governance strategy, making it a relevant shift in internal preferences.[7] Second, this change in the engagement and investment preferences of NBIM was unanticipated[8], when we consider events at an annual frequency. Finally, the Note focuses only on certain specific

[6] The language of the Note contains statements such as "NBIM's primary corporate-governance focus will consequently be on mechanisms shareholders can use directly and indirectly to influence companies towards sustained business success" or "NBIM operates a corporate-governance program. Setting out generic expectations for good corporate governance is one of several steps in this program and the topic of this discussion note" (NBIM, 2012: 3).

[7] In fact, the novelty of this strategy was covered by financial media in the weeks that followed the Note release in November 2012: For example, CNBC wrote: "Norway has just published an important note on what it expects in terms of corporate governance from the companies it invests with" (Carney, 2013). Comments from the CEO, Mr. Slyngstad, and reported in the Financial Times stressed how the fund shifted into active ownership: "I think active is a fair description. We think it is the responsibility of the larger investors to be more involved in what in the UK is referred to as stewardship and have a dialogue not just with the CEO and CFO but also the chairman of the board" (Milne, 2013a).

[8] "It is a big change in how the oil fund operates and signifies a more active approach to its largest investments" (Milne, 2013b).

corporate governance practices which we capture through a governance index score preconstructed by Eikon.[9] Overall, the fund's public and explicit release of this Note entails a substantial exogenous change in investor's preferences from the point of view of firms on specific governance practices.

III. DATA

III.A. Sample and data sources

Our sample consists of a full panel of all firms in the "Environmental, Social and Governance (ESG)" dataset from Eikon (Thomson Reuters) providing firm-level governance, financial and accounting data. To determine which of these firms are inside NBIM's portfolio and the level of NBIM's investment, we merge the Eikon universe with NBIM's dataset. The NBIM dataset provides yearly equity holdings of NBIM as of December since its inception in 1998. We complement this data with data on the constituents of the FTSE Global Cap Index from the FTSE Russell Help Desk.

The matched NBIM-Eikon database provides firm-level ESG variables for more than 4,200 public companies listed in multiple stock exchanges since 2002. Our sample starts in 2006 which is the first year in which NBIM invested in small and mid-cap firms. The coverage of Eikon is also much richer post 2006. Given the structure of our analysis and the timing of the shock (the Note is released in 2012), in our main specifications we use yearly data for the period 2009-2015 (in order to have 3 years before and 3 years after the 2012 event). We collect yearly firm-level information on governance, accounting and financials for the period 2006-2015. Given the availability of governance and financial data, we obtain a final sample of 4,200 companies per year.[10] All our yearly data is measured in the end of December.

[9] Eikon provides index scores at the firm level, grouped in 3 categories: environmental, social and governance. Within the category of governance, Eikon provides 3 indexes: Management, Shareholders and CSR. We use the Management Score since it best matches the Note's focus on governance expectations, and it is Eikon's most complete index on governance (it includes 34 indicators). The other 2 indexes within the Governance category are Shareholders and CSR, which are more restrictive and only include 12 and 8 indicators respectively.

[10] For consistency and to avoid sample attrition, in our main analysis we drop firms that have one or more missing values on our main variable of interest (the governance index) during our main period of analysis (2009-2015). We are left with a sample of about 15,000 observations.

As a measure of firm-level corporate governance, we use the *management score* provided by Eikon ESG as our governance index. According to Eikon, this governance score "measures a company's commitment and effectiveness towards following best practice corporate governance principles," with a focus on management monitoring. It represents an equally-weighted average of 34 corporate governance indicators, including board independence, CEO-Chairman separation, board diversity, board skills background, staggered boards or the existence of audit, nomination, and compensation committees.[11] Each indicator is calculated as a "percentile score" which ranks companies according to each indicator and then the management score equally weights the 34 indicators. Given that our tests employ differences in differences specifications (comparing treatment and control firms), a ranked index is even more suitable than an index in levels because it implicitly compares firms within the index, and it ensures that our results are not driven by aggregate governance changes.[12]

Finally, to calculate abnormal returns, we use return data from Eikon and the *RMRF*, *SMB*, *HML* and *UMD* global factors from Kenneth French's website. To construct returns, we use information on total returns (which incorporates reinvested dividends) and prices (daily stock closing prices) from Eikon.

III.B. Descriptive statistics

Table I reports summary statistics for our main sample. The governance index takes scores from 0 to 100. The index ranks companies according to the quality of its corporate governance. Scores closer to 100 mean that the company has a high index score relative to all the companies in Eikon ESG. In our sample, the average company has a governance index score of 52.8. The standard deviation is 28.7. The average weight of a firm in NBIM (what we define as fund weight, which is the fraction of the NBIM's portfolio represented by a firm's market value) is 0.04%. The average weight that NBIM represents in a firm (what we define as firm weight, which is the fraction of the firm's market value held by NBIM) is 0.84%.

[11] A detailed explanation on the construction of the *management score* is provided in the Appendix.
[12] In order to have results on aggregate governance changes, we also construct a governance index in levels following Eikon's methodology. All information and results are included in Section VI.C.2.

Table AI in the Appendix presents the evolution of the NBIM total equity holdings, as well as the percentage of NBIM holdings that we track in our final sample after the merge with Eikon. Tables AII and AIII in the Appendix show industry and country summary statistics of our sample. These tables classify firms that are in the portfolio of the NBIM in 2011 (treatment group) and control firms that are not in the portfolio of the NBIM in 2011. There is heterogeneity in the countries and industries in the treatment and control groups, but no significant differences in the composition of the two samples.[13] Table AIV in the Appendix reports the yearly number of companies' entries and exits carried out by NBIM during our sample period. We further classify whether these entries and exits are discretionary or driven by the composition of the FTSE Global Cap Index.

IV. THREE STEP DECOMPOSITION FOLLOWING NBIM ANNOUNCEMENT

We define G_{it} as an index that measures the total corporate governance quality of the NBIM portfolio $G_{it} = \sum_{i=0}^{I} w_{it} g_{it}$. Where w_{it} is the investment weight of firm *i* at time *t* in the NBIM portfolio and g_{it} is the governance index of firm *i* at time *t*. The definition of G_{it} allows us to decompose changes of G_{it} in three different elements. Higher (lower) levels of G_{it} can be interpreted as better (worse) overall corporate governance quality of NBIM's portfolio according to the preferences stated by NBIM in the note.

The changes in the corporate governance overall level of the NBIM portfolio (ΔG_{it}) can be decomposed as follows:

$$\Delta G_{it} = \sum_{i=0}^{I} w_{it+1} g_{it+1} - \sum_{i=0}^{I} w_{it} g_{it} \qquad (1)$$

We define $\Delta w_{it} = w_{it+1} - w_{it}$ and $\Delta g_{it} = g_{it+1} - g_{it}$ to obtain the following expression:

$$\Delta G_{it} = \sum_{i=0}^{I} (w_{it} + \Delta w_{it})(g_{it} + \Delta g_{it}) - \sum_{i=0}^{I} w_{it} g_{it} \qquad (2)$$

Re-arranging terms we can express the specification as:

$$\Delta G_{it} = \sum_{i=0}^{I} \Delta w_{it} g_{it} + \sum_{i=0}^{I} (w_{it} \Delta g_{it}) + \sum_{i=0}^{I} \Delta w_{it} \Delta g_{it} \qquad (3)$$

[13] To account for country heterogeneity, our main specifications include Country*Post-event fixed effects.

Thus, the overall change in the governance quality of the NBIM portfolio (ΔG_{it}) can be decomposed into the three terms of equation (3). Each has a clear economic interpretation that we analyze in the next section. The first term is the re-weighting conducted by NBIM following the new NBIM governance strategy. NBIM can exit (enter) firms with worse (better) governance or decrease (increase) its portfolio holdings of firms with worse (better) governance. In the first term, the firms' governance is fixed prior to the release of the Note, and the changes in G_{it} are only driven by NBIM's investment strategy. The second term depends on the decision of the firms to change their governance, potentially to meet NBIM governance expectations. This term has fixed NBIM weights prior to the release of the Note and allows for firm governance levels to change. Intuitively, it is similar to a standard intent to treat specification in which treatment depends on fixed pre-determined (2011) NBIM investment weights. Similarly, it can be interpreted as a reduced form of a regression in which we instrument NBIM's post 2012 weights with a cross-sectional snapshot of pre-2012 weights. In this second term, G_{it} changes are driven by changes in the corporate governance index of NBIM's investee companies. Finally, the third term measures changes in corporate governance that come with changes in weights. In equilibrium it can be that NBIM changes its holdings of a firm due to changes in governance of the firm or vice-versa.

V. ANALYSIS

We use the decomposition in the previous section as an analytical structure to organize the remainder of the paper. That is, to analyze the impact of the Note on the governance quality of the NBIM's portfolio, we follow the econometric counterparts of the decomposition in equation (3) and analyze the terms one by one in the following sections. Before turning to each individual term, Section V.A explores the overall change in the governance index of the NBIM portfolio after the release of the Note. Afterwards, Section V.B focuses on the changes in the investment strategy of NBIM, our first term in equation (3) taking the *governance types* of each firm as given and pre-determined, and exploring the impact of the investment strategy changes in the overall change in governance. Section V.C, which analyzes the second term in equation (3), fixes NBIM weights prior to the release of the Note and allows for firm governance levels to change. In this way, this section measures the response of firms to the release of the Note in an intent-to-treat structure that uses the

fixed holdings of NBIM before the release of the Note as proxies of the NBIM influence after its release. Section V.D explores the third term in equation (3) and shows how the correlation between changes in governance and changes in investment weights is altered by the Note. Finally, Section V.E decomposes the overall effect onto its components.

V.A. The overall change in the governance index of the NBIM portfolio

We first examine whether the governance index of firms included in the NBIM portfolio changes with the announcement by comparing it against the changes in the governance index of firms outside the NBIM portfolio. For this purpose, we estimate for every year *t* the following cross-sectional regression from 2007 to 2015:

$$Governance_{\mathrm{i}} = \alpha + \sigma NBIM_i + \varepsilon_i \qquad (4)$$

where the dependent variable G*overnance*$_i$ is the governance index of firm *i* in year *t*, and *NBIM*$_i$ is a dummy variable that equals one if firm *i* belongs to the NBIM portfolio at time *t*, and zero otherwise. The coefficient of interest σ estimates for every year t the average differential governance between firms in the NBIM portfolio and firms outside it.

