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Does social capital foster sustainable investment?

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Abstract

How do country-level societal norms affect financial investments? We provide evidence that mutual funds managed in high social capital countries are inclined to consider environmental, social and governance filters in their portfolios, especially when acquiring new stocks and investing abroad. We argue that social capital nurtures the investment preferences of retail investors, whose demand incentivizes fund managers to respond in kind. Such impact is more pronounced in individualistic and high-power distance societies, suggesting that the social cohesion benefit of social capital complements altruistic inclinations in the former and provides mechanisms to punish unsustainable investment behaviour in the latter.

KEYWORDS

ESG, mutual funds, social capital, sustainable investment

JEL CLASSIFICATION

G15, G41, M14, Z13

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1 | INTRODUCTION

Traditional equity funds have been suffering outflows due to awareness of high active management fees and a movement towards sustainable funds, which attracted nearly \$142.5 billion in the fourth quarter of 2021, taking the total asset under management by sustainable funds worldwide to \$2.7 trillion.¹ Extensive research has established that institutional investors exercise their shareholder power to improve the investee firm's environmental, social, and governance (ESG) dimensions while benefiting from improved operating performance.² Although active engagement with *individual* holdings is clearly evidenced, whether and why institutional investors are ESG conscious regarding *overall* portfolio holdings remain less clear. In this paper, we argue that social capital, the set of country-level norms and networks facilitating cooperation (Putnam, 1993), guides retail investors to exhibit demand and thus exert pressure on fund managers to construct more sustainable portfolios.

It is unclear whether managers' and investors' perspectives on sustainable investing are consistent with each other. With fund flows chasing past performance, funds solely aiming to maximize revenue could overweight poor-ESG firms, such as sin stocks with superior returns (Hong & Kacperczyk, 2009), and selectively engage with firms with the potential to improve both ESG and financial performance. From the client's perspective, the classical view is that investors are risk–return utility maximizers and ESG objectives should not matter unless they can improve returns. However, investors clearly care about fund overall ESG performance, since funds with higher sustainability ratings attract more net inflows (Hartzmark & Sussman, 2019), despite their poor financial performance (Cornell, 2021; El Ghouli & Karoui, 2017). We propose that investors in societies with higher social capital are more altruistic and tend to invest more sustainably. The resulting demand, coupled with implicit sanctions from the violation of social norms, guides fund managers to construct overall sustainable portfolios in addition to engaging with targeted firms on ESG issues as documented in the literature.

Our study is based on an international data set of 4626 mutual funds across 20 countries, including conventional funds and funds with explicit sustainability mandates. The sample period spans from 2011 to 2016, resulting in 17,699 fund–year observations.³ We construct a fund-level ESG score as the dollar holdings–weighted average of each stock's ESG score and regard it as the fund sustainability level. We further recalculate the score using only foreign holdings as a more intentional investment decision. Following the literature, we construct a country-level index for social capital using principal component analysis (PCA) and update the index every year during our sample period. We rely on eight components that capture trust, associational activities, and norms of civic behaviour (Knack & Keefer, 1997; Putnam, 1993): *Generalized Trust*, *Election Turnout*, *Corruption Perception Index*, *Social Network Support*, *Volunteering Time*, *Helping a Stranger*, *Donating Money* and *Feeling of Safety*. We control for fund characteristics and country-level variables for economic, social, regulatory efficiency, and political dimensions.

We investigate the implications of social norms in financial markets and contribute to the literature by providing cross-country evidence on how social capital influences mutual funds' investment decisions in terms of overall portfolio composition, changing portfolio weights, and

¹*Financial Times*: <https://www.ft.com/content/ae78c05a-0481-4774-8f9b-d3f02e4f2c6f> (Accessed on 1 March 2022).

²See, for example, Dyck et al. (2019) and Chen et al. (2020). We stick to the terminologies of the cited papers and therefore use ESG and corporate social responsibility (CSR) interchangeably in this paper.

³Data for our study were retrieved in 2017, when the latest available data were for 2016.

investing abroad. Institutional investors from countries with high environmental and social (E&S) consciousness are actively involved in improving individual firms' E&S performance (Dyck et al., 2019). Investors are willing to accept lower returns on sustainable funds than on conventional funds due to non-pecuniary motives (Riedl & Smeets, 2017). Complementing these prior studies, we investigate *whether* and *how* social capital feeds into the decision making of mutual funds, irrespective of their sustainability strategy. Our empirical evidence shows that social capital has a significantly positive impact on funds' overall ESG scores, even after controlling for the ESG investment opportunity set within the local market. The economic impact of social capital on fund ESG score is comparable to an explicit objective to invest sustainably, particularly when mutual funds acquire new holdings, increase portfolio weights in existing holdings, and invest abroad. We study small holdings to rule out the alternative explanation that our results are driven by fund managers improving portfolio ESG via engagement. Institutions face a cost–benefit analysis of monitoring their holdings: the smaller a firm's holdings, the larger the proportional cost of monitoring and engagement. Fund managers will thus have the incentive to freeride on the ESG performance of their small holdings rather than actively engage with these firms. We still find a positive link between country-level social capital and the ESG score of small holdings defined as those constituting the first 10% of the total portfolio value when individual weights are ranked in an ascending order. This result cannot be explained by the active engagement explanation in the literature as it suggests that fund managers in societies with strong civic norms employ ESG filters even on holdings not intended for engagement.

We further contribute to the literature by exploiting the dichotomy of retail and institutional investors and identifying retail investors' demand as the main channel of transmission of social norms in the mutual fund industry, which has not been previously documented in the literature. Retail investors were much more reactive to sustainability signals than institutional investors to the introduction of Morningstar ratings (Ammann et al., 2018). We contribute to this line of research by examining the separate impact of social capital on retail and institutional funds. Social capital is significantly related to the overall fund ESG score as well as separate ESG dimensions for retail funds, whose ultimate beneficiaries are individual investors. To reveal retail investors' sentiment towards sustainable investment, we use Google searches per country on the topics of ESG, environment, social, and governance (Da et al., 2015). We use topics instead of search terms because the former addresses misspellings and searches in different languages, since the Google algorithm can group different searches that have the same meaning under a single topic. The constructed index is associated with higher fund ESG scores within the country. Moreover, we find that the net inflows to sustainable retail funds are larger for countries with higher social capital, thus revealing investors' preferences for sustainable investing. Retail investors preferences are nurtured by social capital and, in turn, they can exert an implicit demand and influence on fund managers to filter for ESG criteria. In contrast, institutional investors' preference for sustainable investment is likely driven by economic incentives as responsible portfolios hold less systematic and idiosyncratic risk (Maxfield & Wang, 2020). Institutional investors avoid stocks with negative E&S performance as a risk management tool but appear indifferent to superior E&S performance (Nofsinger et al., 2019). As such, we offer novel and robust evidence to this line of the research suggesting that fund managers' selection of high CSR stocks can be guided by retail investors directed by social norms.

Furthermore, our study adds to the literature by identifying cross-country factors driving responsible investments. The marginal role of social capital varies across countries and depends on the moderating role of formal and informal institutions. For example, one could expect individualistic societies, as more self-serving, to be less concerned about the ESG externalities of their capital

allocation. Counterintuitively, individualism fosters altruistic behaviour: individualist values follow a cultural de-emphasis on kin-based institutions (Schulz et al., 2019) and greater exposure to globalized attitudes, which can promote altruism particularly towards strangers (Buchan et al., 2009). Nevertheless, altruism nurtured by individualistic behaviour does not guarantee responsible investments. Our empirical results show that the average fund in collectivist societies fostering conformity and an internalization of collective goals records a significantly higher ESG score than its counterpart in individualist countries.⁴ However, in the presence of high social capital, fund managers in individualist countries have a strong tendency to construct sustainable portfolios, thereby narrowing the gap of fund ESG scores compared to those in collectivist societies. The bonding aspect of social capital thus acts as a glue that creates social cohesion which in turn manifests in altruistic preferences. Moreover, social capital provides mechanisms to punish unsustainable investing behaviour in high-power distance societies and nurtures prosocial preferences in masculine countries. We also find a positive relation between the social capital in a fund manager's location and the ESG score of foreign holdings in financially developed markets. Social capital thus bridges ESG preferences overseas into countries where the costs of acquiring information, enforcing contracts, and making transactions are lower. We therefore argue that the degree of financial development plays an important role in attracting foreign sustainable capital.

The robustness of our main findings is supported in a battery of further tests. We employ the Volkswagen emission scandal as an exogenous shock and find that mutual funds managed in higher social capital countries withdrew more of their holdings from Volkswagen than other mutual funds. We also find that even mutual funds not explicitly listed as sustainable invest with social impact in mind due to investors' demand for ESG causes. Therefore, investors' preferences in high social capital countries can also direct conventional funds towards stocks with high ESG scores. Our findings remain robust in alternative settings, such as weighted least square regressions with weights inversely proportional to the number of fund-year observations in each country, data from an alternative ESG data provider, and subsample tests excluding US funds.

The remainder of the paper is organized as follows. Section 2 discusses the theoretical foundations of the relation between social capital and mutual fund sustainability. Section 3 focuses on the methodological framework and sample data. Section 4 tests the implications of social capital on portfolio management. Section 5 discusses the moderating effects of culture and regulation. Additional tests are presented in Section 6, and Section 7 concludes the paper.

2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The central proposition of social capital theory is that networks of relationships constitute a valuable resource for the conduct of social affairs. For instance, Banfield (1958) attributes the underdevelopment of southern Italy to a lack of social trust outside strict family circles, which the author labels *amoral familism*. Banfield's work paves the way for important studies providing evidence that social capital facilitates economic transactions and generates positive economic outcomes (Guiso et al., 2004, 2008).

⁴The difference between fund the ESG scores in collectivist versus individualist societies is positive and significant at the 1% level in our test.

At the micro level, social capital is conceptualized as the property of the individual actor (private good) that will bring benefits to its owner. Under this paradigm, social capital can be defined as the quality of individual social ties and the resources those ties have access to, and therefore can be captured by investments in firm-level social responsibility as a disposition towards cooperation between the firm and its stakeholders (Lins et al., 2017). Although the individual level of analysis could be preferred because it suits the reductionist paradigm that dominates economics, it can oversimplify complex social environments. When people decide how to behave, they consider the social, economic, and legal implications of their actions, depending on the environment in which the choices are made (Yamagashi, 1988).

Political scholars equate social capital with levels of civicness in communities such as cities or entire countries. According to Putnam (1993), the most prominent advocate of this approach, social capital translates into features of social organizations, such as norms, networks, and trust that facilitate action and cooperation for mutual benefit. We therefore look at the group or organizational level of social capital conceptualized as a public resource, which alleviates agency problems and information asymmetry. Cooperative norms narrow self-interest through internal sanctions (guilt) and external sanctions (shame), leading individuals to contribute to public goods of various kinds (Knack & Keefer, 1997). These sanctions can induce a firm to cooperate with weak stakeholders, as well as generate cooperative networks that would not be sustainable without the power of such sanctions (Antoni & Sacconi, 2011). In other words, under the group perspective, good behaviour is due to strong social norms.

Social norms are becoming relevant in the investment domain as more investors seek to allocate savings in line with their ethics. Investors willing to put their savings into sustainable funds have a multi-attribute utility function that not only includes risk–reward optimization, but also incorporates personal and social values. These social preferences can be nurtured by the altruistic aspects of social capital. If social capital nurtures demand for sustainable investment, we expect asset managers to react in kind because funds with high demand generate significant inflows, which translates to incremental revenues. These mechanisms lead to our first hypothesis.

Hypothesis I – *Active mutual funds managed in higher social capital countries are more likely to invest sustainably than those managed in lower social capital countries.*

However, social capital is not universally beneficial. A given form of social capital that is useful in facilitating certain actions can be useless or even harmful for others (Coleman, 1990). For example, the strong norms and mutual identification that can exert a powerful positive influence on group performance can also limit the group's openness to information and to alternative approaches, resulting in forms of collective blindness (Janis, 1982; Turner, 1976). Based on these conjectures, strong norms could foster engagement and cooperation within the home country, but not necessarily beyond. Accordingly, higher social capital could be unrelated to sustainable investment after controlling for the investment opportunity set within the home country. We empirically test this by analysing mutual funds' investing abroad.

