Universal Owner and Impact of Its Engagement Program: An Analysis of Engagement Records of Japan's GPIF

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Abstract: This study examines the impact of Japan's Government Pension Investment Fund (GPIF) engagement program, leveraging a proprietary dataset of 26,792 engagements across 21 externally managed funds from fiscal years 2017 to 2022. As one of the largest universal owners globally, GPIF plays a pivotal role in influencing corporate behavior through structured engagements aimed at improving corporate governance, environmental sustainability, and financial performance. Despite growing global interest in engagement-driven stewardship, empirical evidence on its effectiveness remains limited, particularly in Japan. Our study fills this gap by analyzing how asset managers select engagement targets and assessing the tangible impact of engagements on corporate outcomes.

We identify three key findings. First, engagement efforts are primarily directed at themes such as business strategy, financial strategy, climate change, board structure, capital efficiency, and disclosure. Second, targeted firms tend to be large-cap companies with lower controlling shareholder ownership and greater corporate transparency. Third, we employ a rigorous propensity score matching and difference-in-differences (PSM-DiD) methodology to measure the effects of engagements. Our results indicate that climate-related engagements significantly reduce Scope 2 greenhouse gas (GHG) intensity and improve firm valuation metrics such as Tobin's Q and the price-to-book ratio. Similarly, governance-related engagements enhance total shareholder returns (TSR), increase the number of independent board members, and reduce cross-shareholdings, a common practice in Japan's corporate landscape.

These findings underscore the importance of universal owners in shaping corporate behavior. By facilitating constructive dialogues between asset managers and investee companies, GPIF's engagement program demonstrates that stewardship can drive measurable improvements in corporate governance, sustainability, and financial performance. The implications of our findings extend beyond Japan, offering insights into the broader role of institutional investors in promoting long-term value creation. Our study contributes to the literature by providing one of the most comprehensive empirical analyses of large-scale engagement activities in a universal ownership context.

JEL Classification: G2, G3

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** Disclaimer: This paper is based on the proprietary engagements records that GPIF (Government Pension Investment Fund) of Japan collected through its delegated asset managers. The views and opinions expressed in this paper, however, are those of the authors and do not necessarily reflect the views or positions of any entities they represent.

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Keywords: Universal ownership, stewardship, monitoring by shareholders, climate change, ESG

1. Introduction

The concept of universal ownership has been explored extensively in the literature (Monks & Minow, 1996; Hawley & Williams, 2000). A universal owner refers to a large institutional investor that holds a broadly diversified portfolio, making it inherently concerned with systematic risks in the economy rather than just firm-specific risks. As a result, universal owners may actively engage with investee companies to mitigate externalities, such as environmental pollution or labor exploitation (Gosling, 2024). One notable example is the Universal Owners Initiative, a think tank founded in 2020 to advocate for corporate sustainability practices. From a theoretical perspective, universal ownership is also seen as an effort to internalize intra-portfolio externalities to maximize long-term portfolio returns (Condon, 2020).

This paper analyzes efforts of Japan's Government Pension Investment Fund (GPIF), one of the world's largest pension funds and a universal owner, which manages approximately 258 trillion yen (approximately 1.6 trillion US dollars) as of the end of 2024, to internalize externalities of its investee companies.

GPIF has made many ongoing efforts to promote constructive dialogue (engagement) between asset managers and investee companies. As part of these efforts, since fiscal 2017, GPIF has required its external asset managers for equities to submit records of its engagement with companies. To understand the status of engagement activities by external asset managers regarding domestic equities and evaluate its effects, GPIF conducted the "Evaluation Project on the Effects of Engagement" based on engagement records and published the results in May 2024. This paper examines the proprietary data that GPIF collected and draws several important results about how its encouragement of engagement by asset managers contributed to changes of behavior of its investee companies. Our research is motivated by seminal work by Dimson, Karakaş and Li (2013) who used US data to

compare the performance, profitability, efficiency, shareholder ratio share price volatility of target companies, and governance change of a successful and failed engagement case by using the Difference in Differences (DID) Method.

While prior studies have examined engagement effects in Japan using proprietary data from a limited number of asset managers (Lin, Kimura, & Inoue, 2023; Becht et al., 2023), our study is unique in utilizing a comprehensive dataset covering 21 asset managers and nearly 27,000 engagements. By analyzing GPIF's engagement program at an unprecedented scale, we provide new empirical insights into how systematic, large-scale engagement efforts influence corporate behavior and financial performance. Although our data is limited to the engagement activities of GPIF's external asset managers, given that many of them are major institutional investors in domestic equities, analysis of the effects of their engagement can provide an overall picture of engagement activities in Japan.

As one of the world's largest pension funds, GPIF manages approximately ¥258 trillion (USD 1.6 trillion) and is a major universal owner in the Japanese equity market. To fulfill its fiduciary duty and ensure long-term portfolio sustainability, GPIF has actively promoted constructive engagement between its external asset managers and investee companies. Since 2017, GPIF has required asset managers to document engagement activities, leading to the creation of one of the most extensive datasets on stewardship in Japan. This study leverages these proprietary engagement records to assess how GPIF's engagement program influences corporate behavior and key performance indicators (KPIs). Engagement activities are generally conducted in a private setting between the asset managers and the company; usually, only those involved has the knowledge of the actual status of the engagement activities. However, our proprietary records of asset managers' engagements enable us to analyze the status and effects of engagement activities. Our records include 26,792 engagements covering 48,077 themes in total, by 21 funds of GPIF's external asset managers entrusted with domestic equity investment from fiscal 2017 to fiscal 2022. We apply and demonstrate statistical

causal inference methods using various indicators, including financial and share price indicators, ESG scores, specific ESG factors such as GHG emissions reduction targets, and the percentage of female board members. This analysis is the first of its kind in Japan in terms of the number of funds and engagements covered, and certainly one of the few studies in the world that analyze the effect of engagement activities behind closed doors.,

Our records of engagements include the theme of engagement that GPIF classified into 38 different categories, the detailed description of theme engaged, the date of the engagement meeting, and the counterpart at the investee company. We primarily rely on the engagement category, and then analyze the distribution of number of engagements by categories, choice (Probit) model of a target firm of engagement, and the effect of engagement on various key performance indicators (KPIs) using difference-in-difference technique.

This study aims to analyze the determinants and effectiveness of GPIF's engagement program using a proprietary dataset covering over 26,000 engagement records from 21 asset managers between 2017 and 2022. We seek to answer the following key questions: (1) What factors influence asset managers' selection of engagement targets? (2) Do engagement activities lead to measurable improvements in corporate governance, environmental practices, and financial performance? The summary of our findings is as follows.

Our results indicate that engagement efforts are concentrated on business strategy, financial strategy, climate change, board structure, capital efficiency, and disclosure. Companies targeted for engagement tend to have larger market capitalizations, lower controlling shareholder ownership, and greater transparency in corporate disclosure. Furthermore, using propensity score matching and difference-in-differences (PSM-DiD) analysis, we find that certain engagements—particularly those on climate change and governance—result in significant improvements in corporate KPIs, such as reductions in

Scope 2 greenhouse gas (GHG) emissions and improvements in corporate (Tobin's Q and PBR). Other improvements of KPIs include the increase of TSR (total share returns) including dividends, increase in the number of external board members, and a reduction in cross-shareholdings.

The structure of this paper is as follows. In Section 2, we briefly describe the history of GPIF and its engagement program. Section 3 summarizes the descriptive statistics of the records of engagement, by theme and asset managers. We also explain what our research agendas are, as well as the methodology we use to investigate each agenda. Section 4 describes the result of choice (Probit) model of a target investee company by asset managers. Section 5 reports the result of staggered PSM-DiD results that examines the effect of engagement on several KPIs. Section 6 concludes.

2. History of GPIF and Its Engagement Program

2.1 Background

GPIF was established as an Independent Administrative Agency in April 2006 to invest the financial reserves of Japanese public pension schemes. As an IAA, the fund is assumed to operate independently from the Ministry of Health Labor and Welfare (MHLW). It provides supplementary finance for the Japanese public pensions system

[1] by aiming "to secure a long-term real return […] of 1.7% plus rate of wage increase, with minimal risks".[2] GPIF has been instrumental in promoting responsible investment and ESG (environmental, social and governance) in Japan.