Figure 1 and Table II show our results. Before the event (2012), we find no significant governance differences across firms inside and outside the NBIM portfolio and no particular trend of this difference. However, firms in the portfolio of NBIM exhibit higher significant governance levels in the period following the event (2012-2015) relative to firms outside the portfolio. The difference between the periods is statistically significant and economically large, amounting to 4.8 to 7.5 rank score points in the governance index. That is, if there were 100 representative companies, the firms inside the NBIM portfolio would increase their governance rankings by 4.8 to 7.5 ranks, on average, after the announcement. This positive overall effect can be due to firms reacting to the NBIM's new governance preferences (the firms in the portfolio of NBIM receive treatment and target their governance practices), or due to a "rebalancing" channel (NBIM exits firms with low governance index scores and invests in firms with high governance index scores). We explore in detail these components in the following sections.

In addition, we also compute continuous measures of the NBIM weights. For that purpose, we estimate the following pooled OLS regression:

$$\text{Governance}_{\text{it}} = \sigma_1 Post_{(\text{t}\geq 2012)} * NBIM\_Weight_{it} + NBIM\_Weight_{it} + \alpha_t + \varepsilon_{it} \quad (5)$$

where $Governance_{it}$ is analogous to that in equation (4), $NBIM\_Weight_{it}$ is either the NBIM firm weight or the NBIM fund weight, and $Post_{(\text{t}\geq 2012)}$ is a dummy variable that takes the value of one after the Note's release (2012–2015) and zero for previous years (2009–2011). We include the full sample of firms in this analysis (including those firms outside the NBIM portfolio with a weight of zero). The NBIM fund weight is the fraction that NBIM's holding of a given firm represents over the total NBIM's portfolio. The NBIM firm weight is the fraction of the firm's market value held by NBIM. The results in Table III show how the portfolio of firms constructed with fund weights increases its average governance index after the announcement by an average of 9.5 percentile scores. The results are statistically not significant when we focus on firm weights.

Taken together, both results show that the overall governance quality of the NBIM portfolio became closer to NBIM's governance preferences after the announcement. In the next two sections, we analyze which part of this governance change can be attributed to changes in the investment strategy of NBIM and which part to changes in the governance characteristics of the firms in the NBIM portfolio.

V.B. Changes in the investment strategy of NBIM

To examine whether NBIM re-balanced its portfolio according to the new governance expectations, we first analyze whether NBIM invests in firms with higher governance index scores after the announcement. We use the following empirical strategy:

$$\text{Governance}_{\text{i2011}} = \sigma_1 Post_{(\text{t}\geq 2012)} * NBIM\_entry_{it} + NBIM\_entry_{it} + \alpha_t + \varepsilon_{it} \quad (6)$$

where $Governance_{i2011}$ is the governance index of firm *i* fixed in year 2011 (before the announcement), $NBIM\_entry_{it}$ is a dummy variable that takes the value of one if firm *i* enters the NBIM portfolio in year *t*, and it takes a value of zero according to three different control groups, and $Post_{(\text{t}\geq 2012)}$ is a dummy variable that takes a value of one after the Note's release (2012–2015) and zero for previous years (2009–2011). We use three alternative control groups. The first control group *NonNBIM* includes firms that do not belong to the NBIM portfolio. The second control group *NBIM* includes firms that belong to the NBIM

portfolio. The third control group *All* consists of all the firms in our sample, those that belong to the NBIM portfolio and those that do not belong to the NBIM portfolio.

By keeping the governance index fixed at a point in time before the announcement (2011), we avoid that changes in the governance of firms can act as a confounding factor for the changes in the investment strategy of the fund. Intuitively, we are fixing the firms' governance levels before the announcement and keeping them constant throughout the analysis as in the first term of the decomposition in Section IV.

We show the results in Table IV. Columns 1-3 use all the new entrants in NBIM. Each column corresponds to one of the three control groups described (NonNBIM, NBIM, ALL). All three specifications have a negative and statistically significant coefficient on the *NBIM_entry* variable. On average, throughout the whole sample period, firms entering the fund have lower governance index scores than firms outside the fund (Column 1). The relative governance effect is larger when compared with the firms inside the fund (Column 2), consistent with firms inside the fund having a better governance than those outside the fund. The coefficient of *NBIM_entry* in column 3 is the composition of these two effects.

The main variable of interest is *NBIM_entry*Post*. All three coefficients are positive and statistically significant, indicating that the fund puts more weight on corporate governance when picking entrants after the announcement. The effect is large and statistically significant corresponding to a difference of 4 to 6 score points.

In columns 4-6 we replicate this analysis, excluding those entries and exits that are exogenous to the fund and driven by changes in the composition of the FTSE Global Cap index. These exogenous entries and exits cannot be driven by the fund's new preferences, acting as noise that attenuates the results. Indeed, when we focus only on the discretionary entries and exits selected by NBIM, we find stronger results. As expected, the effect of interest is more intense for this component of entry; amounting to 6 to 8 additional governance score points after the announcement.

Overall, the results in Table IV show that, on average, firms entering the NBIM portfolio tended to have lower governance scores than those inside or outside the portfolio. However, this effect is almost completely offset by the change in preferences of the fund

after the announcement, providing strong support for the thesis that the fund did indeed change its investment strategy after the announcement.[14]

We develop a similar analysis to test for exit effects. Again, we use equation (6) to estimate whether NBIM exits firms with poor governance after the announcement. For this purpose, we use the dummy $NBIM\_exit_{it}$ instead of the dummy $NBIM\_entry_{it}$. $NBIM\_exit_{it}$ is a dummy variable equal to one if firm *i* exits the NBIM portfolio in year *t*, and equal to zero according to the three control groups used for $NBIM\_entry_{it}$. The results are shown in Table V. The baseline levels of governance of firms exiting NBIM are, before the announcement, comparable to the rest of the firms in NBIM and outside NBIM. However, after the announcement, the governance score of firms that exit the fund is relatively lower by approximately 5 score points. Once again, if we focus on the discretionary elements of exits, the effect is larger and statistically more significant; with firms exiting NBIM being, on average, 7 score points worse than the firms that remain in or out of NBIM.[15]

Another way to examine NBIM's change in preferences is to explore whether after the announcement NBIM's portfolio is associated with a trade-off between returns and governance. That is, to see whether NBIM is willing to give up some performance in exchange of more aligned governance characteristics. To explore this idea, we construct portfolios that track the past performance of discretionary and non-discretionary NBIM investments before and after the announcement. Focusing on discretionary investments, we can compare the returns between high vs. low governance portfolios to understand whether NBIM is willing to trade-off returns in exchange of better corporate governance. The non-discretionary group of investments is composed of firms where NBIM is forced to invest by its benchmark strategy and acts as a control group that captures the general evolution of the governance-returns trade-off in the economy.

Before the announcement, we find no particular trade-off between governance and returns for NBIM in either group. However, post announcement, discretionary investments

[14] This improvement occurs despite the big increase in the number of holdings of NBIM from 2011 to 2012 (see Table AI in the Appendix) which would make more difficult to cherry pick stocks with high governance after the announcement.

[15] In Table AIV in the Appendix, we observe that NBIM has a spike in the amount of exits in 2011, some months before the Note. It seems that the fund started to re-balance its portfolio even before the release of the Note. In 2011, NBIM started a risk-based approach and decided to divest from a number of companies. Thus, in Table AVIII we show that our results are robust to eliminating the exits of 2011. For this purpose, we omit 2011 and add 2008 to keep our sample balanced and have three years before and after the announcement.

exhibit a strong differential return between the high and the low governance portfolio. In fact, the alpha of the low-governance portfolio is positive and statistically significant, indicating that NBIM is only willing to include low governance index firms in its discretionary portfolio if their returns are expected to be high. Moreover, the alpha of the high-governance portfolio post announcement is negative, indicating that NBIM is willing to incorporate some firms with a high governance index into its portfolio, even if their expected returns are low. Overall, these results suggest that the preferences of NBIM changed after the announcement with respect to the trade-off between returns and governance, with NBIM willing to leave out some returns in exchange of better governance practices in its portfolio. Results and further explanations are shown in Table AIX of the Appendix.

Summing up, in this section we show that NBIM re-balanced its portfolio according to its new governance expectations. After the announcement, entrants in NBIM have better inherent governance and firms exiting NBIM have worse inherent governance. Once we focus on discretionary investment changes made by NBIM, effects are even stronger. Moreover, we provide an insight into NBIM's change in preferences across returns and governance after the announcement. Jointly these results validate the identification assumption that NBIM did indeed change its preferences following the 2012 event. In the next section, we focus on the main result of the paper by analyzing the change in firms' governance triggered by this change in NBIM governance expectations.

V.C. Changes in the governance of NBIM portfolio firms

V.C.1. The effect on governance of NBIM portfolio firms

We now turn to analyze the change in the governance of NBIM portfolio firms following the Note. In order to correctly estimate the effect of the announcement on the change in governance of the firms in the portfolio of NBIM, we fix the portfolio of NBIM in 2011 (before the announcement). Otherwise, changes in the investment strategy of NBIM can act as a confounding factor for the changes in the governance of NBIM portfolio firms (for example, firms with better governance are more likely to be added to the NBIM portfolio after the announcement).

In our estimation strategy we use both reduced form regressions and two-stage least squares (2SLS) regressions. The reduced form results are informative about the effect of the

announcement on the governance changes of firms in the portfolio of NBIM, however, only the 2SLS estimates can be interpreted directly as the treatment on the treated firms.

In the reduced form regressions, our treatment group is composed by the firms that belong to the portfolio of NBIM in December 2011, a year before the release of the Note. Our control group includes firms that do not belong to the portfolio of NBIM in December 2011.

$$\text{Governance}_{\text{izt}} = \sigma_1 Post_{(\text{t}\geq 2012)} * NBIM_{iz2011} + Post_{(\text{t}\geq 2012)} * \delta_z + \alpha_t + \mu_i + \varepsilon_{izt} \quad (7)$$

for firm i, in country z, at time t. $NBIM_{iz2011}$ is a dummy variable equal to one if firm *i* belongs to the NBIM portfolio in 2011 and zero otherwise. $Post_{(\text{t}\geq 2012)}$ is analogous to that defined in equation (6). δ_z, α_t and μ_i are country, year and firm dummies, respectively. For the 2SLS estimation, in the first stage we instrument NBIM's actual holdings after the Note with NBIM's holdings in 2011.[16]

The results are shown in Table VI. The first two columns report results for reduced form regressions, and columns 3, 4 and 5 report results for 2SLS regressions. Results show a significant increase in the governance index scores of firms' in the portfolio of NBIM in 2011. On average, firms in the portfolio of NBIM enhance their governance by 5 score points yearly after the disclosure of the Note relative to firms that are not in the portfolio of NBIM. The change in corporate governance is even larger in the 2SLS regressions, amounting to more than 7 score points. These results are directly interpretable in terms of magnitudes. Moreover, by interacting NBIM_i with year dummies (with 2009 as the omitted category) instead of $\text{POST}_{(\text{t}\geq 2012)}$, we are able to capture the lagged effects of the changes in governance. The magnitude of the difference in governance among the two groups increases with time. This momentum, post 2012, is consistent with the idea that some governance changes may take time to be implemented.