2.1 | Moderating role of a country's informal institutions

The development of social capital depends strongly on a society's political and institutional framework, which are usually centralized at the country level. Previous research investigates the

impact of social capital on economic outcomes within US counties to reduce data heterogeneity. However, this approach would not be appropriate for our research, since most funds are managed in a few concentrated locations, mostly in New York. A mono-country study would thus prohibit us from capturing and testing the underlying forces and diminish the meaningfulness of our empirical analysis results. An international research context allows us to better understand cross-country discrepancies in sustainable market size across continents and even within Europe, as seen in Supporting Information: Appendix II. Furthermore, a cross-country study allows us to understand how national culture and important macroeconomic variables motivate the interplay between social capital and sustainable investment. Prior studies investigating the role of social capital (e.g., Ferris et al., 2019; Javakhadze et al., 2016, 2017; Javakhadze & Rajkovic, 2019) have also adopted an international setting to draw relevant regulatory and economic inferences on cross-country trends.

The marginal role of social capital can vary across countries due to the possible moderating role of institutions. Informal institutions, such as socially shared cultural traits, are as equally manifested as the formal ones but are not laid down in writing and tend to be more persistent than formal rules (North, 1997). We thus examine several cultural traits from Hofstede (2001) including individualism/collectivism, power distance and masculine/feminism, and analyze how they can moderate the impact of social capital on sustainable investing behaviour of mutual funds.

First, contemporary researchers of the dark side of individualism have linked it to several forms of social pathology, such as high levels of crime, suicide, divorce, child abuse, and emotional stress (Cobb, 1976; Naroll, 1983). However, the individualistic configuration of ideas and values, which characterizes most modern societies, elevates social welfare by encouraging people to work creatively and benefits others (Waterman, 1984). People in individualistic cultures tend to have more acquaintances and friends (Triandis, 2000), are more extraverted and open to new experience (McCrae, 2001), and are more trusting and tolerant towards people of different races (Hofstede, 2001). While counterintuitive at first, individualistic societies are generally more altruistic than collective societies: altruism increases when cultural values provide the scope for pursuing personally meaningful goals (Rhoads et al., 2021). The greater relational mobility in individualist cultures means that anyone unfamiliar could 1 day become a friend, whereas a stranger will remain a stranger in collectivist cultures.

Second, people living in societies exhibiting high-power distance are more willing to accept that authority is associated with inequality and the accretion of skills and wealth, whereas, in countries with low-power distance, authority does not necessarily confer the accumulation of wealth. In such conditions, stakeholders in high-power distance cultures are less likely to punish perceived bad behaviour. Indeed, Hofstede's framework suggests that, in high-power distance cultures, scandals can be covered up rather than brought out into the open to terminate the careers of those involved (Hofstede & Hofstede, 2005). We thus anticipate social capital to play a more important role in societies with high-power distance cultures by providing the incentive and mechanisms to punish bad behaviour.

Third, masculine societies tend to be competitive and regard an aggressive and decisive approach as excellent management, whereas feminine cultures tend towards consensus and negotiated compromise (Hofstede & Hofstede, 2005). Therefore, rewards in masculine societies tend to be based on perceived merit, whereas in feminine societies they tend to be based on equality. Masculine societies are therefore more likely to focus on material advancement and to be instrumentalist in their adoption of CSR policies. Nevertheless, stakeholders in masculine societies are more likely to act on their own in the pursuit of justice than in feminine societies, leading to greater willingness to punish bad behaviour (Hofstede, 2001). Masculine societies are

therefore more likely than feminine ones to have incidents of irresponsible behaviour, but are, in turn, more likely to exhibit a strong tendency for stakeholders to punish such incidents.

Based on the above discussions, we develop below competing hypotheses on whether the three cultural features complement or substitute for social capital in fostering sustainable investment.

Hypothesis II.A – *The marginal effect of social capital on mutual fund sustainability is more pronounced in individualistic/high-power distance/masculine societies.*

Hypothesis II.B – *The marginal effect of social capital on mutual fund sustainability is more pronounced in collective/equal/feminine societies.*

2.2 | Moderating role of a country's formal institutions

According to the World Bank, financial sector development occurs when ‘financial instruments, markets, and intermediaries ease the effects of information, enforcement, and transactions costs’.⁵ Existing research finds that financial development is related to better formal institutions such as better rule of law and better protection of shareholder and creditor rights (Claessens, 2006; La Porta et al., 1997). To the extent that regulations are better enforced, a well-developed financial market promotes financial disclosure and enhances the usefulness of accounting information (Leuz et al., 2003), facilitates the production of firm-specific information (Morck et al., 2000), and reduces the information asymmetry with a lower cost to external financing for firms (Rajan & Zingales, 1998). Therefore, when fund managers preferences are nurtured by social capital, they are more likely to invest in high ESG firms in more financially developed markets where they benefit from more valuable analyst research (Arand et al., 2013) and the risk of being expropriated is lower. In contrast, when fund managers invest in less financially developed markets, their incentive to invest in high ESG firms may be confounded by issues such as poor regulatory environment and opaque information environment, curtailing the role of social capital in directing their investment decision. We thus test the below hypothesis:

Hypothesis III – *The marginal effect of social capital on mutual fund sustainability is more pronounced when funds invest in firms located in more financially developed markets.*

3 | SAMPLE, DATA AND RESEARCH DESIGN

3.1 | Sample and data

This cross-country study encompasses actively managed mutual funds across 20 OECD countries.⁶ Our sample covers 15 European countries, Canada, the United States, and Japan, together accounting for more than 95% of the global sustainable market, as shown in

⁵<https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-development> (Accessed on 24 February 2022).

⁶Our country sample selection is based upon the OECD, from which where we source some of the social capital variables. See Supporting Information: Appendix I for explanations for the inclusion and exclusion of the OECD countries.

Supporting Information: Appendix II. We cover the largest asset management markets in Europe (see Supporting Information: Appendix III).⁷

Our data on firm-level ESG performance are sourced from Thomson Reuters ESG Research data. The score is a proxy of a company's relative ESG performance. Since mutual fund portfolios can be globally diversified, we extract the data from the year when Thomson Reuters ESG Research extended its coverage to the MSCI Emerging Markets Index and provided full coverage of the Russell 1000 Index. Fund-level data are collected from the Center for Research in Security Prices (CRSP) for US funds and from the Bloomberg Terminal for funds from other countries. We adjust for multiple share classes to avoid multiple counts of the same fund and exclude funds with less than \$5 million in total net assets (TNA), because they might not be able to diversify.

3.2 | Baseline regression models

Our baseline tests examine the relation between the sustainability level of actively managed mutual funds and the social capital index in the country where the funds are managed. We include fund family fixed effects, since institutions can strategically coordinate their fund strategies (Gaspar et al., 2006) by signing international conventions on sustainability (e.g., the United Nation–supported Principles for Responsible Investment).⁸ We also employ country and year fixed effects to control for, respectively, unobserved country fixed invariant factors and factors changing each year that are common to all sample mutual funds for a given year. Furthermore, robust standard errors are clustered at the country and fund family levels. The panel regression model can be written as follows:

$$Fund\ ESG\ Score_{i,t} = \alpha_0 + \alpha_1 Social\ Capital_{c,t} + \alpha_2 F_{i,t} + \alpha_3 C_{c,t} + \varepsilon_{i,t}, \quad (1)$$

where, Fund ESG Score is calculated for fund i in year t ; Social Capital is measured for country c in year t ; F is a vector of fund-level control variables; and C is a vector of country-level control variables.

Since our international sample consists of countries with unbalanced numbers of funds, we also estimate the regression using weighted least squares, with weights equal to the inverse of the number of fund–year observations in each country.

3.2.1 | Measurement of fund sustainability level

The dependent variable in Equation (1) is the fund sustainability level (*Fund ESG Score*). The variable is calculated using the following equation as the asset value–weighted ESG score of a fund's holdings at the year-end:

⁷Because election turnout is one of our explanatory social capital variables, we exclude Belgium, Luxembourg, and Australia, where voting is compulsory. We do not consider funds managed in the Isle of Man, Jersey, or Guernsey, because these funds can be managed in offshore tax havens for fiscal reasons and the level of social capital of these countries might not necessarily reflect that of mutual fund clients. Supporting Information: Appendix I provides further details on our sample choices.

⁸See <https://www.unpri.org/>.

$$Fund\ ESG\ core_{i,t} = \sum_{j=1}^{n_{i,t}} w_{i,j,t} \times Company\ ESG\ Score_{j,t}, \quad (2)$$

where $w_{i,j,t}$ is the weight of stock j in fund i at the end of year t , $n_{i,t}$ is the number of stocks held by fund i at the end of year t , and $Company\ ESG\ Score_{j,t}$ is the ESG score of stock j at the end of year t . Following El Ghouli and Karoui (2017), we only consider funds for which we can match at least 67% of the holdings to an ESG score.⁹ We address concerns of selection bias by running tests using alternative threshold levels of 50% and 75% in the robustness tests.

3.2.2 | Measurement of social capital

Social capital is an inherently abstract concept and cannot be represented by a single measure or figure. The most reputational constructs in the literature are presented in Supporting Information: Appendix IV. We draw upon previous research on social capital (Knack & Keefer, 1997; Putnam, 1993) and proxy for it via levels of trust, norms of civic behaviour, and associational activities. The discussions below motivate our choice of variables to construct the measure of social capital across countries.

3.2.2.1 | Trust

We distinct between generalized (social) trust and institutional trust. Cross-country studies assess generalized trust via the WVS Survey result on the question: ‘Generally speaking, would you say (1) that most people can be trusted, or (2) that you can’t be too careful in dealing with people?’. Our indicator is the percentage of respondents in each country that chose the first option in WVS Wave 6 (2010–2014). Institutional trust is measured by asking respondents how much confidence they have in a variety of organizations or institutions, such as the legal system, the government, or major companies (Knack & Keefer, 1997). We capture institutional trust via the variables *Election Turnout* and *Corruption Perception Index*.¹⁰ A low election turnout and high perception of corruption usually arise because of growing social inequalities and exclusion. These create an expanding section of society that feels dissatisfied with the political system and believes they are not represented. This can, in turn, lead to a vicious circle in which disadvantaged minorities participate less, have less of a voice, and become even more disadvantaged (Alesina & La Ferrara, 2000).

3.2.2.2 | Civic behaviour

We gauge selfless behaviour and generosity by incorporating the percentage of people who have helped a stranger (*Helping a Stranger*) and donated money to charity (*Donating Money*). People usually donate money or help others not only to feel good about themselves or to appear nice to others, but also to conform with social norms (Vesterlund, 2006). Such civic norms can attach guilt and shame to criminal behaviour, thus increasing the opportunity cost of committing a crime (Buonanno et al., 2009). A good public support network should build safe and trustworthy communities. We thus consider the percentage of people feeling safe walking alone at night (*Feeling of Safety*).

⁹Morningstar Portfolio Sustainability Scores also adopt this methodology.

¹⁰Prior studies in the United States (Hasan et al., 2017a, 2017b, 2020; Rupasingha et al., 2006) also consider election turnout in presidential elections and the census mail response rate.

3.2.2.3 | Associational activity

Prior work at the US county level captures the strength of networks and associations by two measures: the numbers of associations and nongovernment organizations per 10,000 people (Hasan et al., 2017a, 2017b). Because neither measure is available for other countries, we proxy for voluntary associations and community ties by the percentage of people who volunteered their time (*Volunteering Time*) and the percentage of people who report having relatives or friends they can count on (*Social Network Support*).

We construct a country-level index for social capital as the PCA among the above measures and update the index annually during our sample period. Given our empirical design, it is important that the social capital measure reflects meaningful and considerable variation, both cross-sectionally and over time. We are able to capture both cross-country and time-series variations in social capital via this PCA measure, as discussed in Section 3.3.

3.2.3 | Fund-level control variables

We draw on the literature to identify fund-level control variables. We control for total returns, including reinvested dividends, based on the findings of Riedl and Smeets (2017) and Bollen (2007) that investors with CSR objectives are willing to accept lower returns. Fund size and age are standard control variables in the mutual fund literature. Large companies tend to record high CSR scores (Liang & Renneboog, 2017) although it is unclear in the literature whether a similar relation still holds regarding mutual fund size. Chevalier and Ellison (1997) find that the convex flow–performance relation is more pronounced for younger funds. In line with the previous research discussed above, we proxy for fund size by the natural logarithm of total assets under management and measure fund age as the natural logarithm of the number of years since the inception date.