GPIF is one of the world's largest pension funds, with its total assets amounting to JPY 258 trillion (USD 1.6 trillion) and is a "universal owner" that invests widely across the global capital market.

[1] GPIF manages and invests the Reserve Funds of the Government Pension Plans, namely Employees' Pension Insurance (EPI) Plan and National Pension (NP) Plan, entrusted by the Minister of Health, Labour and Welfare. GPIF contributes to the financial stability of both Plans by remitting profits of investment.

[2] GPIF Annual Report FY 2023.

GPIF also has the characteristic of being an "ultra-long-term investor" from the perspective of playing a part in Japan's public pension system with an eye on the next 100 years. In order for GPIF, as both a "universal owner" and an "ultra-long-term investor," to generate stable long-term returns, it is important that the companies it invests grow sustainably, and that the entire capital market also achieves stable and sustainable growth.

For example, what if some of the companies held by GPIF engage in business activities do not take into account of their externalities such as the significant burden on the environment and society in order to temporarily increase profits. This may result in the rise of stock price of the company, although the economy and society as a whole, including other companies, are negatively affected by these activities. Such actions can significantly damage the "universal owner's" portfolio as a whole. Therefore, to secure investment returns, it is essential to suppress negative externalities and maintain sustainable capital markets and societies. The idea of "universal ownership," which actively works to suppress such negative externalities, is at the core of GPIF's ESG-conscious investment.

Besides "ensuring market average returns", GPIF aims to enhance the long-term performance of GPIF's entire portfolio by reducing sustainability-related risks and improving market sustainability". Symbolic efforts are the passive management of stocks based on ESG indices, which began in 2017, and the engagement-enhanced passive management, which began in 2018. This paper aims to statistically verify the effects of the latter effort in particular, including causal relationships.

2.2 History of GPIF's Engagement Program

In 2014 GPIF adopted a more direct approach to responsible investment. The fund implemented Japan's Stewardship Code and introduced measures that supplemented its monitoring of external managers. In 2015 GPIF became a signatory to The Principles of Responsible Investment (UN-PRI) promoting its commitment to investor stewardship. In 2016 GPIF established a business and asset owners' forum and initiated a survey of listed companies. This survey provides GPIF with direct

feedback from portfolio companies regarding the ESG-related dialogue, voting and other issues of their external asset managers.

In 2017 the fund reinforced its commitment to active ownership and stewardship by shifting its approach towards external managers from monitoring to engagement. GPIF "proactively held dialogues with external asset managers on matters such as exercise of proxy voting rights" to "evaluate that external asset managers are exercising proxy voting rights in compliance with GPIF Proxy Voting Principles by integrating ESG factors into the investment process." GPIF also engaged in a dialogue with ESG analysts that supply the ratings for the ESG indices it had adopted, aiming to positively influence their evaluation methods employed by the evaluators and encourage dialogue with GPIF's portfolio companies during the evaluation process (ESG Report 2017, pg. 12).

GPIF has continued to make significant efforts to promote constructive dialogue (engagement) between asset managers and investee companies. As part of these efforts, since fiscal 2017, the fund has required its external equity asset managers to submit records of their engagement with companies. To understand the status of engagement activities by external asset managers for domestic equities and evaluate its effects, we conducted the "Evaluation Project on the Effects of Engagement" based on their engagement records, and published the results in May 2024. One of the funds' main focuses for the Project was on the stewardship of passive asset managers.

In recent years, the proportion of passive management has increased not only for GPIF but also for many institutional investors. Accordingly, the role of passive managers in addressing ESG issues within investee companies, such as corporate governance, is becoming increasingly important.

However, the evaluation of passive managers is centered on two evaluation axes: tracking error, or how well the management is aligned with the benchmark, and low costs. The emphasis on the manager's engagement and stewardship activities, such as the exercise of voting rights, is generally

minimal, leaving little incentive to actively pursue engagement activities. Additionally, the effect of engagement will be widely distributed to shareholders regardless of the amount of cost burden. Since engagement activities are generally conducted behind the scenes, it is not easy for asset owners to monitor the efforts of these managers. All of these factors contribute to passive managers potentially becoming free-riders, avoiding the engagement activities they are originally expected to undertake. The same is applies to asset owners.

Approximately 90% of GPIF's stock management is passive, and it is also a major shareholder. As of the end of 2024, GPIF has invested 65 trillion yen (410 billion US dollars) in domestic equities, representing 6.5% of the total market capitalization of Tokyo Stock Exchange-listed companies. If these major shareholders can incur appropriate costs to passive managers and encourage effective engagement activities, it could lead to the long-term growth of GPIF's managed assets. If the engagement activities of its managers can improve overall market return by even 1%, the return would exceed 600 billion yen (4 billion US dollars).

Given the importance of passive managers' stewardship activities, GPIF significantly increased the weight of stewardship evaluation in the assessment of stock passive managers in 2017. In addition, in 2017, GPIF selected two companies, Asset Management One and Fidelity Investment Trust, as passive management models that emphasize stewardship (hereinafter referred to as "engagement-enhanced passive funds".) In 2021, Sumitomo Mitsui Trust Asset Management and Resona Asset Management were added to that list. Each company has unique characteristics, such as funds where top management of the asset management company is actively involved in engagement activities, and funds that utilize AI technology to evaluate companies' integrated reports and TCFD disclosures, using these as a starting point for engagement. However, all of them set appropriate KPIs for engagement (setting goals for medium- to long-term engagement activities, annual plans for achieving them, i.e., milestone management, etc.) and they allocate fees to funds that are recognized for having excellent

organizational structures for conducting stewardship activities, distinct from the compensation system of general passive managers.

3. Data and Research Agendas

3.1 Engagement Data

As we described before, our proprietary records of asset managers' engagement comprise 26,792 engagements covering 48,077 themes (described below) in total, by 21 funds of GPIF's external asset managers entrusted with domestic equity investment conducted from between April 2017 and December 2022. The list of 21 asset managers, as well as the number of engagements by each asset manager, are shown in Table 1. By nature of a passive fund that the number of investee companies is larger than that of an active fund, the number of engagements is also generally larger for passive funds. Please note that the total number of engagements per fund is for reference only and cannot be compared directly because there are funds which were newly contracted or terminated to manage for GPIF during our sample period.

Table 2 reports the number of total engagements per fiscal year. The fiscal year for GPIF starts in April and ends in March subsequent year, for example FY 2017 data includes engagements between April 1, 2017 and March 31, 2018 (in the case of FY 2022, we only have data until December 31, 2022). We see a rapid increase in the number of engagements since 2017 (3,128 in 2017 vs. 6,274 in 2022, almost 100% increase). Note that FY 2022 records include only 9 months of engagements, so the total number for FY 2022 should amount to 6,000. During the period, the number of asset managers that GPIF delegated its assets slightly decreased, which means that the number of engagements per asset manager increased even more rapidly.

GPIF asked its asset managers to report their engagement records with the theme of the engagement discussion. GPIF then designated and classified the theme of the engagement into 38 categories. Table

3 reports the distribution of engagements by the 38 categories. GPIF provides 5 broader classification categories, which are "B", "E", "S", "G", and "ES/SG/ESG". "B" categories include 5 business related themes. "E" categories include 8 environmental themes. "S" categories include 7 social themes. "G" categories include 12 governance related themes with some similar issues classified as sub-themes. "ES/SG/ESG" categories include 6 themes that have overlapping issues with environment, social and governance, with ES1 related to environmental and social supply chains, SG1 related to social and governance diversity. The remaining 4 "ESG" categories are cross-over themes between E, S and G.