In Table VII, we check that the governance changes captured in Table VI are driven by firms that are part of NBIM holdings and not by a global governance trend. For this purpose, we classify firms in 2011 into four groups: firms in the portfolio of NBIM that are not in FTSE Global Cap Index (discretionary portfolio of NBIM), firms in the FTSE Global

[16] See Table AX of the Appendix for first stage regressions showing that the relevance condition of our instrument is satisfied.

Cap Index that belong to the portfolio of NBIM (non-discretionary firms, since NBIM's investment strategy follows this benchmark), firms in the FTSE Global Cap Index not held by NBIM, and firms excluded by the NBIM ethics committee. The omitted group contains firms that do not belong to FTSE, to NBIM nor have been excluded by the NBIM ethics committee.[17] We observe that firms that significantly improve their governance scoring after the announcement are the firms in which NBIM is invested. After the announcement, we do not observe a significant increase in the governance index scores of firms exclusively listed in the FTSE Global Cap Index. Only firms that are held by NBIM (independently of whether they are also in FTSE) exhibit improvements in governance. Overall, the results in Table VII show that the general evolution of the governance index in the FTSE Global Cap Index is not a relevant confounding factor for our results. [18]

V.C.2. Robustness tests

We conduct a series of further tests that add further robustness of the results in Table VII. In Table AXII of the Appendix the weights of NBIM are fixed in 2010 to avoid potential biases caused by a reweighting of the NBIM portfolio in 2011 (the year before the event). Fixing the weights in 2010 improves the exogeneity of the instrument (strengthens the validity of the exclusion restriction) but decreases its relevance. In Table AXIII of the Appendix we re-balance the number of firms in the control group to equal to the number of firms in the treated group by using nearest-neighbor propensity score matching with replacement. The results in both A12 and A13 are very similar to those of Table VII.

Finally, it is important to note that our dependent variable re-ranks firms every year, thus providing extra reassurance (beyond the difference-in-differences structure) that the results are not driven by aggregate governance changes. However, it is also interesting to replicate the results expressing the different governance elements of the index in levels. In Table AXIV of the Appendix we replicate this analysis but replace the ranked governance index provided by Eikon with a governance index in levels. We find qualitatively similar

[17] Sample size for each group is 1,946 observations for $OnlyNBIM_{11}$, 13,076 observations for $NBIMFTSE_{11}$, 658 observations for $OnlyFTSE_{11}$, 161 observations for $Excluded\text{-}ethics_{11}$, and 1,547 observations for the omitted group.

[18] We report three further robustness tests in the Appendix related to the results in Table 7. In Table A11 we re-weight regressions by the logarithm of firm assets.

results to those in Table VII. After the Note, on average firms in the portfolio of NBIM in 2011 improve 0.75 governance provisions per year more than firms outside the portfolio of NBIM in 2011.[19]

V.C.3. Skin in the firm versus strong voice

Institutional monitoring is likely to depend on both the fraction of the firm held by the institution and the fraction of the institution's portfolio represented by the firm (Fich, Harford & Tran, 2015). In Table VIII, we analyze whether the increase in the governance index after the announcement depends on an extensive margin (belonging or not to NBIM) and on an intensive margin that can either be the fraction of the firm held by NBIM or the fraction that the firm represents for NBIM.

We use a linear specification, and a quantile specification of the form:

$$\text{Governance}_{\text{izt}} = \sum_{q=1}^{Q} \sigma_q Post_{(\text{t}\geq 2012)} I_q(NBIM_{Weight_{iz2011}}) + Post_{(\text{t}\geq 2012)} * \delta_z + \alpha_t + \mu_i + \varepsilon_{izt} \quad (8)$$

for firm i, in country z, at time t. I_q are quartiles of the NBIM weights (zero weight is the omitted category) and $NBIM\_Weight_{i2011}$ represents the fraction of the firm held by NBIM in 2011 or the fraction of NBIM's portfolio represented by the firm in 2011. The coefficients of interest are σ_q and are showed in columns 4 and 5 of Table VIII. In columns 1, 2 and 3 of Table VIII, we use a linear regression model and instead of using quartiles, we include the continuous measure of $NBIM\_Weight_{iz2011}$. Results with the linear specification seem to indicate a positive relation with the firm weights. Firms in which NBIM has a higher weight improve more their governance after the announcement. However, the quantile specifications reveal a much richer structure.

[19] Results are shown in Table AXIV of the Appendix. To construct a governance index in levels, we replicate the methodology of Eikon but instead of ranking the firms for each of the 34 provisions, each firm takes an absolute value between 0 and 1 for each provision (independently of other firms' governance), where 1 is good governance and 0 is poor governance. As in Eikon, the governance index is the equally weighted sum of the non-missing provisions. Weights are calculated excluding provisions with missing data. We drop firms with more than 10% of missing provisions. A detailed explanation of the 34 provisions and the construction of Eikon's index is provided in the Appendix.

When interacting *Post* with fund-level weights, the reaction of firms seems to be largely driven by the extensive margin. It makes a big difference (4.2 reduced-form rank points) to be part of the NBIM portfolio, even if the firm represents a small part of NBIM's investments. However, the incremental effect of being more important within NBIM is small, reaching 5.8 reduced-form rank points increase for the most important firms in the portfolio.

This picture contrasts to the one on firms' weights. The intensive margin effect seems much more relevant here. While firms in the bottom quantile of the participation of NBIM in their shareholdings barely react to the announcement (2 points, not statistically significant), the effect grows monotonically to 7.7 rank points for those firms in which NBIM has a substantial weight within its shareholders.

Overall, the results of this section suggest that NBIM has an influence on firms across different levels of importance within its portfolio. However, firms are more reactive when NBIM has a sufficiently important shareholder presence. Note also that, the monotonicity of the quantile coefficients lends further support to our hypothesis that the effects that we are capturing are driven by NBIM holdings and not by other potential confounding factors.

V.C.4. Heterogeneous effects

We explore the heterogeneous reactions of the firms' response to the announcement contingent on their characteristics before the announcement, in 2011. We evaluate the following features: firm's total assets, firm's total market value, firm's performance (EBITDA over revenues), firm's governance, the voice and accountability governance indicator of the firm's country of incorporation and firm's liquidity. We use the following specification:

$$\text{Governance}_{izt} = Post_{(t\geq 2012)} * \delta_z + \sum_{q=1}^{Q} \sigma_q Post_{(t\geq 2012)} * I_q(Feature_{iz2011}) + \sum_{q=1}^{Q} \vartheta_q Post_{(t\geq 2012)} * I_q(Feature_{iz2011}) * NBIM_{iz2011} + \alpha_t + \mu_i + \varepsilon_{izt} \quad (9)$$

for firm I, in country z, at time t. I_q are dummy variables equal to one for firms in the *ith* quartile in 2011 of the analyzed feature. All other variables are analogous to those defined in equation (7). The coefficients of interest are ϑ_q which indicate for each feature and

quartile, the average governance difference after 2011 between firms that belong to the NBIM portfolio in 2011 and firms that do not belong to the NBIM portfolio in 2011.

Results are shown in Table IX. In columns 1 and 2 we observe that the increase in the governance index after the announcement is larger for smaller firms. In fact, the governance of firms in the top quartile of size does not change after the announcement relative to the control group. In column 3, we notice that firms with worst past performance react more to the NBIM's announcement and increase their governance index. This suggests that poor performing firms change their governance characteristics to compensate for their poor results and remain attractive to NBIM. This is in line with the portfolio analysis explained at the end of Section V.B., where we observe that, after the announcement, a trade-off between returns and governance emerges in the investment strategy of NBIM. In column 4, we find that firms in the middle two quartiles of pre-existing governance scores are the ones who react the most to the announcement. Firms in the lowest quartile of past governance scores do not react to NBIM's announcement. It may be more costly for these firms to improve governance or they may find themselves too far from NBIMs newly expected standards. On the other hand, firms in the highest quartile of past governance scores slightly react. This might be either because there is small room to improve their governance or because they already fulfill NBIM expected governance standards. In column 5, we observe that firms incorporated in countries with weak national corporate governance quality, do not improve their governance scores, while the opposite is true for firms incorporated in countries with stronger corporate governance quality. These findings suggest that the influence of active owners on firm policies is contingent on the nature of the national corporate governance where those firms are embedded. It seems like there exists a minimum national threshold for active owners to have an influence. This result speaks to whether country or firm drives firm corporate governance changes. For this reason, all our specifications include Post*Country effects, so our estimates will capture changes in firm's governance within country. Finally, stock liquidity reported in column 6 also seems to have an influence on the reaction of firms to NBIM's announcement. Firms with high liquidity do not react to the announcement while firms with lower liquidity are a lot more sensitive to the announcement. This result is consistent with higher incentives of firms with illiquid stocks to comply with NBIM's new expectations, as they would suffer a higher price impact if NBIM decided to exit.

V.D. Correlation of NBIM investment changes and governance changes

In this section we explore the third term in equation (3) and analyze whether changes in governance are linked to investment changes. For this purpose, we estimate the following OLS pooled regression:

$$\Delta\text{Governance}_{\text{iz(t+2,t)}} = \sigma_1 Post_{(\text{t}\geq 2012)} * \Delta NBIM\_Weight_{\text{iz(t+2,t)}} + Post_{(\text{t}\geq 2012)} * \delta_z$$

$$+ \Delta NBIM\_Weight_{\text{iz(t+2,t)}} + \alpha_t + \varepsilon_{izt} \qquad (9)$$

for firm i, in country z, at time t. $\delta Governance_{i(t+2,t)}$ is the difference between firm *i*'s governance index score in year *t+2* and year *t*, and $\Delta NBIM\_Weight_{i(t+2,t)}$ is the difference between the firms' holdings by NBIM in year *t+2* and year *t*.[20]

The regression analyzes whether there is a correlation between changes in governance of firms and changes in investment by NBIM, and whether this correlation changes before and after the announcement. Results are shown in Table X. The correlation between changes in governance and changes in investment weights becomes high and statistically significant only after the announcement; while the two seem uncorrelated before the announcement. We also perform Granger causality tests to better understand the relation between innovations in governance and innovations in investment changes.[21] We find that lagged changes in governance predict changes in fund weights. The reverse effect is not statistically significant. These results provide evidence supporting that NBIM's strategy reacts to positive changes in governance after the release of the Note. NBIM re-weights its portfolio holdings not only according to the levels of governance of the firms, but also according to the changes in the levels of the governance of the firms. On the other hand, we do not find evidence that lagged changes in firm weights predict changes in governance.