We include a sustainability dummy that equals 1 for a fund with a sustainability objective in its prospectus, and 0 for a conventional fund.¹¹ Since the fund management sector is quite internationalized, funds can be domiciled in one country, managed in a second, and sold in a third. We include a location dummy equal to 1 if a fund is both managed and legally domiciled in the same country, and 0 otherwise.

3.2.4 | Country-level control variables

We use several country control variables to capture the effects of political institutions, labour and educational systems, and cultural systems, which determine companies' social performance (Ioannou & Serafeim, 2012). Following Liang and Renneboog (2017), we control for the level of democracy in a country using the Economist Intelligence Unit's (EIU) *Democracy Index* and the Heritage Foundation's *Index of Economic Freedom*. Both variables measure different aspects of government interference in business activities, such as government spending, fiscal freedom, business freedom, labour freedom, monetary freedom, and judicial efficiency. We further control for *Ease of Doing Business*, from the World Bank, as a proxy for the flexibility of

¹¹Sustainable funds in the United States are identified using a list of funds collected from the US Forum for Sustainable and Responsible Investment website, at www.ussif.org. Sustainable funds in other countries are identified based on the Bloomberg Terminal fund classification.

the regulatory environment. To account for home bias, we construct a control variable capturing the weighted average CSR score of domestic companies (*Domestic Stocks CSR*) computed as the *Market Capitalization* weighted average of the ESG scores of all companies headquartered in each country, as follows:

$$\text{Domestic Stocks CSR}_{c,t} = \frac{\sum \text{Market Cap}_{j,t} \times \text{ESG}_{j,t}}{\sum \text{Market Cap}_{c,t}}, \quad (3)$$

where, the country-level domestic stocks CSR is calculated using market capitalization and firm-level ESG scores for company j in country c in year t , and. We additionally control for the average CSR score of major country indices (*Equity Index CSR*). The list of companies headquartered in each country, the equity index constituents, and their respective market capitalizations and ESG scores are all sourced from Thomson Reuters.

Investors with higher growth in wealth are more likely to care about sustainability since they have greater leeway to pursue social impact in addition to financial returns. We thus control for the gross domestic product growth rate (*GDP Growth Rate*) to account for current economic conditions. Institutions in more globalized countries should be under greater pressure to comply with international conventions and principles that prescribe responsible investments. Therefore, we control for the KOF Swiss Economic Institute's *KOF Globalization Index*.

To alleviate concerns that our results are driven by community preferences towards environmental or social issues, we control for the Environmental Performance Index (*Environmental Performance Index*) and Employment Rights (*Employment Rights*) (Dyck et al., 2019). The former aggregates country-level data on environmental health and ecosystem viability, while the latter captures the strictness of employment protection legislation and proxies for social norms towards workers' rights and other social issues. Appendix A presents the definitions and descriptions of all the variables.

3.3 | Descriptive statistics

Panel A of Table 1 reports descriptive statistics of the variables used in the regression analyses. Panels B and C present fund-level summary statistics for conventional and sustainable funds, respectively. Fund ESG scores vary between 20.3 and 85.8, with an average score of 66. Conventional funds record an average fund ESG score of 66.03 (with a standard deviation of 6.63), lower than the average of 67.46 for sustainable funds (with a standard deviation of 6.03). All eight social capital components are scaled between zero and 100. The resulting social capital measure from PCA ranges from -3.5 to 1.9 . The average fund in our sample generates a positive total return of 8.8%. The mean value of total net assets is \$818 million. The largest fund, managed by BNP Paribas in the Netherlands, holds about \$180 million. On average, sustainable funds manage fewer assets and are younger than conventional funds.

We report the number of observations as well as statistics of the variable *Social Capital* and *Fund ESG Score* per country in Table 2. In line with the size of investment industry, most of the cross-country observations are from the United States, followed by the United Kingdom and Canada. With the zero mean of social capital across countries by construction, some countries, such as Canada, Finland, and the United Kingdom, have social capital values consistently above zero, and some countries, such as Italy and Portugal, have values consistently below zero.

TABLE 1 Summary statistics.

This table reports the mean, median, standard deviation, minimum and maximum of the fund ESG score; social capital and its eight components (*WVS Generalized Trust, Election Turnout, Corruption Perception Index, Social Network Support, Volunteering Time, Helping a Stranger, Donating Money, and Feeling of Safety*); *Annual Total Return; TNA; Age; Sustainability Dummy; Location dummy; Domestic Stocks CSR; Equity Index CSR; EIU Democracy Index; Environmental Performance Index; GDP Growth Rate; Ease of Doing Business; KOF Globalization Index; Employment Rights; and Index of Economic Freedom*. Panels B and C report fund-level summary statistics for conventional and sustainable funds, respectively. See Appendix A for the definitions of all the variables.

| Panel A: Summary statistics for the overall sample | | | | | | |
|---|---------------------|-------------|---------------|----------------|------------|------------|
| | Observations | Mean | Median | Std Dev | Min | Max |
| Fund ESG Score | 17,699 | 66.13 | 66.89 | 6.60 | 20.33 | 85.77 |
| Annual Total Return (%) | 17,699 | 8.82 | 8.56 | 13.40 | -54.43 | 106.97 |
| Total Net Assets (TNA) (\$ M) | 17,699 | 817.90 | 179.91 | 4119.48 | 5.00 | 182,039.40 |
| Age (years) | 17,699 | 17.42 | 15.08 | 13.05 | 0.50 | 116.92 |
| Sustainability Dummy | 17,699 | 0.07 | - | 0.26 | - | 1.00 |
| Location Dummy | 17,699 | 0.85 | 1.00 | 0.35 | - | 1.00 |
| Social Capital | 17,699 | 0.52 | 0.52 | 0.92 | -3.47 | 1.94 |
| WVS Generalized Trust | 17,699 | 39.54 | 36.42 | 11.04 | 19.20 | 74.90 |
| Election Turnout | 17,699 | 69.15 | 73.20 | 10.37 | 48.50 | 87.70 |
| Corruption Perception Index | 17,699 | 76.24 | 76.00 | 7.83 | 39.00 | 94.00 |
| Social Network Support | 17,699 | 91.50 | 90.99 | 2.90 | 72.40 | 96.30 |
| Volunteering Time | 17,699 | 34.10 | 33.00 | 9.50 | 8.00 | 46.00 |
| Helping a Stranger | 17,699 | 61.00 | 63.00 | 13.20 | 25.00 | 79.00 |
| Donating Money | 17,699 | 57.70 | 63.00 | 15.10 | 19.00 | 79.00 |
| Feeling of Safety | 17,699 | 75.90 | 75.00 | 4.80 | 58.00 | 87.70 |
| Domestic Stocks CSR | 17,699 | 69.15 | 68.95 | 4.25 | 46.76 | 77.63 |
| Equity Index CSR | 17,699 | 68.22 | 66.48 | 6.66 | 46.39 | 80.85 |
| EIU Democracy Index | 17,699 | 8.41 | 8.16 | 0.49 | 6.83 | 9.93 |
| Environmental Performance Index | 17,699 | 78.28 | 78.04 | 7.59 | 63.79 | 90.68 |
| GDP Growth Rate (%) | 17,699 | 2.01 | 1.79 | 2.33 | -4.03 | 25.12 |
| Ease of Doing Business | 17,699 | -14.08 | -8.00 | 12.01 | -87.00 | -3.00 |
| KOF Globalization Index | 17,699 | 84.90 | 84.64 | 3.68 | 74.68 | 91.17 |
| Employment Rights | 17,699 | 1.28 | 1.10 | 0.91 | 0.26 | 4.13 |
| Index of Economic Freedom | 17,699 | 74.55 | 75.50 | 4.68 | 58.80 | 81.90 |
| Panel B: Conventional fund summary statistics | | | | | | |
| | Observations | Mean | Median | Std Dev | Min | Max |
| Fund ESG Score | 16,453 | 66.03 | 66.81 | 6.63 | 20.33 | 85.77 |
| Annual Total Return (%) | 16,453 | 8.86 | 8.50 | 13.42 | -54.43 | 106.97 |

TABLE 1 (Continued)

| Panel B: Conventional fund summary statistics | | | | | | |
|--|---------------------|-------------|---------------|----------------|------------|------------|
| | Observations | Mean | Median | Std Dev | Min | Max |
| Total Net Assets (TNA) (\$ M) | 16,453 | 912.28 | 185.60 | 4265.44 | 5.00 | 182,039.40 |
| Age (years) | 16,453 | 17.63 | 15.25 | 13.31 | 0.50 | 116.92 |
| Location Dummy | 16,453 | 0.86 | 1 | 0.35 | 0 | 1 |
| Panel C: Sustainable fund summary statistics | | | | | | |
| | Observations | Mean | Median | Std Dev | Min | Max |
| Fund ESG Score | 1246 | 67.46 | 67.85 | 6.03 | 46.19 | 80.90 |
| Annual Total Return (%) | 1246 | 8.26 | 9.16 | 13.09 | -43.29 | 60.54 |
| Total Net Assets (TNA) (\$ M) | 1246 | 327.24 | 125.94 | 692.74 | 5.00 | 10,203.90 |
| Age (years) | 1246 | 14.67 | 13.75 | 8.56 | 0.83 | 116.92 |
| Location Dummy | 1246 | 0.83 | 1 | 0.37 | 0 | 1 |

Within a country, there are also considerable variations in social capital over time, as indicated by the comparison of the standard deviation to the mean per country. We are thus able to capture social capital variation in both cross-country ranking and over time. With the large within-country standard deviation, there is likely time variation in the relative rankings of social capital across countries. Moreover, in Panel B of Supporting Information: Appendix V, we report the statistics of the magnitude of yearly changes in social capital calculated in the aggregate across countries. The large standard deviations of yearly change also suggest significant time-series variation in social capital for a given country.

Table 3 reports the pairwise correlation matrix between the fund ESG score, social capital, and control variables. The moderately high correlations among some country-level variables are anticipated, since countries with lower levels of corruption are also likely to benefit from greater democracy and economic freedom and consequently enjoy more globalized economies. For such purposes, we run regressions with different subsets of control variables and employ all variables simultaneously to ensure we control for all the effects of regulation and political institutions.

4 | IMPACT OF SOCIAL CAPITAL ON PORTFOLIO MANAGEMENT

4.1 | Baseline tests

Under the traditional risk–return optimization framework, social capital should not affect the investing behaviour of mutual funds, because it would impose additional constraints and limit the investment opportunity set. However, mutual funds seeking to raise capital locally need to consider local norms and preferences and align their investment decisions accordingly. In Table 4, we test the relation between social capital and fund sustainability level on a panel

TABLE 2 Social Capital and fund ESG Score by country.