Table 3 indicates that the distribution of the engagements by categories is skewed. Categories with large number of engagements include B1: Business Strategy, B2: Financial Strategy, E1: Climate Change, G1: Board Structure/Self-Evaluation, G3: Capital Efficiency, G4-1 Cross-Shareholdings, SG1: Diversity and ESG1: Disclosure. Although time-series change of distribution is not reported in Table 3, we find that the number of engagements in category E1: Climate Change, has increased in the past several years, while that of G5-1: Takeover Defenses has decreased since many companies abolished takeover defenses in our sample period.

Table 4 shows the cross-tabulation of the theme categories and the industry classification. The figures shown are percentage against total engagements per industry. The top themes of dialogue across all industries were "G1: Board Structure & Self-evaluation," "B1: Management & Business Strategy," and "E1: Climate Change". Specifically, in high-GHG emission sectors such as Energy Resources, Steel & Nonferrous Metals, and Electric Power & Gas, "E1: Climate Change" is ranked first, indicating engagements are conducted based on materiality.

3.2 Research Agenda

In the following sections, we analyze two research agendas that we want to explore.

Agenda 1: The selection of engagement target

Firstly, we would like to know how asset managers choose a target company to engage with. Table 5 shows the name of the companies that are frequently engaged (Panel A) and that of firms that are never engaged (Panel B). We see that some companies are engaged very frequently (as many as 48 engagements in total by the 38 asset managers) while there are many firms that are never engaged.

We identify the characteristics of companies that asset managers select as engagement partners using Probit analysis of engagements by theme categories pooled over engagement years. Dependent variable takes the value of 1 if a company is engaged on a theme category in a certain year, and 0 otherwise. We only analyze theme categories with large number of engagements. We have included industry sector dummies of 17 sector dummies, with the base case being "telecommunications and services". As Table 5 seems to suggest that large companies tend to be more frequently engaged by asset managers, we also include TOPIX size category dummies with the base case being 100 largest market cap companies (TOPIX Core 100). The results of the analyses will be reported in Section 4.

Agenda 2: Causal impact of engagements on KPI of investee companies

Secondly, we would like to know whether engagements by asset manager had any effect on financial or operational key performance indicators (KPIs). In our analysis, we focus on overall financial KPIs of an engaged company, as well as operational KPIs that are closely related to a theme category of an engagement. When selecting engagement themes for causal analysis, we took into consideration that the volume of data should be sufficient, that appropriate KPIs could be set according to the themes and that there should be no bias in the target themes. We excluded engagement themes that included "Others" due to the difficulty of setting appropriate KPIs.

We use the causal inference method PSM-DiD (propensity score matching-difference in differences) to analyze how the engagement activities of asset managers changed the behavior of the companies

they engaged with, and how they changed each explained variable (KPI.) We match the characteristics of a group of companies that received engagements (the intervention group) with those that did not (the control group) using variables that affect the probability of receiving engagements. The variables used for matching are the same as in Probit model for Agenda 1: natural logarithm of market cap, natural logarithm of total assets, profit margin on sales, cash deposits divided by total assets, total debt divided by total assets, financial leverage, average stock return over 3 years, ratio of shares held by controlling company, TOPIX category (101–500, 501–1000, or smaller) dummies and industry sector dummies. We limit the universe of treated (engaged) and matching control firms to 1000 largest TOPIX companies, as smaller companies have limited number of treatments.

The Difference-in-Differences (DiD) method extracts and measures only the effects of engagement (the treatment effects) by measuring the difference in change in KPIs before and after engagement for two groups of companies with similar characteristics except for whether or not they received engagements. Since the engagements (treatments) are not conducted in one particular year, but rather, more companies are gradually engaged as year goes by, we use staggered DiD with the following regression function (Sun-Abraham estimator according to Sun and Abraham 2021) with the fixed effect for companies, which reflects the different characteristics of each company, and the fixed effect for fiscal years, which reflects shocks specific to the fiscal year. The base point of the analysis was set with the respective timing of first engagement.

$$Y_{it} = \alpha_i + \lambda_t + \sum_{k} \sum_{\ell \neq -1} \beta_{\ell,k} D_i\,[G_i=k]\, D_{it}[t-k=\ell] + \varepsilon_{it}$$

Y_{it} : Explained variable

α_i : Company fixed effects (baseline for each company)

λ_t : Fiscal year fixed effect (relevant fiscal year-specific shock)

$\beta_{\ell,k}$: Parameter to be estimated (difference between intervention and control groups ℓ years after intervention in fiscal year k)

$D_i[G_i=k]$: Dummy variable that takes the value of 1 when fiscal year k is the first year of intervention, and 0 otherwise

$D_{it}[t-k=\ell]$: Dummy variable that takes the value of 1 in the ℓth period since fiscal year k (when fiscal year k is the first year of intervention,) and 0 otherwise

ε_{it} : Error term (the sum of other effects not presented in the model)

The KPIs analyzed by PSM-DiD are as follows:

(i) theme-wide KPIs to examine the differences before and after the initiation of the engagement: tobin's Q, price-to-book ration (PBR), natural log of market cap, total shareholder return, ROE, equity spread and FTSE ESG scores (overall plus pillar scores for E, S and G).

(ii) theme-category specific KPIs listed below:

Theme	Theme-specific KPI
B1: Management & Business Strategies	Dividend Payout Ratio
	Total Payout Ratio
	Net Cash Ratio
B2: Financial Strategies	Dividend Payout Ratio
	Total Payout Ratio
	Net Cash Ratio
B3: Shareholders' Meeting-related Matters	FTSE Pillar Score (G)
	% of Independent Outside Directors
	# of Independent Outside Directors
E1: Climate Change	FTSE Pillar Score (E)
	Presence of GHG Emissions Reduction Targets
	Carbon Intensity Scope 1
	Carbon Intensity Scope 2
	Carbon Intensity Scopes 1&2
G1: Board Structure, Self-evaluation	FTSE Pillar Score (G)
	% of Independent Outside Directors
	# of Independent Outside Directors
	% of Female Board Members and Statutory Auditors
	% of Female Members in the Board of Directors
G3: Capital Efficiency	FTSE Pillar Score (G)
	Dividend Payout Ratio
	Total Payout Ratio
	Net Cash Ratio
G4-1: Cross-shareholdings	FTSE Pillar Score (G)
	Cross-shareholding Ratio
SG1: Diversity	% of Female Board Members and Statutory Auditors
	% of Female Employees in New Hires
	% of Female Employees in the Workforce
	Difference in Average Years of Employment between Male Employees and Female Employees
	% of Female Managers in All Management Positions
	% of Female Members in the Board of Directors

4. Determinants of choice of engagement target

As we described above in Agenda 1, we would like to know how asset managers choose a target company to engage with. We identify the characteristics of companies that asset managers select as engagement partners using Probit analysis. In our first model, we assign 1 if a company is ever engaged in our sample period and 0 otherwise. In our second model, we conduct an Ordered Probit model where our dependent variable is trinomial where the highest state 2 is for a company which was engaged by more than one asset managers, 1 is for that engaged only by a single asset manager, and 0 is for a company not engaged by any asset manager. In both models, we includ industry sector dummies and fiscal year dummies. We also include TOPIX size category dummies with the base case being 100 largest market cap companies (TOPIX 100). Ordered Probit is used for robustness test of Probit model, as a company engaged by a multiple asset managers may be regarded as receiving a higher level of engagement than that engaged by a single asset manager. The results of Probit and Ordered Probit are shown in Tables 6 and A-1 (in Appendix), respectively. Although industry sector dummies and fiscal year dummies are included in both models, we omit the coefficients from the tables due to the size constraint. Additional tables with coefficients of industry and fiscal year dummies are available upon request. We see from Tables 6 and A-1, that the sign and significance of coefficients from the two models are similar, which suggests the Probit model is robust to the trinomial classification of the dependent variable. Therefore, we will describe our findings below mainly referring to Table 6.

We find that companies are more likely to receive engagements when their size is larger (higher total assets and market cap), their controlling shareholder(s) hold smaller percentage, and their disclosure is proactive (releasing integrated reports). In many theme categories, we find the TOPIX size category dummies being negative for TOPIX constituents that fall below top 500 (more so for below 1000), which means that engagements are heavily concentrated on 500 larger companies within TOPIX.