Although establishing causality in this last part of the analysis is challenging, it allows us to complete the decomposition of effects in Section V. Next, we analytically decompose the three different effects.

[20] Given that governance and weights are somewhat sticky, we allow for two years differences in all our variables to have more variation in our changes on changes analysis.
[21] Results are shown in Table AXV of the Appendix.

V.E. Analytical decomposition of the overall governance effect

Using the measures of the weights (percentage the firm represents in the NBIM fund per year) and the governance index (measure from 0 to 100 each firm has per year), we calculate the values for each of the terms mathematically for the years 2010-2015. We choose 2010 and 2015 because these years are clearly before and after the release of the Note, but the results are consistent across different period choices. We show the results in Table XI.

In the regression analysis, given that we are fixing either the governance index or the investment weights, we are keeping the panel of firms constant throughout the analysis. This same idea is replicated in the first two rows of the table, where we keep the denominator of the investment weight constant or the set of firms constant respectively. Overall, we find a positive increase of the governance index of the NBIM. The first term is negative. As shown, the effect is positive for existing firms but negative for new ones, as marginal new firms have worse governance than pre-existing ones. The second term is the most positive term, which means that firms owned by NBIM are in fact improving their governance significantly. Finally, the cross-product is also positive, which means that on average NBIM increases (decreases) its weights on firms that increase (decrease) their governance.

However, one has to bear in mind that the fund expanded significantly during this period (see Table AI of the Appendix), almost doubling its size. Note also that, from Table IV, we know that the firms that join NBIM have, on average, worse governance than those inside NBIM and that this effect is only partially offset by the change in preferences of the fund. For this reason, in the last row of the table, we relax the full panel assumption and allow new firms to enter the analysis. When doing so, the first term, which is affected by entry, becomes large and negative, reflecting the relatively poor governance quality of new entrants. Still, we can conclude that the change in governance preferences of the fund partially offsets the mechanical decrease in governance levels induced by the fund's expansion.

VI. DISCUSSION AND CONCLUSION

Understanding the scope and channels of influence of active owners, such as pension funds, mutual funds or SWFs, on firm policies continues to be an important issue in corporate governance, beyond looking at market value reactions. Institutional investors often hold a

large fraction of firm ownership, but they have been criticized for not being pro-active enough when it comes to firm policies. Estimating how active institutional investor's engagement results in effective or ineffective governance remains an important empirical question. Within this framework, SWFs can be useful, as they often have investment policies with preferences that depart from the standard maximization of short-term profits. Moreover, given their size and long-term investment horizons, these large active owners try to increase value from setting universal, systemic expectations for their diversified portfolios. Unanticipated changes in these preferences can be used to extract information about how firms cater to the preferences of their investors.

We use a quasi-natural experiment, the NBIM's announcement in November 2012 which outlined what Norway's sovereign fund expected from its global portfolio companies in terms of corporate governance practices. The release of this critical Note initiated a comprehensive strategy of engagement with its portfolio firms. We use a pre-existing governance index that mirrors NBIM's governance preferences and deploy a difference-in-differences strategy to decompose the total change in the corporate governance change of the fund into the one-off re-weighting of its portfolio, the change in governance of the firms that are part of the fund (in an intent-to-treat structure) and the change in the dynamics of the fund investment that follows the initial re-balancing.

Following this structure, we uncover the following results i) the overall governance level (index score) of the fund increased following the announcement, ii) the investment stance of the fund changed, focusing more on firms with high governance index scores and less on firms with low-governance index scores, iii) firms reacted to the fund's new policy by improving their governance—these results are present both if we represent the funds' influence as the fraction that the firm represents in the fund as well as the fraction that the fund represents in the firm, iv) following the announcement, the fund's marginal changes in investment weights became more reactive to the recent changes in the firms' governance scores. Overall these results show that this active institutional owner did change its investment strategy following the announcement and that firms also reacted by enhancing their corporate governance following the fund expectations. We decompose the overall improvement of the fund's governance quality and show that most of the effect comes from the reaction of firms.

Our results add evidence of the monitoring role of active owners and, in particular, SWFs. In our application, we can estimate this influence in a causal way and show large and significant results both from an economic and statistical perspective. Our results also shed light on the literature of shareholder activism and the growing theme of heterogeneous shareholders. Regarding the literature on SWFs, our study helps to understand how, without having a seat on the board, large funds can exert systemic influence and impact their investee companies' corporate governance, and beyond (Vasudeva, 2013).

Our results are reminiscent of an "exit" channel in which NBIM divests from firms with worst governance and a "voice" channel through which NBIM effectively improves the governance of its portfolio companies. This "voice" channel put in place through different mechanisms, most of them "behind-the-scenes" (McCahery et al., 2016), turns out to be effective and can be a way to circumvent the "liability of sovereignness" or the discount effect detected in the literature on sovereign investors (Aguilera et al., 2016; Bortolotti et al., 2015). Of course, these two effects, voice and exit, interact with each other, as a credible threat of exit can be a powerful tool when exercising "voice." By focusing on the direct effect that ownership has on corporate governance, we also add to the discussion around the effects of institutional owners as long-term patient investors, instead of being driven by short-term gains (Bebchuk et al., 2015). We include the SWFs in the matrix of heterogeneous principals, among these patient institutional investors (Bushee, 1998). Moreover, we show that both the fraction of the firm held by NBIM and the fraction of the NBIM's portfolio represented by the firm are key in influencing firm policies. An increase in any of them is translated into a positive improvement of the governance of the firms.

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FIGURES & TABLES

Figure 1. Governance Index differences among NBIM and non-NBIM firms

This graph plots the σ estimates from year-by-year cross-sectional regressions and 90% confidence intervals. The σ estimates are yearly differences in governance between treated firms (firms that belong to the NBIM portfolio) and control firms (firms that do not belong to the NBIM portfolio). The dependent variable is the Governance Index. Only one regressor is used, a dummy variable that takes the value of one if the firm belongs to the NBIM portfolio in year *t* and zero otherwise.

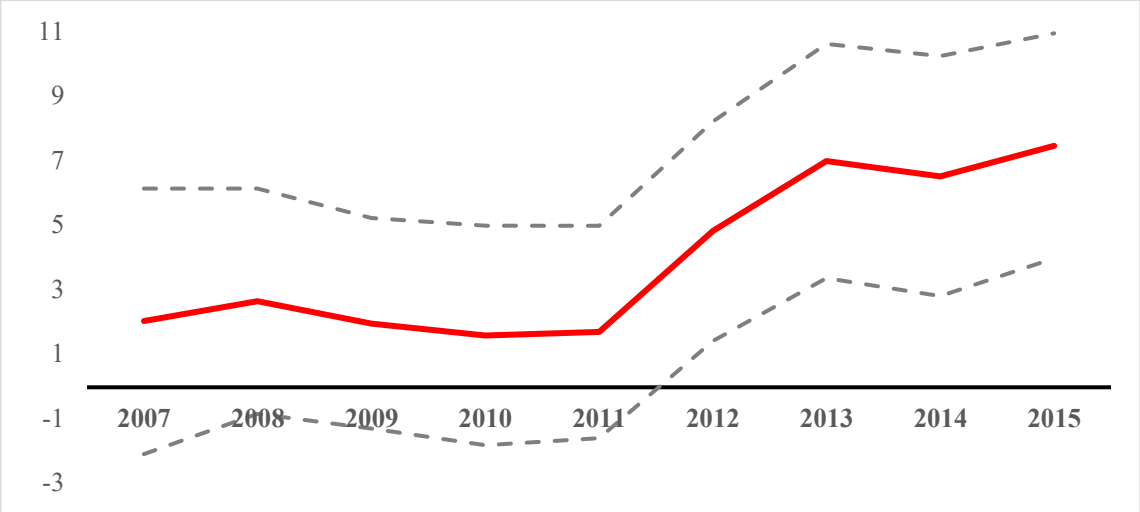

Table I. Summary Statistics

This table reports mean, standard deviation, 25th-percentile, median, 75th-percentile and number of observations for each variable by firm. The Governance Index is an index ranked from 0 to 100 that measures a company's commitment and effectiveness towards following best practice corporate governance principles. NBIM Weight (fund) is the fraction of the NBIM's portfolio represented by the firm's market value. NBIM Weight (firm) is the fraction of the firm's market value held by NBIM. ΔGovernance Index$_{(t+1,t)}$ measures the difference between the firm's score in t+1 and t. $|\Delta$Governance Index$_{(t+1,t)}|$ measures the difference in absolute value between the firm's score in t+1 and t.