This table reports the number of observations and summary statistics for Fund ESG Score and Social Capital by country.

| Country | Observations | Fund ESG Score | | | | Social Capital | | | |
|-------------|--------------|----------------|-------|-------|---------|----------------|-------|-------|---------|
| | | Mean | Min | Max | Std Dev | Mean | Min | Max | Std Dev |
| Austria | 170 | 68.73 | 50.46 | 81.09 | 6.94 | 0.04 | -0.29 | 0.24 | 0.19 |
| Canada | 1653 | 64.63 | 20.33 | 77.65 | 5.68 | 1.06 | 0.27 | 1.69 | 0.58 |
| Denmark | 504 | 65.68 | 42.92 | 80.05 | 6.75 | 0.41 | -0.32 | 1.29 | 0.66 |
| Finland | 215 | 65.73 | 47.34 | 77.24 | 5.57 | 0.56 | 0.02 | 1.21 | 0.43 |
| France | 1414 | 67.28 | 34.82 | 85.77 | 6.59 | -0.57 | -1.22 | 0.42 | 0.61 |
| Germany | 1324 | 69.91 | 42.40 | 80.64 | 6.28 | 0.25 | -0.26 | 0.66 | 0.42 |
| Ireland | 689 | 66.38 | 20.33 | 81.26 | 7.13 | 0.87 | -0.06 | 1.47 | 0.57 |
| Israel | 47 | 67.82 | 49.83 | 81.52 | 7.58 | -0.73 | -2.24 | 0.18 | 0.89 |
| Italy | 252 | 70.14 | 53.96 | 80.91 | 5.54 | -0.94 | -2.11 | -0.10 | 0.78 |
| Japan | 472 | 61.61 | 42.78 | 76.74 | 5.22 | -0.70 | -2.16 | 0.15 | 0.89 |
| Netherlands | 188 | 66.04 | 51.71 | 80.49 | 6.96 | 0.70 | -0.10 | 1.47 | 0.52 |
| Norway | 143 | 66.95 | 55.19 | 80.28 | 3.90 | 0.58 | -0.32 | 1.30 | 0.58 |
| Poland | 9 | 60.76 | 52.65 | 70.26 | 5.60 | -0.81 | -1.63 | 0.08 | 0.72 |
| Portugal | 126 | 71.03 | 56.06 | 83.37 | 5.65 | -1.00 | -1.55 | -0.02 | 0.48 |
| South Korea | 193 | 62.93 | 45.54 | 80.24 | 6.70 | -1.03 | -3.47 | 0.42 | 1.37 |
| Spain | 331 | 72.69 | 52.69 | 81.70 | 5.06 | -0.66 | -1.38 | 0.83 | 0.89 |
| Sweden | 524 | 66.11 | 43.90 | 81.70 | 5.92 | -0.14 | -1.35 | 1.13 | 0.99 |
| Switzerland | 895 | 68.20 | 46.31 | 82.53 | 7.02 | 0.49 | -0.20 | 1.02 | 0.46 |
| UK | 2673 | 66.73 | 39.58 | 83.78 | 5.92 | 0.59 | 0.08 | 1.70 | 0.61 |
| US | 5877 | 64.59 | 35.69 | 81.16 | 6.41 | 1.02 | -0.10 | 1.94 | 0.89 |

regression setting. The dependent variable in all regressions is *Fund ESG Score*, calculated using Equation (2) and we control for a battery of fund- and country-level variables.

The baseline regressions are reported in Columns (1)–(4) of Table 4. The significantly positive coefficients of social capital reported imply that, with a one standard deviation increase in cross-country social capital, we note a 0.28–0.38 unit increase in *Fund ESG Score*.¹² Between a country with social capital that is one standard deviation below the mean and another with social capital one standard deviation above the mean—that is, from the 15th to the 85th percentile or two standard deviations—the variable *Fund ESG Score* is expected to differ by 0.56 ($=2 \times 0.28$) to 0.76 ($=2 \times 0.38$) units. We compare the impact with the coefficient of

¹²Whilst Pearson Correlation in Table 3 reports a negative correlation coefficient between *Social Capital* and *Fund ESG Score*, the sign switches to positive as we include country fixed effects or control for country-level characteristics.

TABLE 3 Pearson correlation matrix.

Table 3 reports the Pearson correlation coefficient among the Fund ESG Score, Social Capital, Annual Total Return, TNA, Age, Sustainability Dummy, Location Dummy, Domestic Stocks CSR, Equity Index CSR, EIU Democracy Index, Environmental Performance Index, GDP Growth Rate, Ease of Doing Business, KOF Globalization Index, Employment Rights, and Index of Economic Freedom. All variables in the table are defined in Appendix A.

| | Fund ESG | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
|---|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <i>(1) Social Capital</i> | -0.06 | 1.00 | | | | | | | | | | | | | |
| <i>(2) Annual Total Return</i> | -0.07 | -0.06 | 1.00 | | | | | | | | | | | | |
| <i>(3) TNA</i> | 0.01 | 0.08 | 0.02 | 1.00 | | | | | | | | | | | |
| <i>(4) Age</i> | 0.01 | 0.06 | 0.03 | 0.20 | 1.00 | | | | | | | | | | |
| <i>(5) Sustainability Dummy</i> | 0.06 | -0.07 | -0.01 | -0.04 | -0.06 | 1.00 | | | | | | | | | |
| <i>(6) Location Dummy</i> | -0.03 | 0.06 | 0.04 | 0.03 | 0.15 | -0.02 | 1.00 | | | | | | | | |
| <i>(7) Domestic Stocks CSR</i> | 0.23 | -0.14 | -0.11 | -0.03 | -0.05 | 0.06 | -0.22 | 1.00 | | | | | | | |
| <i>(8) Equity Index CSR</i> | 0.21 | -0.22 | -0.05 | -0.04 | -0.02 | 0.07 | -0.23 | 0.84 | 1.00 | | | | | | |
| <i>(9) EIU Democracy Index</i> | 0.03 | 0.11 | 0.05 | -0.05 | -0.11 | 0.09 | -0.11 | -0.06 | -0.08 | 1.00 | | | | | |
| <i>(10) Environmental Performance Index</i> | 0.11 | -0.06 | -0.16 | -0.03 | -0.04 | 0.04 | -0.16 | 0.44 | 0.28 | 0.31 | 1.00 | | | | |
| <i>(11) GDP Growth Rate</i> | -0.03 | 0.15 | -0.08 | 0.01 | -0.04 | -0.04 | -0.04 | -0.12 | -0.39 | 0.10 | 0.09 | 1.00 | | | |
| <i>(12) Ease of Doing Business</i> | -0.16 | 0.49 | 0.05 | 0.08 | 0.10 | -0.08 | 0.08 | -0.31 | -0.28 | 0.02 | -0.18 | 0.19 | 1.00 | | |
| <i>(13) KOF Globalization Index</i> | 0.19 | -0.12 | -0.04 | -0.07 | -0.15 | 0.11 | -0.34 | 0.58 | 0.57 | 0.46 | 0.51 | 0.00 | -0.16 | 1.00 | |
| <i>(14) Employment Rights</i> | 0.22 | -0.52 | -0.06 | -0.11 | -0.16 | 0.13 | -0.18 | 0.42 | 0.45 | 0.30 | 0.30 | -0.11 | -0.63 | 0.57 | 1.00 |
| <i>(15) Index of Economic Freedom</i> | -0.13 | 0.53 | 0.04 | 0.04 | 0.05 | -0.11 | -0.02 | -0.35 | -0.29 | 0.40 | -0.01 | 0.18 | 0.57 | -0.13 | -0.59 |

TABLE 4 Baseline results.

This table reports the regression estimates of *Fund ESG Score* on *Social Capital* and the control variables. The fund ESG score is computed via Equation (2) as a holdings-based measure. Social capital index is derived via PCA. The control variables are *Fund Total Return*, *Size* as the natural logarithm of *TNA*, *Age*, *Sustainability Dummy*, *Location Dummy*, *Domestic Stocks CSR*, *Equity Index CSR*, *EIU Democracy Index*, *Environmental Performance Index*, *GDP Growth Rate*, *Ease of Doing Business*, *KOF Globalization Index*, *Employment Rights*, and *Index of Economic Freedom*. Fund-level variables are winsorized at the 1% level. Data were sourced from the CRSP, Bloomberg, the OECD, Thomson Reuters Eikon, the KOF Institute, the World Bank, the Heritage Foundation, Transparency International, the Charities Aid Foundation and EIU for the period 2011–2016. The regressions employ country, year and fund family fixed effects. Standard errors are clustered by country and fund family. All variables in the table are defined in Appendix A. Robust standard errors clustered at the country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Baseline results | | | | | WLS | Excluding US |
|---------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Social Capital | 0.382*** (0.049) | 0.348*** (0.047) | 0.337*** (0.048) | 0.281*** (0.049) | 0.273*** (0.05) | 0.187*** (0.048) | 0.131** (0.058) |
| Annual Total Return | −0.017*** (0.006) | −0.019*** (0.006) | −0.019*** (0.006) | −0.021*** (0.006) | −0.022*** (0.006) | −0.008** (0.004) | −0.012* (0.007) |
| Size | 0.265*** (0.07) | 0.266*** (0.07) | 0.265*** (0.07) | 0.266*** (0.07) | 0.267*** (0.07) | 0.755*** (0.022) | 0.319*** (0.095) |
| Log age | 0.37** (0.15) | 0.367** (0.151) | 0.366** (0.151) | 0.365** (0.151) | 0.362** (0.151) | −1.069*** (0.053) | 0.419*** (0.158) |
| Sustainability Dummy | 1.107** (0.435) | 1.102** (0.435) | 1.101** (0.435) | 1.093** (0.436) | 1.1** (0.436) | −1.741*** (0.16) | 1.373*** (0.492) |
| Location Dummy | −0.558 (0.794) | −0.506 (0.8) | −0.511 (0.798) | −0.492 (0.795) | −0.468 (0.8) | 0.728*** (0.071) | −0.534 (0.803) |
| Domestic Stocks CSR | 0.054** (0.022) | 0.076*** (0.026) | 0.069*** (0.027) | 0.071*** (0.027) | | −0.074*** (0.007) | 0.065** (0.029) |
| Equity Index CSR | | | | | 0.121*** (0.037) | | |
| EIU Democracy Index | | 1.665*** (0.595) | 1.466** (0.635) | 0.951 (0.65) | 1.121 (0.687) | −0.271** (0.111) | −0.56 (0.554) |
| Environmental Performance Index | | −0.045** (0.019) | −0.046** (0.019) | −0.042** (0.019) | −0.037** (0.018) | 0.252*** (0.006) | −0.011 (0.022) |
| GDP Growth Rate | | 0.008 (0.013) | 0.009 (0.013) | 0.011 (0.013) | 0.059*** (0.015) | 0.166*** (0.016) | 0.007 (0.013) |
| Ease of Doing Business | | 0.015 (0.01) | 0.012 (0.01) | 0.003 (0.011) | −0.002 (0.011) | −0.019*** (0.004) | 0.03*** (0.011) |

TABLE 4 (Continued)

| | Baseline results | | | | | WLS (6) | Excluding US (7) |
|---------------------------|---------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) | | |
| KOF Globalization Index | | | -0.077 (0.126) | 0.129 (0.134) | -0.06 (0.128) | -0.3*** (0.012) | -0.081 (0.11) |
| Employment Rights | | | -1.886*** (0.713) | -1.498** (0.711) | -1.183* (0.711) | 1.996*** (0.073) | 0.658 (0.706) |
| Index of Economic Freedom | | | | 0.211*** (0.052) | 0.154*** (0.052) | 0.032** (0.014) | 0.066 (0.05) |
| Constant | 61.249*** (1.67) | 49.259*** (5.218) | 60.444*** (13.827) | 30.346** (15.167) | 44.772*** (14.987) | 80.608*** (0.896) | 67.265*** (12.557) |
| Observations | 17,699 | 17,699 | 17,699 | 17,699 | 17,699 | 17,699 | 11,822 |
| R ² | 0.024 | 0.025 | 0.026 | 0.026 | 0.027 | 0.331 | 0.021 |

Sustainability Dummy to appreciate the economic significance of social capital. *Fund ESG Score* is on average one unit higher for funds with an explicit sustainability mandate (i.e., sustainable funds) than those without such a mandate. Therefore, the economic impact of social capital on *Fund ESG Score* is comparable to an explicit objective to invest sustainably.

In Column (5) of Table 4, we substitute *Domestic Stocks CSR* by *Equity Index CSR*, which captures the average CSR score of each country's leading equity index, and we find almost identical results as those reported in Column (4). Since our international sample consists of unbalanced numbers of funds across countries, we re-estimate the regression in Column (6) using the weighted least squares methodology, with weights equal to the inverse of the number of fund-year observations in each country. We thus mitigate concerns that our results are driven by countries with the largest numbers of observations. In Column (7), we exclude US funds, which account for 33% of the sample. Social capital remains significant in both tests.¹³

The coefficient of *Social Capital* is statistically significant at the 1% level in all regressions reported in Table 4, implying that mutual funds managed in high social capital countries are more inclined to invest sustainably than their counterparts managed in low social capital countries. At the country level, social capital is consistently an important factor driving *Fund ESG Score*. Regarding other country-level variables, the CSR engagement of local companies (*Domestic Stocks CSR*) is also significant at the 1% level, but the magnitude is much lower than that of *Social Capital*. The variable *Index of Economic Freedom* is strongly related to *Fund ESG Score*: funds managed in open market economies and in countries with greater trade freedom and a more effective judicial system are more likely to embrace ethical investing. There are also several interesting findings for

¹³We do not consider tests aggregating all fund ESG scores into one observation per country-year, because country averages do not control for fund-specific influences. The use of country aggregates instead of the underlying observations requires implausible assumptions and can lead to biased results (Holderness, 2016).

fund-level control variables: *Total Return* is negatively related to *Fund ESG Score* across all specifications. This is not surprising, since investors' preferences for ESG lead to lower expected returns (Cornell, 2021). Larger and older funds tend to have higher fund ESG scores.