Looking closer to each column, we see that asset managers choose an engagement theme in accordance with the target company's characteristics and industry sector. For example, B-1 and B-2, business and financial strategies tend to be an engagement theme when profit margin is low, and target companies, with industry dummies suggesting that banks and financial companies tend to be less likely to be chosen on these themes. For E1, climate change, the targets are companies with high carbon intensity and GHG reduction targets, and the industries such as energy resources, electric appliances & precision instruments, steel & non-ferrous metals, automobiles& transport equipment, and transportation & logistics. Governance themes are also chosen depending on the characteristics of a target. For G1 board structures, a company with higher percentage of independent directors, higher cash balance relative to total assets and existence of takeover defense tends to become an engagement target. For G3 capital efficiency and G4-1 cross-shareholdings, a company with higher percentage of ownership by controlling shareholders, low profit margin, low asset turnover and low leverage is likely to be engaged.

Our overall findings regarding our Agenda 1 are (1) that companies whose size is larger, smaller percentage of ownership of controlling shareholders and proactive disclosure tend to their controlling shareholder(s) hold smaller percentage, and their disclosure is proactive (releasing integrated reports), and (2) engagement themes are choosing according to target characteristics and industry sector, suggesting that asset managers select targets and themes to engage with, so that engagements become more effective.

5. Engagement effects of target companies

As we described in Section 3, we use PSM and staggered-DiD methodology to analyze the effect of engagement on various target KPIs. We analyze engagement themes, we choose those whose number of engagements is sufficient, and whose appropriate KPIs could be set. We excluded engagement

themes that included “Others” because various engagement issues are included in the category. We examine engagements of nine theme categories, which are B1, B2, B3, E1, G1, G3, G4-1, SG1 and ESG1. As we described before, we limit our analyses to the top 1,000 companies in TOPIX by market capitalization to secure the number of companies in treated (engaged) and control (not engaged) groups are sufficient.

Table 7 shows the results of PSM-staggered DiD analysis of KPIs of target companies engaged on a specific theme. We report not only coefficients for all sample, but also sub-sample analyses of the 1,000 TOPIX companies by splitting the treated companies into three categories according to market capitalization; large (top 100), mid (top 101~500) and small (below 501). This is because we find that there is a difference in impact of engagements between on large cap companies and smaller cap companies. The coefficient for KPIs reported in Table 7 is Sun-Abraham estimator (Sun and Abraham 2021) with the fixed effect for companies and the fixed effect for fiscal years. The base point of the analysis was set with the respective timing of first engagement, and each coefficient indicates the average treatment effect of periods relative to the first engagement year. The figures in shaded cells are the ones whose estimates are not reliable, because even after the PSM, there remains a different pre-trend between the treated and the control.

We have conducted 94 KPI analyses based on all treated firms, as well as additional 282 (94 X 3) KPI analyses based on size categories (large, mid and small capitalization). Out of total of 376 resulting coefficients, 42 are excluded because of the existence of pre-trend difference between the treated and the control, leaving 334 cells to be discussed in Table 7. There are total of 56 KPIs that significantly improved as a result of engagements, and we see that significant improvements concentrate on small cap companies (24 KPIs compared with 12 KPIs in large cap and 5 KPIs in medium cap). There is only one case in B3 theme large cap group that engagements had adverse impacts on KPI, which is the FTSE ESG score that decreased.

Examining results by engagement theme categories, we find that the engagements on E1: Climate Change, are very effective. KPIs related to corporate valuation (e.g. PBR, Tobin's q) showed improvements, as well as theme related KPIs such as the increased setting of decarbonization targets, and the reduction of Scope 2 carbon intensity.[3] Additionally, engagement on "G1: Board Structure & Self-evaluation," improved KPIs related to investment returns (e.g. PBR, natural logarithm of market cap, Total Shareholder Return), as well as the increase in the number of independent outside directors. In this case, market capitalization of companies engaged in this theme increased by 6% compared to those that were not engaged. While this may seem small, the total market capitalization of the 256 companies that received engagements on this theme in fiscal 2017 was roughly ¥304 trillion (as of March 31, 2018,) accounting for 47% of the market capitalization of the TOPIX constituents at the time.

Other improvements in KPIs of all sample of engaged targets with 5% level significance are as follows: (i) For G3 "capital efficiency": TSR, (ii) for G4-1 "cross-shareholdings": cross-shareholdings (reduction), and (iii) SG1: "diversity": market cap. We also find that engagements on SG1 "diversity" have positively affected KPIs related to diversity of small cap companies, such as percentage of female employees in new hires.

In summary, engagements by asset managers improved company valuation as well as several KPIs related to specific engagement themes. Engagements are found to be more effective for smaller market cap companies.

[3] We still need to examine why Scope 2 intensity decreased significantly, while Scope 1 intensity did not. Nihon Keizai Shimbun (Nikkei) Newspaper reports a similar finding of only Scope 2 intensity decreasing among Japanese companies (Nikkei morning edition, February 13, 2025).

6. Conclusion

This study examines the determinants and impact of engagement programs facilitated by Japan's Government Pension Investment Fund (GPIF). Using a comprehensive dataset of 26,792 engagements across 21 asset managers (2017–2022), we provide new insights into how universal owners influence corporate behavior.

Our analysis reveals three key findings. First, engagement activities are concentrated on business strategy, financial strategy, climate change, board structure, capital efficiency, and disclosure. Second, companies targeted for engagement tend to be large-cap firms with lower controlling shareholder ownership and greater corporate disclosure activity. Third, certain engagement themes demonstrably affect firm performance: climate-related engagements contribute to reduced Scope 2 greenhouse gas (GHG) intensity and improved firm valuation (Tobin's Q, PBR), while governance-related engagements lead to higher total shareholder returns (TSR), more independent board members, and reduced cross-shareholdings.

These findings underscore the role of universal owners in influencing corporate behavior, demonstrating that structured engagement can drive meaningful change in corporate governance, sustainability, and financial performance.

Overall, our findings suggest that GPIF's engagement program positively influences several crucial KPIs, reinforcing the significance of active stewardship in universal ownership. It is noteworthy that engagements not only impacted KPIs directly related to their themes but also had positive effects on broader company valuations, such as Tobin's Q and the price-to-book ratio. Additionally, we found little evidence of negative effects resulting from engagements, which is another important finding.

Several avenues for future research remain, as follows:

(i) **Analysis of difference of nature of engagements of active and passive asset managers:** This analysis did not consider the status of each fund's share ownership. However, active funds may sell their shares of companies that responded poorly to engagement. Regarding the engagement of active funds that have the option of selling, our approach may not appropriately measure their engagement capabilities. Furthermore, some asset managers offer both active and passive funds, so there may be cases where engagement records between the active and passive investment are not separately reported. We may need to focus our analyses only on engagements by asset managers specialized in active management.

(ii) **Analysis of difference in the nature and effectiveness of engagements between single and multiple asset managers:**

We need to analyze further the difference between companies that are engaged only by a single asset manager and those engaged by more than one asset managers. Their characters (size, profitability, ownership structure, etc.) as well as the impact of engagements may be different. Especially, we need to figure out whether engagements by multiple asset managers are more (or less) effective than those by a single asset manager.

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Table 1 List of 21 asset managers and their number of engagements

This table shows a list of funds (asset managers) delegated by the GPIF to invest in domestic equity. The asterisk (*) in the column "Name of Fund" indicates funds that the fund had already been withdrawn as of March 2023. "A" stands for active fund and "P" for passive fund.