	Mean	Standard Deviation	25%	Median	75%	Obs.
Governance Index	52.849	28.68	28.424	53.880	78.125	17388
NBIM Weight (fund)	0.037	0.10	0.003	0.010	0.028	17388
NBIM Weight (firm)	0.842	1.23	0.008	0.513	0.907	17388
ΔGovernance Index$_{(t+1,t)}$	1.117	18.24	-8.351	0.379	10.655	14904
$\|\Delta$Governance Index$_{(t+1,t)}\|$	13.195	12.64	3.632	9.386	18.881	14904

Table II. Governance differences among NBIM and non-NBIM firms

This table presents estimates of yearly cross-sectional OLS regressions of governance index differences among NBIM and non-NBIM firms. The dependent variable is the Governance Index. For each year *t*, one explanatory variable is used (NBIM), a dummy variable that takes the value of one if the firm belongs to the NBIM portfolio and zero otherwise. Standard errors are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NBIM	2.048	2.667	1.983	1.606	1.714	4.845***	7.016***	6.548***	7.489***
	(2.102)	(1.782)	(1.663)	(1.740)	(1.681)	(1.739)	(1.851)	(1.899)	(1.780)
Observations	1,422	2,123	2,484	2,484	2,484	2,484	2,484	2,484	2,484
R-squared	0.001	0.001	0.001	0.000	0.000	0.003	0.006	0.005	0.007

Table III. Governance differences among fund and firm weights

This table shows estimates from OLS regressions of the effect of fund and firm weights on the governance index. The dependent variable is the Governance Index (an index that ranks from 0 to 100). In column 1, the independent variables are NBIM weight fund (fraction of the NBIM's portfolio represented by the firm), an interaction of NBIM weight fund and Post (a dummy variable that takes the value of one for the period 2012-2015 and zero for the period 2009-2011), and year dummies. Column 2 is analogous to column 1, but we now use NBIM weight firm, which is the percentage of the firm's market value held by NBIM. Standard errors are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Fund Weight (1)	Firm Weight (2)
NBIM_Weight	37.652***	1.360***
	(2.280)	(0.278)
Post*NBIM_Weight	9.483**	-0.449
	(3.725)	(0.355)
Observations	21,034	20,948
R-squared	0.030	0.007

Table IV. Governance differences for firms that enter the portfolio of NBIM

This table reports the results from pooled OLS regressions. The dependent variable is the Governance Index fixed in 2011. The key explanatory variable is NBIM_entry, a dummy equal to one for firms that enter the NBIM portfolio in year *t* and do not belong to the NBIM portfolio in year *t-1*. This dummy is equal to zero according to the control group selected. The control group varies in each column. In column 1, NBIM_entry is equal to zero for firms that do not belong to the NBIM portfolio the previous and subsequent 2 years. In column 2, NBIM_entry is equal to zero for firms that belong to the NBIM portfolio the previous and subsequent 2 years. In column 3, NBIM_entry is equal to zero for NBIM and non-NBIM firms. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Columns 4, 5 and 6 are analogous to columns 1, 2 and 3, but we exclude the entries that are driven by entries in the FTSE Global Cap. Year dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	All Entries			Discretionary Entries Only		
	Vs-NonNBIM	Vs-NBIM	Vs-ALL	Vs-NonNBIM	Vs-NBIM	Vs-ALL
	(1)	(2)	(3)	(4)	(5)	(6)
NBIM entry	-4.011**	-9.850***	-8.939***	-4.918*	-10.881***	-9.909***
	(1.908)	(1.541)	(1.507)	(2.687)	(2.451)	(2.428)
NBIM entry *Post	4.426*	5.889***	5.486***	6.406**	7.916***	7.451**
	(2.365)	(2.084)	(2.104)	(3.157)	(3.013)	(3.016)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,906	14,892	17,026	2,572	14,558	16,692
R-squared	0.003	0.004	0.002	0.004	0.002	0.001

Table V. Governance differences for firms that exit the portfolio of NBIM

This table reports the results from pooled OLS regressions. The dependent variable is the Governance Index fixed in 2011. The key explanatory variable is NBIM_exit, a dummy equal to one for firms that exit the NBIM portfolio in year *t*. This dummy is equal to zero according to the control group selected. The control group varies in each column. In column 1, NBIM_exit is equal to zero for firms that do not belong to the NBIM portfolio the previous and subsequent 2 years. In column 2, NBIM_exit is equal to zero for firms that belong to the NBIM portfolio the previous and subsequent 2 years. In column 3, NBIM_exit is equal to zero for NBIM and non-NBIM firms. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Columns 4, 5 and 6 are analogous to columns 1, 2 and 3, but we exclude the exits that are driven by exits in the FTSE Global Cap. Year dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	All Exits			Discretionary Exits Only		
	Vs-NonNBIM	Vs-NBIM	Vs-ALL	Vs-NonNBIM	Vs-NBIM	Vs-ALL
	(1)	(2)	(3)	(4)	(5)	(6)
NBIM_exit	2.010	-3.342*	-2.586	2.283	-3.054	-2.322
	(2.261)	(1.921)	(1.899)	(2.366)	(2.036)	(2.015)
NBIM_exit *Post	-5.807*	-5.058*	-5.311*	-7.661**	-6.954**	-7.184**
	(2.979)	(2.756)	(2.766)	(3.120)	(2.916)	(2.924)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,651	14,637	16,771	2,596	14,582	16,716
R-squared	0.003	0.001	0.001	0.004	0.002	0.001

Table VI. The effect of NBIM on firm governance: instrumental variables

This table reports instrumental variables estimates of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index measured at the firm level. Column 1 reports estimates of a pooled OLS regression. Columns 2 and 3 include firm fixed effects. NBIM ($NBIM_{11}$) is a dummy variable equal to one for firms in the portfolio of NBIM (in 2011) and zero otherwise. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. In columns 3 and 4, Post*NBIM is instrumented with Post*$NBIM_{11}$. In column 5, year* is a dummy variable for the years 2010, 2011, 2012, 2013, 2014 and 2015, the reference year is 2009. NBIM*year2012, NBIM*year2013, NBIM*year2014 and NBIM*year2015 are instrumented with $NBIM_{11}$*year2012, $NBIM_{11}$*year2013, $NBIM_{11}$*year2014 and $NBIM_{11}$*year2015. Year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Reduced form		2SLS		
	(1)	(2)	(3)	(4)	(5)
$NBIM_{11}$*Post	5.443***	4.666***	7.437***	7.283***	
	(1.644)	(1.142)	(1.677)	(1.769)	
$NBIM_{11}$*year2010					1.372
					(1.342)
$NBIM_{11}$*year2011					2.149
					(1.379)
$NBIM_{11}$*year2012					6.322***
					(1.927)
$NBIM_{11}$*year2013					7.379***
					(2.460)
$NBIM_{11}$*year2014					9.985***
					(3.117)
$NBIM_{11}$*year2015					14.269***
					(3.474)
Year dummies	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	Yes	No	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes	Yes
Observations	17,388	17,388	17,388	17,388	17,388
R-squared	0.021	0.025	0.024	0.025	0.022

Table VII. The effect of NBIM on governance – discretionary investments

This table reports estimates of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index. $NBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 and zero otherwise. $FTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 and zero otherwise. $OnlyNBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 that do not belong to FTSE in 2011. $OnlyFTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 that do not belong to NBIM in 2011 or have not been excluded by the ethics committee of NBIM in 2011. $NBIMFTSE_{11}$ is a dummy variable equal to one for firms both in the portfolio of NBIM in 2011 and in the FTSE in 2011. $Excluded\text{-}ethics_{11}$ is a dummy variable equal to one for firms that have been excluded from NBIM holdings by the ethics committee of NBIM by 2011. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)
$NBIM_{11}$*Post	4.666***		4.011***	
	(1.142)		(1.290)	
$FTSE_{11}$*Post		2.836***	1.215	
		(0.980)	(1.101)	
$OnlyNBIM_{11}$*Post				4.008**
				(1.736)
$NBIMFTSE_{11}$*Post				4.993***
				(1.372)
$OnlyFTSE_{11}$*Post				1.562
				(2.545)
$Excluded\text{-}ethics_{11}$*Post				-2.386
				(3.918)
Firm & Year fixed effects	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes
Observations	17,388	17,388	17,388	17,388
R-squared	0.025	0.023	0.025	0.025

Table VIII. The effect of NBIM on firm governance – Extensive vs. Intensive margin

This table reports OLS estimates from panel regressions with firm fixed effects. The dependent variable is the Governance Index. NBIM_Weight$_{11}$(fund) is the fraction of the NBIM's portfolio represented by the firm's market value in 2011. NBIM_Weight$_{11}$(firm) is the fraction of the firm's market value held by NBIM in 2011. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. In column 4, I(% quartile`i´)$_{11}$ is a dummy variable equal to one for firms in the ith quartile of NBIM_Weight$_{11}$(fund). In column 5, I(% quartile`i´)$_{11}$ is a dummy variable equal to one for firms in the ith quartile of NBIM_Weight$_{11}$(firm). In columns 4 and 5, the reference group is formed by all the firms that are not in the portfolio of NBIM in 2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Fund	Firm	Fund+Firm	Fund	Firm
	(1)	(2)	(3)	(4)	(5)
Post*NBIM_Weight$_{11}$(firm)		1.11***	1.15***		
		(0.41)	(0.42)		
Post* NBIM_Weight$_{11}$(fund)	-0.66		-2.03		
	(2.84)		(2.78)		
Post* I(% quartile1)$_{11}$				4.22***	2.01
				(1.33)	(1.75)
Post* I(% quartile2)$_{11}$				3.78***	3.40**
				(1.30)	(1.45)
Post* I(% quartile3)$_{11}$				4.79***	4.92***
				(1.31)	(1.51)
Post* I(% quartile4)$_{11}$				5.81***	7.65***
				(1.30)	(1.57)
Firm & Year fixed effects	Yes	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes	Yes
Observations	17,388	17,318	17,318	17,388	17,318
R-squared	0.02	0.02	0.02	0.02	0.03

Table IX. The effect of NBIM on firm governance – Heterogeneous effects

This table reports OLS estimates from panel regressions wih firm fixed effects. The dependent variable is the Governance Index. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. $NBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 and zero otherwise. For each feature analyzed, we create quartiles, so that $Q(\%\ quartile`i')_{11}$ is a dummy variable equal to one for firms in the ith quartile of each feature in 2011. In column 1 we classify NBIM portfolio firms according to total assets. In column 2 we classify NBIM portfolio firms according to total market value. In column 3 we classify NBIM portfolio firms according to performance (EBITDA over revenues). In column 4 we classify NBIM portfolio firms according to their governance index. In column 5 we classify NBIM portfolio firms according to their country's worldwide governance indicator of voice and accountability. In column 6 we classify NBIM portfolio firms according to their liquidity (daily volume traded / daily absolute return). The coefficients reported are those of the interaction of $Post*NBIM*Q(\%\ quartile`i')_{11}$. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Heterogeneous Effects on Governance					
	Assets	MV	Performance	Governance	WGI	Liquidity
	(1)	(2)	(3)	(4)	(5)	(6)
$Post*NBIM_{11}*Q(\%\ quartile1)_{11}$	7.37***	6.51**	8.12***	2.78	0.56	6.34***
	(2.72)	(2.56)	(2.69)	(1.99)	(2.02)	(2.08)
$Post*NBIM_{11}*Q(\%\ quartile2)_{11}$	6.74***	7.45***	6.67***	6.79***	4.76**	7.05***
	(2.15)	(2.22)	(2.27)	(2.16)	(2.11)	(2.43)
$Post*NBIM_{11}*Q(\%\ quartile3)_{11}$	4.47**	4.07*	4.19*	6.22**	11.60***	4.22*
	(2.00)	(2.13)	(2.44)	(2.46)	(2.84)	(2.33)
$Post*NBIM_{11}*Q(\%\ quartile4)_{11}$	0.58	0.23	3.12	4.13**	5.72**	0.09
	(2.12)	(2.01)	(2.03)	(2.00)	(2.43)	(2.04)
Firm & year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Post*Q(% quartile`i´)	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,367	17,318	15,890	17,388	17,136	17,073
R-squared	0.03	0.03	0.03	0.03	0.03	0.03