Our social capital result on fund ESG documents the effect on average ESG scores within portfolios. This effect can be manifested in several ways, such as by purchasing high-ESG stocks and/or selling low-ESG stocks. To understand how social capital affects portfolio management, we dissect fund ESG into contributions from new acquisitions, increased/decreased weights of existing holdings, and divestment. Table 5 presents the regression results on the ESG scores of the four holding groups.

New acquisitions are identified as stocks that are added to the portfolio as of the end of year t when holdings at the end of the year $t - 1$ were zero. The opposite is defined as a divestment: a positive holding at the end of the year $t - 1$ and no holdings as of the end of the year t . For each holding group, we calculate the value-weighted average of the ESG scores. We use market capitalization at the end of year $t - 1$ for the divestment group and the year t market capitalization for the other groups. The regression results for new acquisitions and divestments are reported in Columns (1) and (2) and Columns (7) and (8) of Table 5, respectively.

As for increased/decreased weights, these are defined based on abnormal changes in holdings: a stock is categorized as an increase in weight if the difference between the percentage change in the dollar value of holdings between years t and $t - 1$ and the stock return in year t ranks in the top 40% of the portfolio. If this difference ranks in the bottom 40% of the portfolio, we classify that as a decreased weight. The intuition is that a passive buy-and-hold strategy will have the same percentage change in holding value as the stock's return, and an active strategy will have a percentage change in holding value different from the stock's return. We discard the middle 20% of holding changes, because it is ambiguous to classify the non-reinvestment of cash dividends as a change in holdings and there is a small time mismatch between when funds report holdings before the year-end and when returns are measured at year-ends. The regression results for increased and decreased weights are reported in Columns (3) and (4) and Columns (5) and (6) of Table 5, respectively.

We find that social capital plays an important role when mutual funds allocate capital into new holdings and increase weights into pre-existing holdings. Not only is social capital statistically significant at the 1% level for such specifications, but also the coefficients demonstrate strong economic significance (varying between 0.60 and 0.73). If funds just shuffle existing holdings to increase overall ESG scores, we should symmetrically observe divestments of poor-ESG stocks relating to social capital, as well as investments of high-ESG stocks. However, we find no evidence that social capital drives divestment or motivates the threat of exit.

The preference of mutual funds to invest in home equities is well documented in the literature. For instance, US equity fund managers allocate nearly 94% of their portfolio holdings to domestic securities, even though the US equity market comprises less than 48% of global equity markets (French & Poterba, 1991). Furthermore, Jha and Cox (2015) find that firms headquartered in a high social capital county in the United States have higher CSR scores. It is thus possible for a fund to have a high ESG score solely due to being located in a region with abundant ethical stocks. We thus recalculate fund-level ESG scores by excluding domestic stock and therefore only considering foreign holdings. We denote

TABLE 5 Impact of social capital on portfolio management.

This table presents the regression results for new acquisitions, increased/decreased weights, and divestment. All the variables in the table are defined in Appendix A. The regressions employ country, year, and fund family fixed effects. Standard errors are clustered by country and fund family and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | New acquisitions | | | Increased weight | | | Decreased weight | | | Divestment | |
|----------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|-----|------------|--|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (7) | (8) | |
| Social Capital | 0.732*** (0.104) | 0.721*** (0.119) | 0.667*** (0.097) | 0.601*** (0.102) | -0.079 (0.095) | 0.004 (0.104) | -0.271* (0.16) | -0.269 (0.173) | | | |
| Annual Total Return | -0.01 (0.01) | -0.008 (0.01) | -0.028*** (0.008) | -0.03*** (0.008) | -0.044*** (0.008) | -0.041*** (0.008) | 0.029** (0.012) | 0.03** (0.012) | | | |
| Size | 0.307*** (0.097) | 0.306*** (0.097) | 0.137 (0.085) | 0.138 (0.085) | 0.284*** (0.083) | 0.284*** (0.082) | 0.306*** (0.119) | 0.306*** (0.119) | | | |
| Log age | -0.39*** (0.143) | -0.404*** (0.143) | 0.512*** (0.184) | 0.488*** (0.183) | 0.621*** (0.188) | 0.628*** (0.187) | 0.266 (0.181) | 0.261 (0.181) | | | |
| Sustainability Dummy | 1.649*** (0.483) | 1.654*** (0.484) | 1.068** (0.475) | 1.116** (0.478) | 0.942* (0.547) | 0.942* (0.547) | 1.437** (0.571) | 1.444** (0.571) | | | |
| Location Dummy | 0.715 (0.569) | 0.716 (0.559) | -0.122 (0.968) | -0.014 (0.983) | -1.239 (0.84) | -1.288 (0.827) | -2.072*** (0.793) | -2.076*** (0.789) | | | |
| Domestic Stocks CSR | 0.29*** (0.051) | 0.168*** (0.057) | 0.191*** (0.047) | 0.189*** (0.057) | 0.216*** (0.06) | 0.255*** (0.07) | 0.086 (0.056) | 0.044 (0.064) | | | |
| EIU Democracy Index | -1.297 (1.103) | -1.297 (1.103) | 0.205 (0.92) | 0.205 (0.92) | -2.648*** (1.004) | -2.648*** (1.004) | -0.68 (1.11) | -0.68 (1.11) | | | |

(Continues)

TABLE 5 (Continued)

| | New acquisitions | | Increased weight | | Decreased weight | | Divestment | |
|---------------------------------|----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|----------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Environmental Performance Index | | 0.114*** (0.033) | 0.098*** (0.028) | 0.032 (0.03) | | | | -0.019 (0.053) |
| GDP Growth Rate | | 0.079* (0.046) | -0.062*** (0.027) | | | | | 0.106* (0.054) |
| Ease of Doing Business | | -0.051* (0.029) | 0.133*** (0.022) | | | | | 0.027 (0.029) |
| KOF Globalization Index | | -0.814** (0.348) | -1.446*** (0.272) | | | | | -0.694* (0.377) |
| Employment Rights | | -3.159 (2.856) | 0.211 (2.075) | | | | | -2.058 (2.885) |
| Index of Economic Freedom | | 0.075 (0.112) | -0.201** (0.099) | | | | | -0.17 (0.135) |
| Constant | 40.677*** (3.664) | 118.198*** (35.436) | 51.824*** (3.333) | 181.956*** (28.09) | 52.14*** (4.243) | 10.793 (32.635) | 56.798*** (4.097) | 143.368*** (42.805) |
| Observations | 14,183 | 14,183 | 13,884 | 13,884 | 14,051 | 14,051 | 13,545 | 13,545 |
| R ² | 0.016 | 0.019 | 0.017 | 0.022 | 0.03 | 0.033 | 0.007 | 0.008 |

the resulting score as *Foreign Holdings ESG* and rerun the regressions as presented in Table 6. These tests allow us to better capture the sustainability appetite of portfolio managers as a more intentional decision. Not only is the coefficient for *Social Capital* statistically significant at the 1% level, but also its magnitude is larger when we consider only foreign allocation in Table 6 than the results previously reported in Table 4. The weighted least squares results reported in Column (4) continue to be significant.

We further examine the role of social capital in foreign new acquisitions and changes in weights and divestments in Table 7. The results are qualitatively similar and comparable to those reported for the overall *Fund ESG* findings, where social capital motivates ESG screening for foreign acquisitions and increases in weight.

4.2 | Does social capital motivate managers to select more sustainable stocks?

There is established evidence on the role of active asset management on ESG engagement (e.g., Chen et al., 2020; Dyck et al., 2019). Nevertheless, institutions face a cost–benefit tradeoff when monitoring their holdings (Barber, 2007). As long as there is a fixed component to the cost of gathering and analysing information, there will be economies of scale in monitoring companies. The larger the holdings of an institution, the smaller the proportional cost of monitoring. Such costs and lack of economies of scale should demotivate funds' engagement with relatively smaller holdings. Fund managers would most likely free-ride on the ESG status of their smaller holdings. If fund managers in high–social capital countries are conscious of the overall ESG settings of their portfolios, they should implement such filters when acquiring these small holdings, meaning that the positive social capital–fund ESG relation should also hold for small holdings. To this end, we first rank funds' holdings in an ascending order and define small holdings as those that accumulate up to the first ten percent of the total weight.¹⁴ We then calculate the ESG score using Equation (2) for small holdings and present the regression results in Table 8. We find a positive link (at the 5% level of statistical significance) between country-level social capital and the ESG score of small holdings, and the magnitude of the coefficient (0.271 in Column [3]) is comparable to that of the main result (0.273 in Column [5] in Table 4). The results suggest that social capital motivates sustainable stock selection, which supports the hypothesis of an overall portfolio consciousness.

4.3 | Does investor demand drive sustainable investment?

A common explanation for the sudden rush of fund managers into green finance is investors' increasing awareness of climate change and social issues. Fund managers tend to follow suit, since their payoffs are determined by management fees charged on assets under management. Evidence in behavioural finance suggests that retail investors are particularly subject to the marketwide rise and fads of demand (e.g., the marketwide

¹⁴For example, the sorted weights for stocks in a fund are 0.2%, 0.3%, 0.5%, 2%, 2%, 4.5%, 6%, 10%, and so on. The ESG score for small holdings is calculated using the first six stocks, because they contribute to the first 10% of total weights.

TABLE 6 Impact of Social Capital on Foreign Holdings ESG.

This table reports the regression estimates of *Foreign Holdings ESG Score* on *Social Capital* and the control variables. The variable *Foreign Holdings ESG score* is computed via Equation (2) as a holdings-based measure considering only nondomestic/foreign holdings. Columns (1)–(3) employ ordinary least squares; Column (4) reports the results using the weighted least squares methodology. Fund-level variables are winsorized at the 1% level. Robust standard errors clustered at the country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Foreign Holdings ESG | | | |
|---------------------------------|----------------------|---------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Social Capital | 1.126*** (0.129) | 0.946*** (0.119) | 1.015*** (0.124) | 0.43*** (0.107) |
| Annual Total Return | −0.03*** (0.011) | −0.04*** (0.012) | −0.042*** (0.012) | −0.047*** (0.006) |
| Size | 0.4*** (0.11) | 0.402*** (0.11) | 0.402*** (0.11) | 0.184*** (0.048) |
| Log age | 0.181 (0.255) | 0.175 (0.256) | 0.179 (0.256) | −0.064 (0.109) |
| Sustainability Dummy | 1.704** (0.707) | 1.683** (0.707) | 1.679** (0.708) | 0.617** (0.272) |
| Location Dummy | 0.662 (0.843) | 0.871 (0.867) | 0.869 (0.869) | 0.785*** (0.217) |
| Domestic Stocks CSR | 0.119*** (0.038) | 0.127*** (0.047) | | 0.036 (0.024) |
| Equity Index CSR | | | −0.121** (0.06) | |
| EIU Democracy Index | | 4.766*** (1.133) | 5.006*** (1.119) | −1.491*** (0.265) |
| Environmental Performance Index | | −0.028 (0.04) | −0.003 (0.041) | −0.008 (0.012) |
| GDP Growth Rate | | −0.041** (0.019) | −0.062** (0.026) | 0.089*** (0.031) |
| Ease of Doing Business | | 0.017 (0.025) | 0.005 (0.024) | −0.095*** (0.008) |
| KOF Globalization Index | | −0.035 (0.248) | 0.08 (0.254) | 0.478*** (0.035) |
| Employment Rights | | −0.416 (1.144) | −1.022 (1.124) | 2.741*** (0.176) |

TABLE 6 (Continued)

| | Foreign Holdings ESG | | | |
|---------------------------|----------------------|---------------------|---------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Index of Economic Freedom | | 0.433*** (0.116) | 0.491*** (0.119) | 0.156*** (0.031) |
| Constant | 54.267*** (2.646) | -12.983 (27.735) | -13.299 (28.598) | 19.864*** (2.723) |
| Observations | 16,776 | 16,776 | 16,776 | 16,776 |
| R ² | 0.026 | 0.031 | 0.031 | 0.145 |

investor sentiment of Baker and Wurgler [2006] and the reaction to Morningstar sustainability ratings in the work of Ammann et al. [2018]), and it is likely that retail investors are also driving the fund ESG results. To this end, we run separate regressions on retail and institutional funds. A retail fund pools money from individual investors, whereas an institutional fund manages capital on behalf of institutional investors.¹⁵ In Panel A of Table 9, the coefficient of social capital is statistically significant at the 1% level for retail funds, but insignificant for institutional funds.