Name of Fund	Passive/ Active	Total
Asset Management One Co., Ltd.	P	3,969
Nomura Asset Management Co., Ltd.	P	3,129
BlackRock Japan Co., Ltd.	P	2,523
Sumitomo Mitsui Trust Asset Management Co., Ltd.	P	4,422
Mitsubishi UFJ Trust and Banking Corporation	P	3,190
Resona Asset Management Co., Ltd.	P	1,708
Goldman Sachs Asset Management Co., Ltd.*	P	691
Asset Management One Co., Ltd. (Active 1)	A	453
Asset Management One Co., Ltd. (Active 2)	A	1,060
Invesco Asset Management (Japan) Limited	A	335
Capital International K.K.	A	829
Schroder Investment Management (Japan) Limited	A	124
Taiyo Pacific Partners LP	A	95
FIL Investments (Japan) Limited	A	492
Sumitomo Mitsui DS Asset Management Company, Limited	A	585
Lazard Japan Asset Management K.K	A	519
Russell Investments Japan Co., Ltd.	A	1,783
Eastspring Investments Limited*	A	135
Dimensional Fund Advisors L.P.*	A	151
Nikko Asset Management Co., Ltd*	A	506
JPMorgan Asset Management (Japan) Limited*	A	93
Total		26,792

Table 2 Number of engagements by fiscal year

This table shows the total number of engagements by all asset managers per fiscal year. It also reports the number of asset managers in each FY. The average engagements per asset manager is shown in the last column.

FY	Total engagements per FY (a)	# of asset managers (b)	Engagements per asset manager (a/b)
2017	3,128	18	174
2018	3,720	18	207
2019	4,320	17	254
2020	4,778	17	281
2021	6,274	16	392
2022	4,572	15	305
Total	27,709		

Table 3 Number of engagements by theme categories classified by GPIF

This table shows the distribution of the engagement by 38 theme categories specified by GPIF. "B" categories are for business related themes. "E" categories are for environmental themes. "S" categories are for social themes. "G" categories are for governance related themes. "ESG" categories are for themes that have overlapping issues with environment, social and governance.

Theme	Number
B1: Management & Business Strategies	6,725
B2: Financial Strategies	2,423
B3: Shareholders' Meeting-related Matters	1,913
B4: Human Capital	1,229
B5: Others	247
E1: Climate Change	4,566
E2: Deforestation	131
E3: Water Stress, Water Security	124
E4: Biodiversity	261
E5: Pollution & Resources	113
E6: Waste Management	133
E7: Environmental Opportunities	707
E8: Others (E)	600
S1: Human Rights & Communities	541
S2: Product Liability	206
S3: Health & Safety	206
S4: Labor Standards	395
S5: Controversial Sourcing	1
S6: Social Opportunities	206

Theme	Number
S7: Others (S)	331
G1: Board Structure, Self-evaluation	6,960
G2: Risk Management	288
G3: Capital Efficiency	2,386
G4-1: Cross-shareholdings	1,503
G4-2: Parent-Subsidiary Listing	277
G4-3: Minority Shareholder Rights (Others)	76
G5-1: Takeover Defenses	880
G5-2: Remuneration	953
G5-3: Corporate Governance (Others)	4,302
G-6: Anti-corruption	71
G7: Tax Transparency	0
G8: Others (G)	0
ES1: Supply Chain	867
SG1: Diversity	1,886
ESG1: Disclosure	3,129
ESG2: Misconduct	1,086
ESG3: ESG Ratings (Scores)	42
ESG4: Others	2,313

Table 4 Engagements theme categories vs. industry classification

This table shows the cross-tabulation of the theme categories and the industry classification. The figures shown are percentage against total engagements per industry. The themes that have very low proportion are not reported.

	Percentage of total engagements of the category																
Theme category	Food	Energy Resources	Construction & Materials	Raw Materials & Chemicals	Pharmaceutical	Automobiles & Transport Equipment	Steel & Non-ferrous Metals	Machinery	Electrical Appliances & Precision Instruments	IT & Services, Others	Electric Power & Gas	Transportation & Logistics	Commercial & Wholesale Trade	Retail Trade	Banks	Financials (EX Banks)	Real Estate
B1: Management & Business Strategies	12.0%	13.8%	11.9%	12.5%	16.5%	13.1%	13.5%	11.9%	16.4%	15.6%	7.6%	14.5%	13.3%	14.3%	14.5%	15.2%	15.1%
B2: Financial Strategies	4.0%	4.9%	6.3%	4.8%	3.5%	4.3%	2.9%	5.0%	5.8%	5.6%	3.3%	5.2%	5.4%	4.5%	4.3%	6.1%	4.9%
B3: Shareholders' Meeting-related Matters	2.2%	3.1%	4.3%	3.5%	3.8%	3.5%	4.4%	3.9%	3.9%	3.8%	10.5%	1.8%	5.1%	1.9%	6.6%	3.9%	3.5%
B4: Human Capital	2.6%	0.7%	2.4%	1.8%	4.3%	1.4%	0.9%	1.4%	2.3%	4.4%	0.9%	3.4%	3.0%	4.5%	2.6%	2.9%	3.3%
E1: Climate Change	7.0%	33.5%	8.5%	9.6%	1.7%	12.3%	16.1%	9.4%	6.4%	4.0%	29.6%	14.3%	13.3%	5.3%	8.8%	8.2%	6.8%
E4: Biodiversity	4.1%	-	0.4%	1.0%	0.4%	0.1%	0.3%	0.1%	0.1%	0.2%	-	0.3%	0.2%	1.3%	0.0%	0.3%	0.3%
E5: Pollution & Resources	0.6%	0.3%	0.1%	0.5%	-	0.3%	0.5%	0.2%	0.0%	0.2%	0.4%	0.3%	0.1%	0.4%	-	-	0.3%
E6: Waste Management	0.9%	-	0.1%	0.8%	-	0.3%	0.4%	0.2%	0.2%	0.1%	0.3%	0.1%	-	0.8%	-	-	-
E7: Environmental Opportunities	0.9%	2.6%	1.4%	2.3%	-	3.1%	1.4%	3.6%	2.0%	0.5%	1.1%	0.7%	0.9%	1.0%	0.2%	0.8%	1.8%
S1: Human Rights & Communities	1.0%	1.1%	0.7%	0.8%	0.5%	0.9%	1.0%	0.6%	0.7%	0.9%	0.9%	1.3%	1.5%	1.7%	4.8%	0.2%	1.3%
S2: Product Liability	1.0%	-	0.1%	0.6%	2.5%	0.8%	0.2%	0.4%	0.3%	0.4%	0.3%	0.3%	0.0%	0.5%	-	0.3%	0.3%
S3: Health & Safety	0.9%	-	0.6%	0.3%	3.3%	0.1%	0.4%	0.3%	0.1%	0.6%	0.2%	0.8%	0.1%	0.4%	0.0%	0.3%	0.3%
S4: Labor Standards	0.3%	0.2%	1.7%	0.6%	0.3%	0.1%	0.5%	0.7%	0.5%	1.9%	0.1%	1.0%	0.8%	1.3%	0.0%	0.1%	1.5%
S6: Social Opportunities	0.5%	-	0.4%	0.3%	3.3%	-	-	0.3%	0.5%	0.7%	0.1%	0.3%	0.1%	0.4%	0.2%	0.3%	0.6%
G1: Board Structure, Self-evaluation	12.4%	11.7%	14.2%	14.8%	11.6%	15.4%	15.4%	14.7%	14.7%	15.6%	15.1%	14.5%	14.4%	14.3%	12.9%	18.1%	16.8%
G2: Risk Management	0.7%	-	0.5%	0.7%	1.2%	0.5%	0.3%	1.3%	0.4%	0.6%	0.8%	0.6%	0.5%	0.4%	0.4%	0.9%	0.3%
G3: Capital Efficiency	2.9%	6.5%	6.2%	4.5%	2.5%	2.8%	4.1%	5.3%	5.9%	4.7%	1.8%	5.8%	4.5%	5.1%	10.0%	4.9%	4.0%
G4-1: Cross-shareholdings	3.8%	0.7%	5.1%	3.1%	2.4%	2.9%	3.7%	2.4%	2.4%	3.0%	0.9%	4.3%	3.4%	1.3%	5.9%	3.2%	3.5%
G4-2: Parent-Subsidiary Listing	0.7%	0.3%	0.3%	0.7%	0.8%	0.4%	1.1%	0.1%	0.4%	1.0%	0.1%	0.5%	0.8%	1.1%	0.0%	0.2%	0.5%
G5-1: Takeover Defenses	4.6%	1.3%	1.4%	2.5%	3.8%	0.8%	3.9%	3.1%	1.1%	1.6%	-	2.2%	1.4%	1.2%	0.2%	0.6%	2.9%
G5-2: Remuneration	2.2%	0.7%	1.9%	2.0%	3.3%	1.8%	2.3%	2.2%	2.3%	2.2%	1.5%	1.7%	1.9%	1.6%	1.5%	2.8%	1.6%
G5-3: Corporate Governance (Others)	8.1%	3.9%	9.8%	9.3%	11.0%	9.1%	8.2%	9.6%	10.6%	10.0%	8.0%	6.8%	7.8%	7.0%	7.4%	7.7%	7.8%
ES1: Supply Chain	4.5%	0.3%	1.7%	1.9%	0.6%	3.1%	0.9%	1.2%	2.0%	1.1%	0.1%	0.9%	2.3%	6.6%	0.0%	0.1%	1.6%
SG1: Diversity	4.2%	2.0%	3.5%	4.1%	4.1%	3.6%	3.4%	4.5%	4.4%	5.3%	1.7%	3.8%	3.5%	4.7%	2.4%	4.5%	3.7%
ESG1: Disclosure	5.6%	3.9%	6.2%	6.6%	8.3%	5.6%	5.0%	6.6%	7.3%	7.1%	2.4%	5.0%	6.7%	7.6%	4.2%	7.3%	6.1%
ESG2: Misconduct	0.3%	0.7%	4.4%	1.5%	0.5%	6.5%	3.1%	1.9%	1.8%	1.9%	4.7%	1.6%	0.9%	1.2%	2.6%	4.2%	2.2%
ESG4: Others	6.1%	3.9%	3.3%	5.3%	6.4%	3.4%	3.9%	5.3%	4.8%	3.9%	4.0%	4.6%	4.7%	6.2%	7.4%	5.2%	4.9%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 5 Name of companies that are most and never engaged