Table X. Changes on investment and changes on governance

This table reports the results from OLS regressions. The dependent variable is the difference between the Governance Index in t+2 and the Governance Index in t. In column 1, ΔNBIM_Weight $_{(t+2,t)}$ measures the difference between the fraction of the NBIM's portfolio represented by the firm in t+2 and in t. In column 2, ΔNBIM_Weight $_{(t+2,t)}$ measures the difference between the percentage market value that NBIM holds of the firm in t+2 and in t. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Fund (1)	Firm (2)
Post*ΔNBIM_Weight$_{(t+2,t)}$	23.320**	0.380
	(10.379)	(0.548)
ΔNBIM_Weight$_{(t+2,t)}$	1.795	-0.017
	(6.270)	(0.345)
Year dummies	Yes	Yes
Post*Country dummies	Yes	Yes
Observations	12,420	12,366
R-squared	0.010	0.010

Table XI. Analytical decomposition of the overall governance effect

This table presents the results from the analytical decomposition of the overall governance effect for the period 2010-2015. ΔG is the overall change in the governance level of the NBIM portfolio from 2010 to 2015, w is the value of the holding that firm i represents in the total value of the portfolio of NBIM, g is the governance index of firm i, Δw are changes in the value of the holdings from 2010 to 2015 and Δg are changes in the governance index from 2010 to 2015. The value of the holdings w_{it} is measured using 3 different denominators. In row 1 the denominator is constant, it is the total value of the portfolio of NBIM in 2010. In row 2, the set of firms is constant, it is the firms in the portfolio of NBIM in 2010. In row 3, the denominator is the total holdings of the NBIM portfolio. Subindex i is for each firm in the portfolio of NBIM, subindex t is for year 2010 and for year 2015.

Period: 2010-15	**Total**	**Term 1**	**Term 2**	**Term 3**
	ΔG	**$\Delta w * g_{2010}$**	**$w_{2010} * \Delta g$**	**$\Delta w * \Delta g$**
w_{it} = holding$_{it}$ / total holding$_{i2010}$	39.31	31.35	2.95	5.04
w_{it} = holding$_{it}$/ total holding$_{it}$ (2010 firms)	2.33	-2.51	2.95	1.87
w_{it} = holding$_{it}$ / total holding$_{it}$	-0.73	-5.55	2.95	1.86

EXTERNAL APPENDIX (not for publication)

Table AI. NBIM holdings and Eikon (Thomson Reuters) coverage

This table presents NBIM total holdings by year (column 2) and the amounts covered by the Eikon (Thomson Reuters) database (column 3). Column 4 shows the percentage of the NBIM total holdings that are covered by the Eikon (Thomson Reuters) database. For each year it divides the value of column 3 by the value of column 2.

	NBIM total holdings ($ billions)	NBIM holdings matched with Eikon ($ billions)	Percentage covered
2008	160.53	115.44	71.9%
2009	284.73	210.49	73.9%
2010	325.76	240.04	73.7%
2011	325.19	243.45	74.9%
2012	417.83	318.58	76.2%
2013	515.69	388.91	75.4%
2014	526.81	397.79	75.5%
2015	519.50	399.86	77.0%

Table AII: Summary statistics by sector of economic activity

This table reports the number of companies in each group by sector of economic activity. In column 2, Non-NBIM are companies which do not belong to the portfolio of NBIM in 2011, they form our "control group". In column 3, NBIM are companies that belong to the portfolio of NBIM in 2011, they form our "treated group". Column 4 adds the number of firms in columns 2 and 3 for each sector of economic activity. Column percentages are shown below the number of companies.

Sector of Economic Activity	Non-NBIM	NBIM	Total
Accommodation and Food Services	30	45	75
	2.4%	1.5%	1.8%
Administrative, Support, Waste Management, Remediation Services	15	44	59
	1.2%	1.5%	1.4%
Agriculture, Forestry, Fishing and Hunting	7	9	16
	0.5%	0.3%	0.4%
Arts, Entertainment, and Recreation	6	19	25
	0.5%	0.6%	0.6%
Construction	50	115	165
	3.9%	3.9%	3.9%
Educational Services	5	9	14
	0.4%	0.3%	0.3%
Finance and Insurance	247	438	685
	19.4%	14.8%	16.2%
Health Care and Social Assistance	21	21	42
	1.6%	0.7%	1.0%
Information	109	193	302
	8.6%	6.5%	7.1%
Manufacturing	309	1,021.0	1,330.0
	24.3%	34.6%	31.5%
Mining, Quarrying, and Oil and Gas Extraction	137	256	393
	10.8%	8.7%	9.3%
Other Services (except Public Administration)	3	8	11
	0.2%	0.3%	0.3%
Professional, Scientific, and Technical Services	58	117	175
	4.6%	4.0%	4.1%
Real Estate and Rental and Leasing	95	163	258
	7.5%	5.5%	6.1%
Retail Trade	56	165	221
	4.4%	5.6%	5.2%
Transportation and Warehousing	45	127	172
	3.5%	4.3%	4.1%
Utilities	52	134	186
	4.1%	4.5%	4.4%
Wholesale Trade	28	68	96
	2.2%	2.3%	2.3%
Total	1273	2952	4225
	100.0%	100.0%	100.0%

Table AIII: Summary statistics by country

This table reports the number of companies in each group by country. In column 2, Non-NBIM are companies which do not belong to the portfolio of NBIM in 2011. In column 3, NBIM are companies that belong to the portfolio of NBIM in 2011. Column 4 adds the number of firms in columns 2 and 3 for each country.

Country	Non-NBIM	NBIM	Total
Australia	161	167	328
Austria	2	11	13
Bahrain	8	0	8
Belgium	4	20	24
Brazil	39	42	81
Canada	86	179	265
Chile	6	16	22
China	71	66	137
Colombia	4	7	11
Cyprus	2	0	2
Czech Republic	0	3	3
Denmark	3	19	22
Egypt	2	9	11
Finland	0	21	21
France	12	80	92
Germany	9	71	80
Greece	4	14	18
Hong Kong	20	109	129
Hungary	0	4	4
India	47	42	89
Indonesia	26	6	32
Ireland	10	13	23
Israel	3	14	17
Italy	5	35	40
Japan	22	348	370
Jordan	1	0	1
Kazakhstan	1	0	1
Kuwait	11	0	11
Luxembourg	3	1	4
Malaysia	17	30	47
Malta	1	0	1
Mexico	14	19	33
Morocco	2	1	3
Netherlands	14	21	35
New Zealand	25	12	37
Nigeria	1	0	1
Norway	16	0	16
Oman	9	0	9
Papua New Guinea	1	0	1
Peru	0	2	2
Philippines	8	17	25
Poland	7	23	30
Portugal	0	10	10
Qatar	12	0	12
Russia	15	16	31
Saudi Arabia	14	0	14
Singapore	7	30	37
South Africa	76	36	112
South Korea	56	56	112
Spain	11	35	46
Sri Lanka	1	0	1
Sweden	11	43	54
Switzerland	9	56	65
Taiwan	9	106	115
Thailand	25	8	33
Turkey	0	18	18
United Arab Emirates	9	4	13
United Kingdom	126	245	371
United States	214	871	1,085
Zimbabwe	1	0	1
Total	1,273	2,956	4,229

Table AIV: Number of firms that enter and exit the NBIM portfolio every year

This table reports the number of firms that NBIM yearly exits and entries. Columns 3 and 4 report NBIM exits and entries that are not driven by FTSE exits and entries.

	Exits	Entries	Exits (Discretionary)	Entries (Discretionary)
2009	70	150	50	77
2010	31	169	25	73
2011	228	157	219	52
2012	70	205	64	149
2013	60	279	50	177
2014	81	235	76	105

Table AV. Governance differences among NBIM and non-NBIM firms (weighted)

This table presents estimates of yearly cross-sectional OLS regressions (weighted by the logarithm of assets) of governance index differences among NBIM and non-NBIM firms. The dependent variable is the Governance Index. For each year *t*, one explanatory variable is used (NBIM), a dummy variable that takes the value of one if the firm belongs to the NBIM portfolio and zero otherwise. Standard errors are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	2007	2008	2009	2010	2011	2012	2013	2014	2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NBIM	1.543	2.799	1.910	1.199	1.533	4.540***	6.688***	6.258***	7.084***
	(2.133)	(1.808)	(1.689)	(1.760)	(1.685)	(1.749)	(1.874)	(1.913)	(1.798)
Observations	1,418	2,117	2,481	2,481	2,481	2,483	2,480	2,478	2,484
R-squared	0.000	0.001	0.001	0.000	0.000	0.003	0.005	0.004	0.006

Table AVI. Governance differences for firms that enter the portfolio of NBIM (weighted)

This table reports the results from pooled OLS regressions (weighted by the logarithm of assets). The dependent variable is the Governance Index fixed in 2011. The key explanatory variable is NBIM_entry, a dummy equal to one for firms that enter the NBIM portfolio in year *t* and do not belong to the NBIM portfolio in year *t-1*. This dummy is equal to zero according to the control group selected. The control group varies in each column. In column 1, NBIM_entry is equal to zero for firms that do not belong to the NBIM portfolio the previous and subsequent 2 years. In column 2, NBIM_entry is equal to zero for firms that belong to the NBIM portfolio the previous and subsequent 2 years. In column 3, NBIM_entry is equal to zero for NBIM and non-NBIM firms. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Columns 4, 5 and 6 are analogous to columns 1, 2 and 3, but we exclude the entries that are driven by entries in the FTSE Global Cap. Year dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Vs-NonNBIM	Vs-NBIM	Vs-ALL	Vs-NonNBIM	Vs-NBIM	Vs-ALL
	(1)	(2)	(3)	(4)	(5)	(6)
NBIM_entry	-4.762**	-10.043***	-9.269***	-5.526**	-10.915***	-10.096***
	(1.970)	(1.591)	(1.558)	(2.775)	(2.543)	(2.519)
NBIM_entry *Post	4.456*	5.587***	5.283**	6.358**	7.532**	7.182**
	(2.379)	(2.128)	(2.142)	(3.224)	(3.104)	(3.103)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,859	14,865	16,962	2,530	14,536	16,633
R-squared	0.003	0.004	0.003	0.003	0.002	0.002

Table AVII. Governance differences for firms that exit the portfolio of NBIM (weighted)