While the results in Table 9 support a channel of preference transition from retail investors to fund managers, it is unclear which ESG components are driving the results. We therefore compute the fund-level scores for each ESG component, using data from Thomson Reuters ESG Research, as the value-weighted average of the component scores across individual holdings.¹⁶ As demonstrated in Panel B, all three components are significantly related to social capital only for retail funds. Hence, retail funds screen across the entire ESG spectrum in response to social capital. As anticipated, we do not find evidence that institutional funds located high-social capital countries react to social capital by taking ESG aspects into consideration.

To provide further evidence, we proxy for retail investors' ESG preferences via the Google *Search Volume Index* (Da et al., 2015). Compared with survey-based measures of investor preferences, the search-based measure has several advantages. Although respondents answer survey questions for altruistic reasons, there is often little incentive to answer them carefully or truthfully, especially when the questions are sensitive (Singer, 2002). Search volume has the potential to reveal more individual behaviour, whereas the nonresponse rates in surveys are particularly high or the incentive for truth telling is low. Finally, some economists have been skeptical about answers in survey data that are not cross-verified by data on actual (not self-reported) behaviour as noted by objective external measurements (e.g., Vissing-Jorgensen, 2003). Google, the largest search engine in the world, makes public the *Search Volume Index* of search topics via its Google Trends (<http://www.google.com/trends/>). The values are scaled from 0 to 100. We extract

¹⁵If a mutual fund's share classes are only available to institutional investors, it is classified as an institutional fund. If, by contrast, the share classes cater only to retail investors, the fund is classified as a retail fund. The dichotomy is identified by the CRSP for US funds and by Bloomberg for funds in other countries.

¹⁶Appendix A also contains a brief description of the dimensions covered by each component score.

TABLE 7 Impact of social capital on foreign holdings allocation.

This table presents the regression results for new acquisitions, increased/decreased weights, and divestment considering only nondomestic/foreign holdings. The regressions employ country, year, and fund family fixed effects. Standard errors are clustered by country and fund family and are reported in parentheses. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Foreign Holdings ESG | | | | | | | |
|----------------------|----------------------|---------------------|---------------------|---------------------|----------------------|----------------------|---------------------|---------------------|
| | New acquisitions | | Increased weight | | Decreased weight | | Divestment | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Social Capital | 0.436*** (0.163) | 0.294* (0.171) | 1.259*** (0.177) | 1.154*** (0.175) | -0.195 (0.146) | -0.197 (0.16) | 0.245 (0.169) | 0.255 (0.175) |
| Annual Total Return | -0.024* (0.014) | -0.028* (0.015) | -0.02* (0.012) | -0.023* (0.012) | -0.032*** (0.012) | -0.033*** (0.012) | -0.013 (0.014) | -0.013 (0.015) |
| Size | 0.496*** (0.115) | 0.494*** (0.116) | 0.154 (0.113) | 0.149 (0.113) | 0.245** (0.119) | 0.244*** (0.119) | 0.604*** (0.118) | 0.603*** (0.118) |
| Log age | -0.342 (0.223) | -0.362 (0.221) | 0.287 (0.26) | 0.276 (0.258) | 0.418* (0.242) | 0.42* (0.242) | 0.298 (0.236) | 0.287 (0.236) |
| Sustainability Dummy | 1.955*** (0.627) | 1.955*** (0.625) | 1.539** (0.657) | 1.568** (0.655) | 1.696** (0.71) | 1.687** (0.711) | 1.209* (0.687) | 1.219* (0.689) |
| Location Dummy | 0.187 (0.834) | 0.277 (0.842) | 0.101 (1.177) | 0.179 (1.177) | -1.372** (0.543) | -1.381** (0.541) | -2.001** (0.949) | -1.936** (0.949) |
| Domestic Stocks CSR | 0.171*** (0.062) | -0.039 (0.067) | 0.228*** (0.057) | 0.267*** (0.061) | 0.049 (0.065) | 0.04 (0.076) | 0.053 (0.063) | 0.034 (0.066) |
| EIU Democracy Index | | 0.85 (1.486) | | 1.565 (1.112) | | 1.145 (1.104) | | 1.709 (1.284) |

TABLE 7 (Continued)

| Foreign Holdings ESG | | Increased weight | | Decreased weight | | Divestment | |
|---------------------------------|----------------------|------------------------|---------------------|------------------------|----------------------|----------------------|----------------------|
| New acquisitions | | (3) | (4) | (5) | (6) | (7) | (8) |
| (1) | (2) | | | | | | |
| Environmental Performance Index | 0.208*** (0.054) | -0.025 (0.041) | -0.039 (0.043) | -0.091* (0.051) | | | |
| GDP Growth Rate | 0.149*** (0.049) | -0.058** (0.029) | 0.002 (0.03) | 0.127** (0.057) | | | |
| Ease of Doing Business | 0.009 (0.034) | 0.166*** (0.031) | -0.018 (0.033) | 0.059 (0.037) | | | |
| KOF Globalization Index | -1.792*** (0.44) | -1.799*** (0.41) | -2.34 (0.399) | -1.409*** (0.421) | | | |
| Employment Rights | 1.108 (3.812) | -2.003 (2.937) | 1.23 (2.847) | -8.625** (3.875) | | | |
| Index of Economic Freedom | 0.411** (0.18) | -0.301* (0.169) | -0.045 (.146) | -0.639*** (0.166) | | | |
| Constant | 48.326*** (4.535) | 160.343*** (44.069) | 48.31*** (4.049) | 215.199*** (40.575) | 64.278*** (4.566) | 79.392** (40.049) | 58.045*** (4.545) |
| Observations | 12,442 | 12,442 | 11,006 | 11,006 | 11,158 | 11,158 | 11,972 |
| R ² | 0.005 | 0.009 | 0.012 | 0.017 | 0.015 | 0.015 | 0.008 |

TABLE 8 Impact of social capital on Small Holdings ESG.

This table reports the regression estimates of the smallest 10% of portfolio weight ESG scores on *Social Capital* and the control variables. All the variables in the table are defined in Appendix A. The regressions employ country, year, and fund family fixed effects. Standard errors are clustered by country and fund family and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Small Holdings ESG (smallest 10% portfolio weight) | | |
|---------------------------------|---|---------------------|---------------------|
| | (1) | (2) | (3) |
| Social Capital | 0.233** (0.108) | 0.226** (0.113) | 0.271** (0.109) |
| Annual Total Return | -0.003 (0.008) | -0.006 (0.009) | -0.009 (0.009) |
| Size | 0.077 (0.08) | 0.074 (0.08) | 0.075 (0.08) |
| Log age | 0.057 (0.183) | 0.054 (0.184) | 0.052 (0.184) |
| Sustainability Dummy | 1.76*** (0.532) | 1.753*** (0.531) | 1.758*** (0.532) |
| Location Dummy | -0.475 (1.457) | -0.405 (1.446) | -0.374 (1.447) |
| Domestic Stocks CSR | 0.256*** (0.045) | 0.206*** (0.049) | |
| Equity Index CSR | | | 0.067 (0.06) |
| EIU Democracy Index | | 4.634*** (1.175) | 5.075*** (1.215) |
| Environmental Performance Index | | 0.052* (0.03) | 0.079*** (0.029) |
| GDP Growth Rate | | -0.005 (0.031) | 0.045 (0.036) |
| Ease of Doing Business | | -0.025 (0.022) | -0.043** (0.022) |
| KOF Globalization Index | | 0.686** (0.307) | 0.512* (0.296) |
| Employment Rights | | -8.103*** (3.09) | -8.19*** (3.134) |

TABLE 8 (Continued)

| | Small Holdings ESG (smallest 10% portfolio weight) | | |
|---------------------------|--|--------------------|---------------------|
| | (1) | (2) | (3) |
| Index of Economic Freedom | | 0.105 (0.096) | 0.069 (0.095) |
| Constant | 44.101*** (3.415) | -50.69 (32.689) | -29.696 (31.907) |
| Observations | 17,583 | 17,583 | 17,583 |
| R ² | 0.011 | 0.014 | 0.013 |

data on the topics of ESG, environment, social and governance and calculate indexes as their demeaned aggregate annual average. We use topics instead of search terms to address misspelling and searches in different languages. The regression results reported in Table 10 show that country-level Google keyword searches and the interaction with *Social Capital* are positively related to fund ESG levels. The results suggest that retail investors' demand for ESG results in higher fund ESG scores, with a stronger effect for higher social capital.

If retail investors are indeed the channel of transmission of sustainability preference, do such preferences translate into actual demand for sustainable investing? We therefore test whether sustainable retail funds in high social countries experience larger inflows than their institutional counterparts. To answer the question, we construct fund flows as follows and express them as a percentage:

$$Fund\ Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} \times Annual\ Return_{i,t}}{TNA_{i,t-1}} \times 100, \quad (4)$$

where *TNA* denotes total net assets as of the year-end. The findings in Table 11 support our expectations, because the coefficient of the interaction term between the sustainability and high-social capital dummies is both statistically and economically significant only for retail funds: sustainable retail funds in countries with high social capital experience 1.742% more inflows than similar institutional funds.

5 | MODERATING ROLE OF FORMAL AND INFORMAL INSTITUTIONS

Thus far, we have captured the average impact of social capital in our cross-country sample. We test whether the marginal role of social capital differs with respect to cultural dimensions by Hofstede. We start by calculating the Pearson correlations among the Hofstede dimensions (power distance, individualism, and masculinity) and social capital in Panel A of Table 12. Mutual funds in collective, feminine, and lower-power distance societies record higher ESG

TABLE 9 Retail Funds versus Institutional Funds.

This table reports the subsample regression results of Equation (1) for retail and institutional funds. Panel A reports the results when the *Fund ESG Score* is the dependent variable. Panel B reports the results when the fund component ESG scores are the dependent variable. Robust standard errors clustered at country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| Panel A: Fund ESG Score as the dependent variable | | |
|--|---------------------|----------------------------|
| | Retail Funds | Institutional Funds |
| | (1) | (2) |
| Social Capital | 0.165*** (0.059) | 0.141 (0.123) |
| Annual Total Return | -0.018** (0.007) | -0.031** (0.014) |
| Size | 0.409*** (0.109) | 0.23 (0.23) |
| Log age | 0.272 (0.187) | 0.911* (0.546) |
| Sustainability Dummy | 1.697*** (0.469) | 2.085 (1.718) |
| Location Dummy | -0.26 (0.874) | -2.663 (3.499) |
| Domestic Stocks CSR | 0.053 (0.032) | 0.03 (0.093) |
| EIU Democracy Index | 0.361 (0.684) | 1.602 (2.188) |
| Environmental Performance Index | 0.008 (0.021) | -0.08 (0.054) |
| GDP Growth Rate | 0.012 (0.018) | -0.015 (0.024) |
| Ease of Doing Business | 0.009 (0.011) | -0.075 (0.047) |
| KOF Globalization Index | 0.073 (0.125) | 0.308 (0.401) |
| Employment Rights | -0.329 (0.726) | -0.262 (2.948) |
| Index of Economic Freedom | 0.162*** (0.054) | 0.345** (0.163) |

TABLE 9 (Continued)

| Panel A: Fund ESG Score as the dependent variable | | | | | | |
|--|----------------------|----------------------|---------------|----------------------|----------------------------|----------------------|
| | Retail Funds | | | | Institutional Funds | |
| | (1) | | (2) | | (3) | |
| Constant | 39.425*** | | 3.856 | | | |
| | (14.448) | | (46.511) | | | |
| Observations | 10,194 | | 2,072 | | | |
| R ² | 0.025 | | 0.041 | | | |
| Panel B: Fund ESG Component Score as the dependent variable | | | | | | |
| | Environmental | | Social | | Governance | |
| | Retail | Institutional | Retail | Institutional | Retail | Institutional |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Social Capital | 0.156** | 0.054 | 0.242*** | 0.016 | 0.46*** | -0.02 |
| | (0.068) | (0.164) | (0.067) | (0.138) | (0.109) | (0.258) |
| Control | All | All | All | All | All | All |
| Observations | 10,047 | 2058 | 10,198 | 2074 | 8812 | 1455 |
| R ² | 0.025 | 0.03 | 0.03 | 0.03 | 0.038 | 0.032 |

scores than their counterparts in individualist, masculine, and high-power distance societies due to their intrinsic internalization of social norms and ability to punish bad behaviour (Hofstede & Hofstede, 2005).¹⁷

We report the regression results relating fund ESG scores to social capital on the partitioned samples by the respective median of national culture variables, with *Fund ESG* as the dependent variable in Panel B of Table 12 and with *Foreign Holdings ESG* in Panel C. We test the differences between cross-group coefficients and report the corresponding *p* values. The impact of *Social Capital* on sustainable portfolio creation is more pronounced in unequal, individualistic, and masculine societies.¹⁸ Its marginal role is particularly more pronounced when fund managers located in individualistic and masculine societies invest abroad, as demonstrated by the *p* value significance in Panel C. On the other hand, *Social Capital* is more influential in selecting sustainable domestic stocks in high-power distance societies.