This table shows the name of a company that GPIF's asset managers engaged with and the total number of engagements each year. Panel A shows most frequently engaged companies and Panel B shows the least frequently i.e., never, engaged.

Panel A: Most frequestly engaged companies

2017			2018			2019			2020			2021			2022		
Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#
Fuji Film	21,846	26	Mitsubishi Materials	3,842	33	LIXIL	4,214	44	Kansai Electric Power	11,246	45	Mitsubishi UFJ	100,983	48	Mitsubishi Corp.	69,284	38
Ricoh	7,829	24	SUBARU	19,402	28	Takeda	52,146	35	Mizuho FG	40,603	36	Toshiba	20,141	42	Mizuho FG	47,687	29
Mitsubishi Corp.	45,508	22	Nissan Motor	38,333	25	INPEX	8,903	28	Ricoh	8,373	33	Kansai Electric Power	10,786	36	Toyota	306,722	27
Nippon Paint HD	12,707	19	Nippon Steel	18,569	23	JR Kyushu	4,876	27	JR Kyushu	4,049	29	Mizuho FG	39,790	36	Kansai Electric Power	12,119	26
Maxell	1,105	18	Alpine	-	23	Sekisui House	12,325	27	IHI	3,473	27	Sumitomo Corp.	26,517	35	Mitsubishi UFJ	107,579	25
Tohoku Electric Power	7,146	18	Honda	54,252	22	Nissan Motor	15,051	27	Mitsubishi Heavy Industries	11,636	27	Mitsubishi Corp.	68,358	35	Kyushu Electric Power	3,590	22
INPEX	19,244	18	Ricoh	8,619	21	Kirin HD	19,537	27	Sekisui House	16,254	27	Mitsui O.S.K.	12,376	32	Mitsui & Co., Ltd.	63,578	22
Nissan Motor	46,597	18	Toray	11,533	21	House Foods	17,839	25	ITOCHU	56,850	27	Seven & i	51,529	32	J-POWER	3,901	21
Teijin Limited	3,961	17	Sekisui House	12,653	21	Suzuki	12,692	23	JFE	8,375	26	Hitachi	59,692	32	Sumitomo Mitsui FG	72,831	21
Shionogi	17,798	17	Mitsubishi Corp.	48,879	21	ZHD	16,782	23	Nippon Steel	17,928	26	Nomura	16,659	30	Tokyo Electron	75,650	21
Hitachi	37,256	17	Mitsubishi UFJ	75,173	21	Toyota	215,189	23				Nippon Steel	20,631	30			

Panel B: Least frequently engaged companies

2017			2018			2019			2020			2021			2022		
Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#	Company name	Market cap	#
Japan Post Bank	64,260	0	NEXON	15,527	0	Japan Post Bank	44,865	0	NEXON	31,890	0	Japan Post Bank	36,933	0	Japan Post Bank	39,963	0
Toyota Industries	20,984	0	A Holdings	9,395	0	Terumo	28,254	0	Renesas	20,792	0	NEXON	26,368	0	Oracle Japan	12,224	0
Suntory BF	15,975	0	Nissan Chemical	7,554	0	A Holdings	12,573	0	JPX	13,918	0	Toyota Tsusho	17,915	0	Kintetsu Group HD	8,132	0
Sharp	15,889	0	Konami G	6,895	0	Oracle Japan	12,100	0	Oracle Japan	13,849	0	Oracle Japan	10,902	0	KOEI TECMO HD	8,026	0
NEXON	15,532	0	Asahi Intecc	6,763	0	Resonac	9,564	0	ZOZO	10,191	0	ZOZO	10,238	0	Kobayashi Pharmaceutical	6,314	0
Japan Post Insurance	14,970	0	Sharp	6,496	0	Hulic	7,400	0	ACOM	8,221	0	TOHO	8,644	0	Zensho HD	6,078	0
A Holdings	10,049	0	USS	6,434	0	ACOM	7,008	0	Kobe Bussan	8,112	0	Sharp	7,031	0	USS	5,898	0
Hulic	7,698	0	ACOM	6,305	0	Renesas	6,655	0	Iida Group HD	7,879	0	USS	6,450	0	Hakuhodo DY	5,824	0
ACOM	7,566	0	Toho Gas	5,286	0	Sharp	6,052	0	Hitachi Construction Machinery	7,626	0	Japan Airport Terminal	5,207	0	ITO EN	5,340	0
SGHD	7,445	0	Shizuoka Bank	5,186	0	Nippon Shinyaku	5,957	0	Toho Gas	7,213	0	ACOM	4,997	0	ACOM	4,997	0

Table 6 Probit analysis of engagement

This table shows the results of Probit analysis of engagements by theme categories. Dependent variable takes the value of 1 if a company is engaged on a theme category in a certain year, and 0 otherwise. We only analyze theme categories with large number of engagements. We have included industry sector dummies of 17 sectors and fiscal year dummies. We also include TOPIX size category dummies with the base case being 100 largest market cap companies (TOPIX 100). Coefficient with "***", "**" and "*" represents significance at 1%, 5% and 10% level, respectively.