This table reports the results from pooled OLS regressions (weighted by the logarithm of assets). The dependent variable is the Governance Index fixed in 2011. The key explanatory variable is NBIM_exit, a dummy equal to one for firms that exit the NBIM portfolio in year *t*. This dummy is equal to zero according to the control group selected. The control group varies in each column. In column 1, NBIM_exit is equal to zero for firms that do not belong to the NBIM portfolio the previous and subsequent 2 years. In column 2, NBIM_exit is equal to zero for firms that belong to the NBIM portfolio the previous and subsequent 2 years. In column 3, NBIM_exit is equal to zero for NBIM and non-NBIM firms. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Columns 4, 5 and 6 are analogous to columns 1, 2 and 3, but we exclude the exits that are driven by exits in the FTSE Global Cap. Year dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Vs-NonNBIM	Vs-NBIM	Vs-ALL	Vs-NonNBIM	Vs-NBIM	Vs-ALL
	(1)	(2)	(3)	(4)	(5)	(6)
NBIM_exit	0.790	-4.092**	-3.446*	1.074	-3.830*	-3.200
	(2.298)	(1.945)	(1.924)	(2.392)	(2.050)	(2.029)
NBIM_exit *Post	-4.881	-4.374	-4.556	-6.686**	-6.186**	-6.353**
	(3.007)	(2.796)	(2.805)	(3.145)	(2.946)	(2.953)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,613	14,619	16,716	2,558	14,564	16,661
R-squared	0.003	0.002	0.001	0.004	0.002	0.001

Table AVIII. Governance differences for firms that exit the portfolio of NBIM (exclude 2011 and include 2008)

This table reports the results from pooled OLS regressions. The dependent variable is the Governance Index fixed in 2011. The key explanatory variable is NBIM_exit, a dummy equal to one for firms that exit the NBIM portfolio in year *t*. This dummy is equal to zero according to the control group selected. The control group varies in each column. In column 1, NBIM_exit is equal to zero for firms that do not belong to the NBIM portfolio the previous and subsequent 2 years. In column 2, NBIM_exit is equal to zero for firms that belong to the NBIM portfolio the previous and subsequent 2 years. In column 3, NBIM_exit is equal to zero for NBIM and non-NBIM firms. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2008-2010. Year 2011 is excluded from the sample. Columns 4, 5 and 6 are analogous to columns 1, 2 and 3, but we exclude the exits that are driven by exits in the FTSE Global Cap. Year dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Vs-NonNBIM	Vs-NBIM	Vs-ALL	Vs-NonNBIM	Vs-NBIM	Vs-ALL
	(1)	(2)	(3)	(4)	(5)	(6)
NBIM_exit	4.424	-3.150	-1.579	7.280**	-0.258	1.285
	(3.220)	(3.042)	(3.026)	(3.629)	(3.463)	(3.456)
NBIM_exit *Post	-8.221**	-5.249	-6.318*	-12.658***	-9.750**	-10.791***
	(4.113)	(3.696)	(3.731)	(4.515)	(4.105)	(4.146)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,721	13,655	16,025	2,669	13,603	15,973
R-squared	0.004	0.003	0.001	0.005	0.003	0.001

Table AIX. Governance-returns trade-off in NBIM's portfolio

This table reports mean alphas (calculated through Carhart's (1997) four factor model) and standard errors in parentheses. The portfolio of NBIM is decomposed into non-discretionary (firms that belong to the FTSE Global Cap Index) and discretionary (firms that do not belong to the FTSE Global Cap Index). Pre-event is for the period 2009-2011. Post-Event is for the period 2012-2015. Panel A shows equally-weighted results. Panel B shows market value-weighted results. The last row reports differences between alphas in the high and low governance portfolios. ***, ** and * indicate statistical significance of these differences at the 1%, 5% and 10% level, respectively.

Panel A: Equally-weighted

Governance	**Non-Discretionary**		**Discretionary**	
portfolios	Pre-Event	Post-Event	Pre-Event	Post-Event
1 (Low)	0.299	-0.024	0.198	0.574
	(0.08)	(0.05)	(0.25)	(0.20)
2	0.125	0.022	0.221	0.387
	(0.09)	(0.05)	(0.23)	(0.23)
3	0.376	0.061	0.460	0.173
	(0.08)	(0.05)	(0.21)	(0.18)
4	0.41	0.00	0.26	-0.24
	(0.07)	(0.05)	(0.23)	(0.19)
5 (High)	0.230	-0.060	0.166	-0.219
	(0.07)	(0.05)	(0.24)	(0.15)
Difference High-Low	-0.069	-0.036	-0.031	-0.793***

Panel B: Value-weighted

Governance	**Non-Discretionary**		**Discretionary**	
portfolios	Pre-Event	Post-Event	Pre-Event	Post-Event
1 (Low)	0.421	0.117	0.328	0.590
	(0.07)	(0.04)	(0.23)	(0.16)
2	0.289	0.029	0.171	-0.507
	(0.07)	(0.04)	(0.18)	(0.14)
3	0.285	0.001	0.678	0.113
	(0.06)	(0.04)	(0.15)	(0.11)
4	0.342	0.095	0.672	-0.518
	(0.06)	(0.04)	(0.17)	(0.11)
5 (High)	0.190	-0.133	0.651	-0.594
	(0.06)	(0.04)	(0.16)	(0.09)
Difference High-Low	-0.231	-0.250	0.323	-1.184***

We compute rolling monthly abnormal returns for each firm in the portfolio of NBIM following Carhart's (1997) four factor model. We first decompose the portfolio of NBIM into non-discretionary (firms that also belong to the FTSE Global Cap Index) and discretionary (firms that do not belong to the FTSE Global Cap Index). For each year t, we decompose the discretionary and non-discretionary portfolio of NBIM into five equal-sized portfolios by ranking firms according to their governance index. This implies we are decomposing the NBIM portfolio into a total of 5*2=10 portfolios. For all the firms in each of the 10 portfolios, we average the monthly alphas and obtain the equally-weighted monthly alpha of each portfolio. Next, for each portfolio we average the equally-weighted monthly alphas of periods

2009-2011 and report pre-event alphas, and average the equally-weighted monthly alphas in the period 2012-2015 and report post-event alphas. For the market value weighted results, each month we calculate the average alpha of each portfolio and then we weight firms' alphas with the market value weight that each firm has in the portfolio of NBIM. The alphas of the low governance portfolio are reported in row 1. The alphas of the high governance portfolios are reported in row 5. We report the difference between the highest and lowest governance portfolio alphas in the last row.

In columns 1 and 3 we do not appreciate any significant difference between the alphas in the low governance and high governance portfolio. This indicates that there is no particular trade-off between governance and returns for NBIM pre-announcement. Post announcement, non-discretionary investments exhibit a non-significant alpha differential of -0.04%. However, post announcement, discretionary investments exhibit a differential return between the high and the low governance portfolio of -0.793%. In fact, the alpha of the low-governance portfolio is positive and statistically significant (0.574%), indicating that NBIM is only willing to include firms in its discretionary portfolio if their returns are expected to be high. Moreover, the alpha of the high-governance portfolio post announcement is negative (-0.219%). Indicating that NBIM is willing to incorporate good governance firms into its portfolio, even if their expected returns are low. Results are qualitatively similar for the value-weighted portfolios. Overall, these results suggest that the preferences of NBIM changed after the announcement with respect to the trade-off between returns and governance, with NBIM willing to leave out some returns in exchange of better governance practices in its portfolio.

Reference: Carhart, Mark M., (1997). On persistence in mutual fund performance, *The Journal of Finance 52 (1), 57–82.*

Table AX. First stage: relevance of NBIM-2011

This table reports the results from OLS regressions. The dependent variable is the dummy NBIM-year, for each yeat *t*, this dummy is equal to one for firms that belong to the portfolio of NBIM, and zero otherwise. $NBIM_{11}$ is a dummy equal to one for firms that belong to the portfolio of NBIM in 2011, and zero otherwise. Post is a dummy equal to one for the period 2012-2015, and zero otherwise. In column 2, we add interactions of NBIM with year dummies for 2012, 2013, 2014 and 2015. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	Relevance (1)	Relevance with YD (2)
$NBIM_{11}$*Post	0.642***	
	(0.022)	
$NBIM_{11}$*year2012		0.805***
		(0.021)
$NBIM_{11}$*year2013		0.666***
		(0.026)
$NBIM_{11}$*year2014		0.587***
		(0.027)
$NBIM_{11}$*year2015		0.515***
		(0.028)
Year dummies	Yes	Yes
Post*Country dummies	Yes	Yes
Observations	17,388	17,388
R-squared	0.951	0.952

Table AXI. The effect of NBIM on governance (weighted)

This table reports estimates of panel regressions (weighted by the logarithm of assets) of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index. $NBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 and zero otherwise. $FTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 and zero otherwise. $OnlyNBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 that do not belong to FTSE in 2011. $OnlyFTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 that do not belong to NBIM in 2011 or have not been excluded by the ethics committee of NBIM in 2011. $NBIMFTSE_{11}$ is a dummy variable equal to one for firms both in the portfolio of NBIM in 2011 and in the FTSE in 2011. $Excluded\text{-}ethics_{11}$ is a dummy variable equal to one for firms that have been excluded from NBIM holdings by the ethics committee of NBIM by 2011. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)
$NBIM_{11}$*Post	4.400***		3.673***	
	(1.231)		(1.391)	
$FTSE_{11}$*Post		2.865***	1.407	
		(1.070)	(1.204)	
$OnlyNBIM_{11}$*Post				3.815**
				(1.892)
$NBIMFTSE_{11}$*Post				4.913***
				(1.494)
$OnlyFTSE_{11}$*Post				1.980
				(2.807)
$Excluded\text{-}ethics_{11}$*Post				-1.917
				(4.113)
Firm & Year fixed effects	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes
Observations	17,368	17,368	17,368	17,368
R-squared	0.024	0.024	0.025	0.025

Table AXII. The effect of NBIM on governance (weights fixed in 2010)