We further investigate how formal regulation affects portfolio composition by looking at the importance of social capital when mutual funds invest in firms located in financially developed or underdeveloped markets. We follow Khurana et al. (2006) and measure *Financial Development* as the sum of *Financial Intermediary Development* (debt market size) and *Stock*

¹⁷Collectivist societies record an average fund ESG score of 65.94, versus 63.98 for individualist societies; high-power distance countries record an average fund ESG score of 63.61, lower than that of equal societies, at 65.63; lastly, the average fund ESG score in feminine countries is 65.41 versus 64.12 in masculine countries.

¹⁸In unreported results, we also test the other two Hofstede dimensions: uncertainty avoidance and short/long-term orientation. We find a positive link between social capital and sustainable investments in risk taking and long-term pragmatic societies.

TABLE 10 Retail investors' ESG preference proxied by Google keyword search.

This table presents the regression results of *Fund ESG Score* on retail investors' ESG preference proxied by a Google keyword search and the control variables. Google Keyword Search 1 is calculated as the yearly average Google search trend for three topics: climate, social and governance. Google Keyword Search 2 is calculated as the yearly average Google search trend for the four topics ESG, climate, social, and governance. Both Google keyword searches are demeaned. Robust standard errors clustered at country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | (1) | (2) | (3) | (4) |
|--|------------------------------|------------------------------|------------------------------|------------------------------|
| Google Keyword Search 1 | 0.092*** (0.018) | 0.084*** (0.018) | | |
| Google Keyword Search 1 × Social Capital | | 0.014*** (0.004) | | |
| Google Keyword Search 2 | | | 0.111*** (0.025) | 0.091*** (0.026) |
| Google Keyword Search 2 × Social Capital | | | | 0.013** (0.005) |
| Social Capital | | 0.232*** (0.051) | | 0.249*** (0.052) |
| Control | All with Domestic Stocks CSR | All with Domestic Stocks CSR | All with Domestic Stocks CSR | All with Domestic Stocks CSR |
| Observations | 17,699 | 17,699 | 17,699 | 17,699 |
| R ² | 0.027 | 0.028 | 0.026 | 0.027 |

Market Development (stock market size) with the construction detail in Appendix A.¹⁹ We define countries with high (low) financial development as those whose respective value is above (below) the median. Funds' holdings are split into high and low financial development groups according to the countries where the firms are located at and the *ESG* scores for the respective group of holdings are calculated. Panel A of Table 13 reports the regression results of the split *ESG* scores on *Social Capital* and control variables. We split the sample according to *Financial Development*, *Financial Intermediary Development*, and *Stock Market Development* in Columns (1)–(3), respectively. In all columns, *Social Capital* is significant at the 1% level in driving sustainable investment in financially developed markets. Panel B reports regression results when fund *ESG* scores are constructed only from foreign holdings and it shows a

¹⁹We employ the size of capital market as the measure of financial development because the size of capital market is the outcome of the effect from various dimensions such as reporting standards, investor protection, and information asymmetry, and is arguably better suited in our context of investigating the attractiveness of a well-developed financial market to sustainable funds. In unreported analysis, we conduct the sub-group analysis based on the investor protection index (constructed using the updated anti-director rights index from Spamann 2010) and find that the social capital coefficient is larger in high investor protection group than the low group although the difference is insignificant.

TABLE 11 Impact of Social Capital on Fund Flows into Sustainable Funds.

This table reports the subsample results of regressing *Fund Flows* on *Social Capital* and control variables for retail and institutional funds. The high social capital dummy is defined with respect to its median value. All regressions include country, fund family, and year fixed effects. Robust standard errors clustered at the country and fund family levels are reported in parentheses. All variables in the table are defined in Appendix A. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Retail Funds (1) | Institutional Funds (2) |
|--|-----------------------------|------------------------------------|
| High Social Capital Dummy × Sustainability Dummy | 1.742*** (0.515) | 0.453 (1.553) |
| Sustainability Dummy | 0.557 (0.54) | −1.607 (1.03) |
| High Social Capital Dummy | −0.133 (0.689) | 0.981 (0.953) |
| Lagged Total Net Assets | 0.000 (0.00) | 0.000 (0.00) |
| Lagged Annual Total Return | 0.108*** (0.018) | 0.159*** (0.032) |
| Lagged Age | −0.019* (0.011) | −0.014 (0.041) |
| Country Level Controls | Yes | Yes |
| Observations | 9935 | 1990 |
| R^2 | 0.259 | 0.403 |

consistent pattern where social capital motivates sustainable investment in developed financial markets. We therefore find support for our hypothesis that a more financially developed market attracts capitals induced by investors' social capital in the home country.

6 | FURTHER TESTS

6.1 | Impact of social capital on conventional and sustainable funds

In this section, we examine whether the role of social capital differs between sustainable funds and conventional funds, which do not state socially responsible strategies in their prospectus. We split our sample into two groups and report the regression results in Table 14. Funds with explicit CSR goals either exclude sin stocks (negative screening) or invest in high-CSR stocks (positive screening). We anticipate that these funds will record high ESG scores, regardless of their management teams' locations. Although social capital is positively related to fund ESG scores, Columns (1) and (2) show that the relation is not statistically significant for sustainable funds. The relatively small number of observations for sustainable funds (1,246) could have partially led to lower statistical power. The significance of social capital in Columns (3) and (4)

TABLE 12 Moderating role of informal institutions proxied by various culture dimensions.

Panel A reports the correlation matrix. Panels B and C report the regression results of *Fund ESG* and *Foreign Holdings ESG* on *Social Capital*, respectively, for samples partitioned along Hofstede's cultural dimensions which are extracted from Hofstede Insights. (See <https://www.hofstede-insights.com/>). We use the respective median values of each cultural dimension to partition our sample. The *p* values are obtained from the test of the difference in the coefficients of Social Capital. All regressions include all the control variables, as well as country, fund family, and year fixed effects. Errors are clustered at the country and fund family levels. *, **, and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| Panel A: Correlation matrix | | | | | | |
|--|-----------------------------|----------------------------------|-----------------------------|----------------------------------|-----------------------------------|----------------------------|
| | <i>Social Capital</i> | | <i>Power Distance</i> | | <i>Individualist/Collectivist</i> | |
| <i>Power Distance</i> | -0.34 | | | | | |
| <i>Individualist/Collectivist</i> | 0.52 | | -0.25 | | | |
| <i>Masculine/Feminine</i> | 0.15 | | 0.001 | | 0.19 | |
| Panel B: Moderating role of culture on Fund ESG Score | | | | | | |
| | (1) | | (2) | | (3) | |
| | <i>Collective Societies</i> | <i>Individualistic Societies</i> | <i>Low Power Distance</i> | <i>High Power Distance</i> | <i>Feminine Societies</i> | <i>Masculine Societies</i> |
| Social Capital | 0.023 (0.093) | 0.279*** (0.061) | 0.091 (0.100) | 0.294*** (0.081) | 0.106 (0.078) | 0.279*** (0.062) |
| <i>p</i> Value for difference in SC coeff. | [0.043] | | [0.012] | | [0.158] | |
| Observations | 3782 | 13,917 | 7184 | 10,515 | 3685 | 14,014 |
| R ² | 0.029 | 0.031 | 0.017 | 0.047 | 0.044 | 0.032 |
| Panel C: Moderating role of culture on Foreign Holdings ESG | | | | | | |
| | (1) | | (2) | | (3) | |
| | <i>Low Power Distance</i> | <i>High Power Distance</i> | <i>Collective Societies</i> | <i>Individualistic Societies</i> | <i>Feminine Societies</i> | <i>Masculine Societies</i> |
| Social Capital | 0.366** (0.149) | 1.21*** (0.209) | -0.222 (0.154) | 1.032*** (0.144) | -0.029 (0.144) | 1.122*** (0.146) |
| <i>p</i> Value for difference in SC coeff. | [0.092] | | [0.000] | | [0.000] | |
| Observations | 7091 | 9685 | 3353 | 13,423 | 3581 | 13,195 |
| R ² | 0.017 | 0.056 | 0.029 | 0.042 | 0.059 | 0.037 |

TABLE 13 Moderating role of formal institutions proxied by financial development.

Panel A reports the results of regressing *Fund ESG Score* in high (low) financially developed countries on *Social Capital* and control variables, whilst Panel B considers only foreign holdings. *Financial Intermediary Development* is calculated as the sum of the ratio of liquid liabilities to the GDP and the credit going to the private sector over the GDP. *Stock Market Development* is the sum of market capitalization over the gross domestic product (GDP), total value traded over GDP, and total value traded over market capitalization. *Financial Development* is the sum of both components. We follow Khurana et al. (2006) to estimate these indices. High or low financial development is defined based on the median value. All regressions include country, fund family, and year fixed effects. Errors are clustered at the country and fund family levels. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| Panel A: Moderating role of formal institutions on Fund ESG Score | | | | | | |
|--|------------------------------|-------------|---|-------------|---------------------------------|-------------|
| | (1) | | (2) | | (3) | |
| | <i>Financial Development</i> | | <i>Financial Intermediary Development</i> | | <i>Stock Market Development</i> | |
| | <i>Low</i> | <i>High</i> | <i>Low</i> | <i>High</i> | <i>Low</i> | <i>High</i> |
| Social Capital | 0.008 | 0.417*** | 0.121 | 0.428*** | 0.168 | 0.389*** |
| | (0.13) | (0.064) | (0.117) | (0.063) | (0.134) | (0.063) |
| <i>p</i> Value for difference in SC coeff. | [0.019] | | [0.021] | | [0.000] | |
| Observations | 11,778 | 15,687 | 11,335 | 15,737 | 10,250 | 15,542 |
| <i>R</i> ² | 0.008 | 0.028 | 0.008 | 0.027 | 0.01 | 0.029 |
| Panel B: Moderating role of formal institutions on Foreign Holdings ESG | | | | | | |
| | (1) | | (2) | | (3) | |
| | <i>Financial Development</i> | | <i>Financial Intermediary Development</i> | | <i>Stock Market Development</i> | |
| | <i>Low</i> | <i>High</i> | <i>Low</i> | <i>High</i> | <i>Low</i> | <i>High</i> |
| Social Capital | -0.265 | 0.183* | 0.355 | 0.177** | 0.005 | 0.279* |
| | (0.163) | (0.102) | (0.178) | (0.093) | (0.103) | (0.157) |
| <i>p</i> -Value for difference in SC coeff. | [0.000] | | [0.000] | | [0.014] | |
| Observations | 9723 | 10,740 | 9229 | 10,750 | 9730 | 10,581 |
| <i>R</i> ² | 0.011 | 0.02 | 0.017 | 0.018 | 0.013 | 0.02 |

suggests that conventional funds respond to social capital. Chow's test shows that the difference in *Social Capital* coefficients across the two groups of funds is significant at the 1% level (*p* value = 0.000).

The ESG scores of funds with explicit sustainability mandates should be primarily driven by their investment strategy. For conventional funds, by contrast, the ESG scores are significantly related to social capital. Investor demand and internalized norms sway fund managers' strategy towards more ethical stocks. Such findings are not surprising since many conventional fund managers are found to adopt features of responsible investment (Duuren et al., 2015).