Explanatory variable	B1: Management & Business Strategies	B2: Financial Strategies	B3: Shareholders' Meeting-related Matters	E1: Climate Change	G1: Board Structure, Self-evaluation	G3: Capital Efficiency	G4-1: Cross-shareholdings	SG1: Diversity	ESG1: Disclosure
Log (market cap.)	0.13 ***	0.03	0.05	0.09 *	0.13 ***	-0.04	0.06	0.16 ***	0.24 ***
Log (total assets)	0.17 ***	0.33 ***	0.21 ***	0.25 ***	0.25 ***	0.36 ***	0.25 ***	0.13 ***	0.08 ***
Avg. equity return over 3Y	0.35	0.17	0.11	0.82 *	0.32	0.19	1.09 **	0.08	0.09
% of controlling shareholding	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***
% of cross-shareholding	-0.18	0.06	0.12	-0.24	-0.09	0.53 ***	1.90 ***	-0.17	-0.67 ***
% of independent outside directors	0.87 ***	0.38 **	1.27 ***	0.24	0.35 **	0.55 ***	0.19	0.30 *	0.54 ***
Takeover defense dummy	-0.06	-0.08	0.20 ***	-0.07	0.13 ***	-0.08	0.14 **	-0.04	0.10 **
Total payout ratio	0.00	0.00	0.00	0.00	0.00 **	0.00	0.00	0.00	0.00
Current profit margin on sales	-0.01 ***	-0.01 **	0.00	-0.01 **	0.00	-0.01 **	-0.02 ***	0.00	0.00
Total asset turnover	-0.05	0.00	-0.03	0.03	-0.05	-0.17 ***	-0.22 ***	0.15 ***	0.05
Financial leverage	0.00	0.00	0.00	-0.01 **	0.00	0.00	-0.03 ***	-0.01 **	-0.01 *
Cash + deposits/Total assets	0.34 **	0.50 ***	0.37 **	-0.27	0.43 ***	0.37 **	-0.37	-0.04	0.17
Total debt/Total assets	0.06	-1.29 ***	-0.07	-0.13	-0.11	-1.37 ***	-0.72 ***	-0.42 ***	-0.15
GHG emissions reduction target dummy	0.20 ***	0.13 **	-0.05	0.11 **	0.03	-0.04	0.11 *	0.05	-0.02
Carbon Intensity scopes 1&2	0.00 **	0.00 **	0.00	0.00 ***	0.00 *	0.00	0.00	0.00	0.00 **
Release of integrated reports	0.14 ***	0.10 **	0.14 ***	0.33 ***	0.24 ***	0.03	0.21 ***	0.29 ***	0.19 ***
FTSE ESG score	0.27	0.06	0.58 **	0.28	0.08	0.39	-0.20	0.18	-0.02
FTSE Pillar Score (E)	-0.04	-0.05	-0.22 ***	0.05	0.00	-0.15 *	0.10	-0.01	0.01
FTSE Pillar Score (S)	-0.07	0.01	-0.21 **	-0.10	-0.02	-0.11	0.07	-0.08	0.03
FTSE Pillar Score (G)	-0.02	0.04	-0.09	-0.04	0.03	-0.04	0.10	-0.03	0.02
TOPIX 101-500	-0.11	0.02	-0.10	-0.07	-0.07	0.41 ***	0.18 **	-0.14 *	-0.07
TOPIX 501-1000	-0.30 ***	-0.03	-0.25 **	-0.36 ***	-0.34 ***	0.33 ***	-0.13	-0.45 ***	-0.34 ***
TOPIX constituent companies smaller than 1000	-0.57 ***	-0.33 **	-0.40 ***	-0.79 ***	-0.69 ***	-0.10	-0.45 ***	-0.95 ***	-0.62 ***
Industry sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	14,697	14,697	14,697	14,697	14,697	14,697	14,697	14,697	14,697
Pseude-R^2	0.32	0.28	0.24	0.51	0.36	0.25	0.37	0.33	0.31

Table 7 Effects of engagement on KPIs of target companies

This table shows the results of PSM-staggered DiD analysis of KPIs of target companies engaged on a specific theme. Since the engagements (treatments) are not conducted in one particular year, but rather, more companies are gradually engaged as year goes by, we use staggered DiD with the Sun-Abraham estimator (Sun and Abraham 2021) with the fixed effect for companies and the fixed effect for fiscal years. The base point of the analysis was set with the respective timing of first engagement, and each coefficient indicates the average treatment effect of periods relative to the first engagement year. The figures in shaded cells are the ones whose estimates are not reliable, because even after the PSM, there remains a different pre-trend between the treated and the control. Coefficient with "***", "**" and "*" represents significance at 1%, 5% and 10% level, respectively.

Theme Category	KPI	Overall (1–1000)		Large		Mid		Small	
		Estimated effect	Pre-trend	Estimated effect	Pre-trend	Estimated effect	Pre-trend	Estimated effect	Pre-trend
B1	Tobin's q	0.04	✓	0.12	✓	0.00	✓	0.07 **	✓
	PBR	0.04	✓	0.23	✓	0.06		0.04	✓
	Natural Logarithm of Market Cap	0.03	✓	0.08	✓	-0.01	✓	0.06 *	✓
	Total Shareholder Return	1.09		-2.62		-0.18		0.50	
	ROE	-0.16		2.01 ***		-0.19	✓	-0.53	
	Equity Spread	-0.17		2.24 ***		-0.19	✓	-0.63	
	FTSE ESG Score	-0.02	✓	0.36 *		-0.04		-0.10	
	Dividend Payout Ratio	-0.97		-1.01		-0.74		-0.74	
	Total Payout Ratio	-0.32		-0.47		0.31		-1.40	
	Net Cash Ratio	0.00		0.02 *		0.00		-0.01	
B2	Tobin's q	-0.03		-0.11		-0.04		0.01	
	PBR	-0.06		-0.11		-0.07		0.02	
	Natural Logarithm of Market Cap	0.00		0.05		-0.01		-0.03	
	Total Shareholder Return	-0.55	✓	-5.12		1.93	✓	-1.13	
	ROE	0.15		0.44		-0.12		0.19	
	Equity Spread	0.18		0.43		-0.09		0.18	
	FTSE ESG Score	0.05		0.13		-0.03		0.15	
	Dividend Payout Ratio	-1.21		-3.69		-0.39		0.28	
	Total Payout Ratio	1.51		2.25		3.66		-0.87	
	Net Cash Ratio	0.00		0.00		0.00		-0.01	
B3	Tobin's q	0.02		0.19 *		0.02		0.04	
	PBR	0.07		0.24		0.02		0.16	
	Natural Logarithm of Market Cap	0.04		0.14 **		0.06		0.01	
	Total Shareholder Return	0.33		2.91		0.91		0.27	
	ROE	0.39		1.78		-0.73	✓	0.44	
	Equity Spread	0.39		1.80		-0.72	✓	0.42	
	FTSE ESG Score	-0.07		-0.24 ***		-0.10		0.22 *	
	FTSE Pillar Score (G)	-0.05		-0.11		-0.06	✓	0.24 *	
	% of Independent Outside Directors	0.01		-0.01		0.01		0.02 *	
	# of Independent Outside Directors	0.14		-0.20		0.16		0.17	
E1	Tobin's q	0.07 ***		0.10 *		0.06 **		0.09 **	
	PBR	0.11 ***		0.14		0.08		0.15 **	
	Natural Logarithm of Market Cap	0.03	✓	0.10 **	✓	0.02	✓	0.04	
	Total Shareholder Return	-1.45	✓	1.58		-2.95	✓	-2.34	
	ROE	-0.59		-0.64		-0.43		0.47	
	Equity Spread	-0.59		-0.57		-0.43		0.45	
	FTSE ESG Score	-0.01		-0.07		-0.01		0.15 *	
	FTSE Pillar Score (E)	-0.05		-0.06		-0.04		0.19 *	
	Presence of GHG Emissions Reduction Targets	0.08 ***		-0.02		0.08 *		0.13 **	
	Carbon Intensity Scope 1	6.04		2.27		3.51		-4.36	
	Carbon Intensity Scope 2	-5.29 ***		-8.28 **		-4.79 *		-8.16 **	
	Carbon Intensity Scopes 1&2	-3.55		-5.60		-4.47		-10.39	