This table reports estimates of panel regressions of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index. $NBIM_{10}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2010 and zero otherwise. $FTSE_{10}$ is a dummy variable equal to one for firms in the FTSE in 2010 and zero otherwise. $OnlyNBIM_{10}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2010 that do not belong to FTSE in 2010. $OnlyFTSE_{10}$ is a dummy variable equal to one for firms in the FTSE in 2010 that do not belong to NBIM in 2010 or have not been excluded by the ethics committee of NBIM in 2010. $NBIMFTSE_{10}$ is a dummy variable equal to one for firms both in the portfolio of NBIM in 2010 and in the FTSE in 2010. $Excluded\text{-}ethics_{10}$ is a dummy variable equal to one for firms that have been excluded from NBIM holdings by the ethics committee of NBIM by 2010. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)
$NBIM_{10}$*Post	4.341***		3.741***	
	(1.209)		(1.416)	
$FTSE_{10}$*Post		2.549***	0.968	
		(0.962)	(1.125)	
$OnlyNBIM_{10}$*Post				3.000*
				(1.703)
$NBIMFTSE_{10}$*Post				4.192***
				(1.349)
$OnlyFTSE_{10}$*Post				-1.057
				(3.359)
$Excluded\text{-}ethics_{10}$*Post				-2.404
				(4.185)
Firm & Year fixed effects	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes
Observations	17,388	17,388	17,388	17,388
R-squared	0.024	0.023	0.024	0.024

Table AXIII. The effect of NBIM on governance – reweighting the control group

This table reports estimates of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index in levels. $NBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 (treatment) and zero otherwise (control). We use propensity score matching so that each treated observation has one nearest neighbor in the control group (with replacement). $FTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 and zero otherwise. $OnlyNBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 that do not belong to FTSE in 2011. $OnlyFTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 that do not belong to NBIM in 2011 or have not been excluded by the ethics committee of NBIM in 2011. $NBIMFTSE_{11}$ is a dummy variable equal to one for firms both in the portfolio of NBIM in 2011 and in the FTSE in 2011. $Excluded\text{-}ethics_{11}$ is a dummy variable equal to one for firms that have been excluded from NBIM holdings by the ethics committee of NBIM by 2011. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)
$NBIM_{11}$*Post	5.885***		6.132***	
	(1.376)		(1.700)	
$FTSE_{11}$*Post		3.198**	-0.420	
		(1.456)	(1.766)	
$OnlyNBIM_{11}$*Post				5.621***
				(2.039)
$NBIMFTSE_{11}$*Post				5.226***
				(1.581)
$OnlyFTSE_{11}$*Post				-1.294
				(2.865)
$Excluded\text{-}ethics_{11}$*Post				-3.415
				(4.759)
Firm & Year fixed effects	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes
Observations	26,712	26,712	26,712	26,712
R-squared	0.035	0.030	0.035	0.035

Table AXIV. The effect of NBIM on governance in levels – discretionary investments

This table reports estimates of the effect of the announcement on the governance of NBIM portfolio firms. The dependent variable is the Governance Index in levels. $NBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 and zero otherwise. $FTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 and zero otherwise. $OnlyNBIM_{11}$ is a dummy variable equal to one for firms in the portfolio of NBIM in 2011 that do not belong to FTSE in 2011. $OnlyFTSE_{11}$ is a dummy variable equal to one for firms in the FTSE in 2011 that do not belong to NBIM in 2011 or have not been excluded by the ethics committee of NBIM in 2011. $NBIMFTSE_{11}$ is a dummy variable equal to one for firms both in the portfolio of NBIM in 2011 and in the FTSE in 2011. $Excluded\text{-}ethics_{11}$ is a dummy variable equal to one for firms that have been excluded from NBIM holdings by the ethics committee of NBIM by 2011. Post is a dummy variable equal to one for the period 2012-2015 and equal to zero for the period 2009-2011. Firm fixed effects, year dummies and dummies on the interaction of the dummy Post and country dummies are included. Standard errors clustered at the firm level are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

	(1)	(2)	(3)	(4)
$NBIM_{11}$*Post	0.747**		1.050***	
	(0.302)		(0.326)	
$FTSE_{11}$*Post		-0.136	-0.539**	
		(0.237)	(0.254)	
$OnlyNBIM_{11}$*Post				0.972**
				(0.446)
$NBIMFTSE_{11}$*Post				0.419
				(0.371)
$OnlyFTSE_{11}$*Post				-0.351
				(0.602)
$Excluded\text{-}ethics_{11}$*Post				-1.566*
				(0.935)
Firm & Year fixed effects	Yes	Yes	Yes	Yes
Post*Country dummies	Yes	Yes	Yes	Yes
Observations	11,070	11,070	11,070	11,070
R-squared	0.445	0.444	0.446	0.446

Table AXV: Granger Causality

These tables report results from Granger causality Wald tests by implementing a GMM panel vector autoregression model. In column 1 and 3, the dependent variable is $\Delta Governance_{(t+1,t)}$, a variable equal to the difference of the governance index between year t+1 and year t. In columns 2 and 4, the dependent variable is $\Delta NBIM\_Weight_{(t+1,t)}$ which measures the difference between the fraction of the NBIM's portfolio represented by the firm in year t+1 and year t. The regressors are one period lagged measures of $\Delta Governance_{(t+1,t)}$, and $\Delta NBIM\_Weight_{(t+1,t)}$. Columns 1 and 2 report results for the period 2012-2015, and columns 3 and 4 report results for the period 2009-2011. Panel B and Panel C report P-values for the estimates of the regressions in column 1 and column 2. Standard errors are shown in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: GMM estimation

	$\Delta Gov_{(t+1,t)}$ 2012-15 (1)	$\Delta NBIM\_W_{(t+1,t)}$ 2012-15 (2)	$\Delta Gov_{(t+1,t)}$ 2009-11 (3)	$\Delta NBIM\_W_{(t+1,t)}$ 2009-11 (4)
Lagged $\Delta Governance_{(t+1,t)}$	-.197***	0.004**	-0.203***	0.002
	(0.019)	(0.002)	(0.013)	(0.002)
Lagged $\Delta NBIM\_Weight_{(t+1,t)}$	0.123	0.063	-0.008	-0.085**
	(0.139)	(0.075)	(0.060)	(0.035)
Observations	4,968	4,968	7,091	7,091

Panel B: Changes in governance: $\Delta Governance_{(t+1,t)}$	P- value
- Predicted by lagged $\Delta NBIM\_Weight_{(t+1,t)}$	0.375
- Controls for lagged $\Delta Governance_{(t+1,t)}$	

Panel C: Changes in fund weights: $\Delta NBIM\_Weight_{(t+1,t)}$	P- value
- Predicted by lagged $\Delta Governance_{(t+1,t)}$	0.044
- Controls for lagged $\Delta NBIM\_Weight_{(t+1,t)}$	

How Eikon ESG builds the score for the Management Category

The Management Category designed by Eikon measures a company's relative performance on 34 management indicators (listed below), based on company-reported information. We obtain one management score per company and year. We called this our governance index and it takes values from 0 to 100. Each indicator within the category score is calculated as a "percentile score", which ranks companies according to each indicator. It is based on three factors: How many companies are worse than the current one? How many companies have the same value? And how many companies have a value at all? For each indicator, we obtain a score. The formula to calculate the score of each indicator is described in equation (1):

$$\frac{\text{n. of companies with a worst value} + \frac{\text{n. of companies with the same value included in the current one}}{2}}{n.\,of\ companies\ with\ a\ value}$$

Thus, after calculating the score of the 34 indicators per company, we derive the average scores for individual companies as the equally weighted sum of the 34 indicators, as described in equation (2).

$$\text{average score} = \sum_{s=1}^{S} \text{score} \,/\, 34 \qquad (2)$$

The last step to obtain the Management score, takes the average scores for each company obtained in equation (2) and repeats the formula in equation (1), to rank again companies according to their average scores.

$$Management\ score =$$

$$\frac{\text{n. of companies with a worst average score} + \frac{\text{n. of companies with the same average score included in the current one}}{2}}{n.\,of\ companies\ with\ an\ average\ score}$$

Table AXVI. Definitions of the provisions included in the Management Score of Eikon

Board Cultural Diversity	Percentage of board members that have a cultural background different from the location of the corporate headquarters.
Executive Members Gender Diversity	Percentage of female executive members.
Board Functions Policy	Does the company have a policy for maintaining effective board functions?
Board Meeting Attendance Average	The average overall attendance percentage of board meetings as reported by the company.
Succession Plan	Does the company have a succession plan for executive management (key board members) in the event of unforeseen circumstances?
External Consultants	Do the board or board committees have the authority to hire external advisers or consultants without management's approval?
Audit Committee Independence	Percentage of independent board members on the audit committee as stipulated by the company.
Audit Committee Mgt Independence	Does the company report that all audit committee members are non-executives?
Compensation Committee Independence	Percentage of independent board members on the compensation committee as stipulated by the company.
Compensation Committee Mgt Independence	Does the company report that all compensation committee members are non-executives?
Nomination Committee Independence	Percentage of non-executive board members on the nomination committee.
Nomination Committee Involvement	Percentage of nomination committee members who are significant shareholders (more than 5%).
Board Attendance	Does the company publish information about the attendance of the individual board members at board meetings?
Board Structure Policy	Does the company have a policy for maintaining a well-balanced membership of the board?
Board Size More Ten Less Eight	Total number of board members which are in excess of ten or below eight.
Board Background and Skills	Does the company describe the professional experience or skills or the age of every board member?
Female on Board	Percentage of female on the board.
Board Specific Skills	Percentage of board members who have either an industry specific background or a strong financial background.
Experienced Board	Average number of years each board member has been on the board.

Non-Executive Board Members	Percentage of non-executive board members.
Independent Board Members	Percentage of independent board members as reported by the company.
CEO-Chairman Separation	Does the CEO simultaneously chair the board or has the chairman of the board been the CEO of the company?
Board Member Affiliations	Average number of other corporate affiliations for the board member.
Board Individual Reelection	Are all board members individually subject to re-election (no classified or staggered board structure)?
Executive Compensation Policy	Does the company have a policy for performance-oriented compensation that attracts and retains the senior executives and board members?
Compensation Improvement Tools	Does the company have the necessary internal improvement and information tools for the board members to develop appropriate compensation/remuneration to attract and retain key executives?
CEO Compensation Link to TSR	Is the CEO's compensation linked to total shareholder return (TSR)?
Total Senior Executives Compensation	The total compensation paid to all senior executives as reported by the company.
Shareholders Approval Stock Compensation Plan	Does the company require that shareholder approval is obtained prior to the adoption of any stock based compensation plans?
Executive Individual Compensation	Does the company provide information about the total individual compensation of all executives and board members?
Highest Remuneration Package	Highest remuneration package within the company in US dollars.
Executive Compensation LT Objectives	Is the management and board members remuneration partly linked to objectives or targets which are more than two years forward looking?
Sustainability Compensation Incentives	Is the senior executive's compensation linked to CSR/H&S/Sustainability targets?
Internal Audit Department Reporting	Does the internal audit department report to the audit committee of the board?

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