G1	Tobin's q	0.05 *		0.09		0.03		0.07 *	
	PBR	0.11 **		0.08	✓	0.10		0.12	
	Natural Logarithm of Market Cap	0.06 **		0.10	✓	0.02		0.08 **	
	Total Shareholder Return	3.80 **		-3.34		5.76 **		3.29	
	ROE	0.49		-0.10	✓	-0.20	✓	1.38 **	
	Equity Spread	0.46		-0.09	✓	-0.22	✓	1.33 **	
	FTSE ESG Score	0.09 *		0.18	✓	0.03		0.20 ***	
	FTSE Pillar Score (G)	0.06		0.22 *		0.01	✓	0.13	
	% of Independent Outside Directors	0.00		0.01		0.00		0.01	
	# of Independent Outside Directors	0.15 **		0.08		0.11		0.19 **	
	% of Female Board Members and Statutory Auditors	0.00		0.00		0.00		0.00	
	% of Female Members in the Board of Directors	0.53		0.75		0.07		-0.50	
G3	Tobin's q	0.02		-0.07		0.03		0.07	
	PBR	0.02		-0.14		0.00		0.14 *	
	Natural Logarithm of Market Cap	0.01		-0.05		-0.01		0.09 **	
	Total Shareholder Return	3.68 **		3.87		0.05		8.28 ***	
	ROE	0.24		-0.52		0.55		0.66	
	Equity Spread	0.18		-0.51		0.51		0.80	
	FTSE ESG Score	0.02		-0.01		0.02		0.05	✓
	FTSE Pillar Score (G)	0.01		-0.01		0.00		0.04	✓
	Dividend Payout Ratio	-0.81		-2.31		-0.85		-0.38	
	Total Payout Ratio	-1.11		-4.87		2.35		-7.75	
	Net Cash Ratio	-0.01		-0.01		0.00		-0.01	
G4-1	Tobin's q	-0.01		0.01		-0.02		0.00	
	PBR	-0.01		0.07		-0.05		0.08	
	Natural Logarithm of Market Cap	0.04		0.08		0.03		0.03	
	Total Shareholder Return	2.23		1.79		1.42		5.38	
	ROE	-0.06		-0.79		0.14		0.57	
	Equity Spread	-0.09		-0.74		0.08		0.58	
	FTSE ESG Score	-0.07		-0.18		-0.07		0.24 *	
	FTSE Pillar Score (G)	-0.04		-0.12		-0.04		0.15	
	Cross-shareholding Ratio	-0.01 **		0.00		-0.01 ***		-0.01	
SG1	Tobin's q	0.05		0.15 *		0.00		0.06	
	PBR	0.10 *		0.38 ***		-0.03		0.12	
	Natural Logarithm of Market Cap	0.08 ***		0.18 ***	✓	0.05		0.07	
	Total Shareholder Return	1.14		0.35		1.99		0.52	
	ROE	0.23		0.07		-0.18		1.64 *	
	Equity Spread	0.17		-0.15		-0.16		1.68 *	
	FTSE ESG Score	-0.02		-0.13		-0.03		0.06	
	% of Female Board Members and Statutory Auditors	0.00		0.00		0.01		0.00	✓
	% of Female Employees in New Hires	-0.01		0.52		-0.35		6.17 **	
	% of Female Employees in the Workforce	0.05		0.23		-0.28		2.95	
	Difference in Average Years of Employment between Male Employees and Female Employees	-0.77		-0.81		-1.38		5.02 *	
	% of Female Managers in All Management Positions	0.20	✓	0.27	✓	0.17		0.46	
	% of Female Members in the Board of Directors	1.07 *		0.75		1.12	✓	2.04 *	
ESG1	Tobin's q	-0.03		-0.07		-0.06		0.05	
	PBR	-0.01		-0.01		-0.08		0.17	
	Natural Logarithm of Market Cap	0.02	✓	0.09		-0.02	✓	0.04	
	Total Shareholder Return	-3.22		-5.56		-2.47		-2.57	
	ROE	-0.43		0.13		-0.56		-0.28	
	Equity Spread	-0.45		0.06		-0.62		-0.01	
	FTSE ESG Score	0.03		0.00		0.04		0.07	✓

Appendix Table A-1 Ordered Probit analysis of engagement

This table shows the results of Ordered Probit analysis of engagements by theme categories. Dependent variable takes the value of 2 if a company is engaged by more than one asset managers on a theme category in a certain year, 1 if engaged by a single asset manager and 0 otherwise. We only analyze theme categories with large number of engagements. We have included industry sector dummies of 17 sectors and fiscal year dummies. We also include TOPIX size category dummies with the base case being 100 largest market cap companies (TOPIX 100). Coefficient with "***", "**" and "*" represents significance at 1%, 5% and 10% level, respectively.

Explanatory variable	B1: Management & Business Strategies	B2: Financial Strategies	B3: Shareholders' Meeting-related Matters	E1: Climate Change	G1: Board Structure, Self-evaluation	G3: Capital Efficiency	G4-1: Cross-shareholdings	SG1: Diversity	ESG1: Disclosure
Log (market cap.)	0.12 ***	0.01	0.02	0.06	0.13 ***	-0.08 *	0.04	0.14 ***	0.22 ***
Log (total assets)	0.20 ***	0.35 ***	0.21 ***	0.27 ***	0.23 ***	0.38 ***	0.27 ***	0.14 ***	0.10 ***
Avg. equity return over 3Y	0.42	0.27	0.35	0.58	0.26	0.48	1.04 **	0.00	0.16
% of controlling shareholding	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***	-0.01 ***
% of cross-shareholding	-0.25 *	0.01	0.09	-0.17	-0.11	0.61 ***	1.97 ***	-0.19	-0.72 ***
% of independent outside directors	0.91 ***	0.33 **	1.27 ***	0.24	0.24 *	0.53 ***	0.18	0.27 *	0.54 ***
Takeover defense dummy	-0.07	-0.06	0.22 ***	-0.08	0.13 ***	-0.07	0.17 ***	-0.03	0.11 **
Total payout ratio	0.00	0.00	0.00	0.00	0.00 **	0.00	0.00	0.00	0.00
Current profit margin on sales	-0.02 ***	-0.01 **	0.00	-0.01	0.00	-0.02 ***	-0.01 **	0.01	-0.01
Total asset turnover	-0.05	0.01	-0.03	0.08	-0.03	-0.18 ***	-0.18 **	0.16 ***	0.05
Financial leverage	0.00	0.00	0.00	-0.01 ***	0.00	0.00	-0.03 ***	-0.01 **	-0.01 **
Cash + deposits/Total assets	0.42 ***	0.54 ***	0.41 **	-0.24	0.45 ***	0.45 ***	-0.34	0.05	0.23
Total debt/Total assets	-0.04	-1.34 ***	-0.12	-0.12	-0.10	-1.48 ***	-0.71 ***	-0.42 ***	-0.19
GHG emissions reduction target dummy	0.20 ***	0.13 ***	-0.05	0.12 **	0.03	-0.03	0.13 **	0.05	-0.03
Carbon Intensity scopes 1&2	0.00 ***	0.00 **	0.00	0.00 ***	0.00	0.00	0.00	0.00	0.00 **
Release of integrated reports	0.13 ***	0.10 **	0.13 ***	0.33 ***	0.25 ***	0.06	0.22 ***	0.29 ***	0.22 ***
FTSE ESG score	0.43 **	0.13	0.48 *	0.25	-0.04	0.33	-0.28	0.02	-0.08
FTSE Pillar Score (E)	-0.12 *	-0.08	-0.18 **	0.05	0.04	-0.12	0.13	0.06	0.04
FTSE Pillar Score (S)	-0.12	-0.01	-0.16 *	-0.07	0.02	-0.09	0.10	-0.02	0.05
FTSE Pillar Score (G)	-0.06	0.00	-0.07	-0.01	0.08	-0.04	0.11	0.02	0.04
TOPIX 101-500	-0.20 ***	0.03	-0.11	-0.11	-0.09	0.44 ***	0.23 ***	-0.16 **	-0.03
TOPIX 501-1000	-0.38 ***	-0.06	-0.31 ***	-0.42 ***	-0.37 ***	0.32 ***	-0.08	-0.48 ***	-0.30 ***
TOPIX constituent companies smaller than 1000	-0.66 ***	-0.36 ***	-0.48 ***	-0.84 ***	-0.75 ***	-0.11	-0.45 ***	-1.04 ***	-0.59 ***
Industry sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	14,077	14,077	14,077	14,077	14,077	14,077	14,077	14,077	14,077
Pseude-R^2	0.29	0.25	0.21	0.44	0.30	0.22	0.33	0.29	0.27