TABLE 14 Sustainable Funds versus Conventional Funds.

This table reports the subsample regression results of *Fund ESG Score* on *Social Capital* and the control variables for sustainable and conventional funds. Fund-level variables are winsorized at the 1% level. All variables in the table are defined in Appendix A. The regressions employ country, year, and fund family fixed effects. Standard errors are clustered by country and fund family and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Sustainable Funds | | | Conventional Funds |
|----------------|---------------------------------------|---------------------------------|------------------------------------|---------------------------------|
| | (1) | (2) | (3) | (4) |
| Social Capital | 0.071 (0.108) | 0.024 (0.116) | 0.403*** (0.051) | 0.291*** (0.052) |
| Control | Fund level& Domestic Stocks CSR | All with Domestic Stocks CSR | Fund level& Domestic Stocks CSR | All with Domestic Stocks CSR |
| Observations | 1246 | 1246 | 16,453 | 16,453 |
| R ² | 0.049 | 0.054 | 0.023 | 0.026 |

Hence, we posit that asset managers can tailor existing products' sustainability in response to client demand.

6.2 | Robustness tests

We run several robustness tests to ensure the validity of this study. First, we alter the threshold to 50% (increasing the observations to 24,720) and 75% (13,364 observations) to alleviate any concern of selection bias. Reported in Panel A of Table 15, our findings remain robust to these alternative screening thresholds.

Although we have shown that the results hold across specifications with different dependent variables, there is an ongoing discussion on the validity and divergence of ESG ratings across data vendors (Berg et al., 2020). To address this concern, we repeat our main tests using data from Sustainalytics, a global provider of ESG data. The regression results demonstrated in Panel B of Table 15 present a story that is coherent with our previous findings.

6.3 | A Quasi-natural experiment: The volkswagen emission scandal

As a further test of the hypothesis that social capital motivates responsible portfolio management, we use the Volkswagen emission scandal as a quasi-natural experiment. The Volkswagen emissions scandal began in September 2015, when the US Environmental Protection Agency issued a notice of violation to the automaker, which had intentionally programmed turbocharged direct injection diesel engines to activate their emissions controls only during laboratory emissions testing. We test how active mutual funds in our cross-sample reacted to such news by looking at the changes in their portfolio weights for this firm in the coming year (2016 vs. 2015). The regression results reported in Table 16 show that social capital

TABLE 15 Robustness tests

Panel A presents the regression results of *Fund ESG Score* on *Social Capital* and the control variables. Columns (1) and (2) consider mutual funds for which we match at least 50% of the portfolio weights to a Thomson Reuters ESG score. Columns (3) and (4) alter the threshold to 75%. Panel B reports the regression estimates of *Fund ESG Score* on *Social Capital* and the control variables. The fund ESG score is computed via Equation (2) as a holdings-based measure using Sustainability ESG scores. Robust standard errors clustered at country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| Panel A: Alternative thresholds for the calculation of <i>Fund ESG Score</i> | | | | | | | |
|---|----------------------------------|--|---|--------------------------------------|-------------------------------------|------------------------------|------------------------------|
| | Threshold 50% | | Threshold 75% | | | | |
| | (1) | (2) | (3) | (4) | | | |
| Social Capital | 0.336*** (0.043) | 0.232*** (0.045) | 0.292*** (0.058) | 0.169** (0.058) | | | |
| Control | Fund Level & Domestic Stocks CSR | All Control with Domestic Stocks CSR | Fund Level & Domestic Stocks CSR | All Control with Domestic Stocks CSR | | | |
| Observations | 24,720 | 24,720 | 13,364 | 13,364 | | | |
| R ² | 0.02 | 0.02 | 0.03 | 0.03 | | | |
| Panel B: Baseline results for <i>Fund ESG Score</i> calculated using Sustainability ESG | | | | | | | |
| | Baseline Test | | | WLS | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Social Capital | 0.332*** (0.045) | 0.264*** (0.042) | 0.288*** (0.046) | 0.168*** (0.048) | 0.114** (0.045) | 0.135** (0.052) | 0.163*** (0.045) |
| Control | Fund level & Domestic Stocks CSR | Fund level & Domestic Stocks CSR, EPI, GDP Growth Rate, Ease of doing business | Fund level & Domestic Stocks CSR, EPI, GDP Growth Rate, Ease of doing business, KOF | All with Domestic Stocks CSR | All with Domestic Passive Index CSR | All with Domestic Stocks CSR | All with Domestic Stocks CSR |
| Observations | 17,699 | 17,699 | 17,699 | 17,699 | 17,699 | 17,699 | 11,822 |
| R ² | 0.057 | 0.076 | 0.078 | 0.083 | 0.085 | 0.132 | 0.08 |

TABLE 16 Volkswagen emissions scandal.

This table reports mutual fund reactions to the Volkswagen emission scandal by testing the change in portfolio weights over 2015–2016, calculated as $(VW\ weight_{2016} - VW\ weight_{2015})/VW\ weight_{2015}$. All the regressions include country and fund family fixed effects. Robust standard errors clustered at the country and fund family levels are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

| | Change in portfolio weight from 2015 to 2016 | | |
|---------------------------|--|----------------------|----------------------|
| | (1) | (2) | (3) |
| Social Capital | -4.055*** (0.695) | -3.847*** (0.759) | |
| High Social Capital Dummy | | | -2.133*** (0.421) |
| Annual Total Return | 0.001 (0.021) | 0.004 (0.022) | 0.004 (0.022) |
| Size | 0.096 (0.129) | 0.078 (0.129) | 0.078 (0.129) |
| Log age | -0.118 (0.213) | -0.054 (0.231) | -0.054 (0.231) |
| Sustainability Dummy | | -0.117 (0.325) | -0.117 (0.325) |
| Location Dummy | | -0.532 (0.576) | -0.532 (0.576) |
| Constant | 1.398** (0.643) | 1.782** (0.757) | 1.386* (0.749) |
| Observations | 254 | 254 | 254 |
| R ² | 0.649 | 0.653 | 0.653 |

has significantly negative coefficients, suggesting that it has an impact on motivating fund managers' withdrawal from Volkswagen.

7 | CONCLUSIONS

In this study, we contribute to the literature on the implications of cross-country social norms in financial markets by studying the influence of social capital on mutual funds' investment strategy. Our results indicate that mutual funds managed in high-social capital countries are predisposed to constructing sustainable portfolios, that is, employing superior CSR practices. We argue that social capital, which captures altruistic inclinations, fosters social preferences for cooperation and altruistic behaviour. Consequently, investors in high-social capital countries should be encouraged to allocate their savings into funds that act consistently with their ethical

beliefs. The resulting investor demand and implicit social scrutiny motivate fund managers to align investments with clients' preferences.

The literature offers little prior evidence on the factors driving the recent popularity of ESG screening. We show that cross-country variations in social capital affect fund-level sustainability. Our approach to portfolio-level ESG differs from the predominant focus on how institutional fund managers' engagement drives better ESG outcomes for individual holdings. Moreover, we find that retail funds are more subject to changes in social capital on ESG investing than institutional funds, consistent with prior evidence that retail investors are more sensitive to market wide sentiment.

DATA AVAILABILITY STATEMENT

Data are available from publicly available sources.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A: VARIABLE DEFINITIONS

| Variable | Description |
|--------------------------------|---|
| Fund ESG Score | A vector variable calculated as a holding-based score. Fund holding data on US funds are extracted from the CRSP and the Bloomberg Terminal for the rest of the countries. Company-level ESG scores are derived from Thomson Reuters ESG Research. We also employ ESG data from Sustainalytics as an alternative measure. $Fund\ ESG\ Score_{i,t} = \sum_{j=1}^{n_{i,t}} w_{i,j,t} \times Company\ ESG\ Score_{j,t}$ |
| Fund-level Environmental Score | Thomson Reuters' environmental score aggregates 61 measures covering resource use, emissions, and commitment towards reducing environmental costs. $Fund\ Environmental\ Score_{i,t} = \sum_{j=1}^{n_{i,t}} w_{i,j,t} \times Company\ Environmental\ Score_{j,t}$ |
| Fund-level Social Score | The social score aggregates 63 measures capturing a firm's efforts concerning human rights, community, product responsibility, and the workforce. $Fund\ Social\ Score_{i,t} = \sum_{j=1}^{n_{i,t}} w_{i,j,t} \times Company\ Social\ Score_{j,t}$ |
| Fund-level Governance Score | The governance score aggregates 54 measures and proxies for management commitment towards and effectiveness in following best corporate governance principles, shareholder protection, and a company's CSR strategy. $Fund\ Governance\ Score_{i,t} = \sum_{j=1}^{n_{i,t}} w_{i,j,t} \times Company\ Governance\ Score_{j,t}$ |
| Social Capital | A country index variable derived via PCA. The components capture generalized trust, institutional trust, social networks, and civil norms. We rely upon Generalized Trust, Election Turnout, Corruption Perception Index, Volunteering Time, Helping a Stranger, Donating Money, Feeling of Safety, and Social Support Network. The data are sourced from the WVS, OECD iLibrary, Transparency International, and the Charities Aid Foundation. |
| WVS Generalized Trust | The percentage of respondents in each country that chose the first of the following options: 'Generally speaking, would you say (1) that most people can be trusted or (2) that you can't be too careful in dealing with people?' The data are sourced from WVS Wave 6 (2010–2014). |
| Election Turnout | The percentage of eligible voters who cast a ballot in a parliamentary or presidential election. |
| Corruption Perception Index | An index measure that ranks 180 countries and territories by their perceived levels of public sector corruption according to experts and businesspeople, uses a scale of 0 to 100, where 0 is highly corrupt and 100 is very law abiding. The data are retrieved from Transparency International. |
| Volunteering Time | The percentage of people who said they volunteered time in the past 12 months. The data are from Charities Aid Foundation. |
| Helping a Stranger | The percentage of people who said they helped a stranger in the past 12 months. The data are from Charities Aid Foundation. |
| Donating Money | The percentage of people who said they donated money to a charity in the past 12 months. The data are based on those of the Charities Aid Foundation. |
| Feeling of Safety | Percentage of the population declaring feeling safe when walking alone at night in the city or area where they live. |
| Social Support Network | Percentage of the population declaring they know someone they could rely on in a time of need. A strong social network, or community, can provide emotional support during both good and bad times, as well as access to jobs, services, and other material opportunities. |

| Variable | Description |
|---------------------------------|--|
| Annual Total Return | A vector variable denoting the fund's annual total return, i.e., including reinvested dividends. Return values are calculated as change in the net asset value, including reinvested dividends, from one period to the next. The value was cross-checked with the Bloomberg Terminal and the CRSP to ensure consistency in calculations. |
| Total Net Assets | A vector variable equal to the total dollar value invested in all share classes of t fund as of the year-end. Figures are reported in millions of dollars. |
| Age | A vector variable representing the number of years from the fund inception date. The data are extracted from the CRSP for US funds and from Bloomberg for the rest of the countries. |
| Sustainability Dummy | A dummy variable equal to 1 if the fund employs a sustainable investment strategy, and 0 otherwise. US mutual funds are classified as sustainable based on a list extracted from the US Forum for Sustainable and Responsible Investment https://www.ussif.org/ . Sustainable funds in the rest of the countries are identified based on the Bloomberg Terminal classification. |
| Location Dummy | A dummy variable equal to 1 if the fund is both managed and domiciled in the same country, and 0 otherwise. All US funds are considered to be managed and legally domiciled in the United States, since such data are not available from the CRSP. Data on the rest of the countries are derived from the Bloomberg Terminal. |
| Domestic Stocks CSR | An index measure calculated as the market capitalization-weighted ESG score of companies headquartered in the subject country. The list of companies headquartered in each country and their respective <i>Market Capitalization</i> and ESG scores are derived from Thomson Reuters. $\text{Domestic Stocks CSR}_{c,t} = \frac{\sum \text{Market Cap}_{c,j,t} \times \text{ESG}_{j,t}}{\sum \text{Market Cap}_{c,t}}$ |
| Equity Index CSR | An index measure calculated as the market capitalization-weighted ESG score of the major equity indices constituents. The list of index constituents and their respective market capitalization and ESG scores are derived from Thomson Reuters. The country indices selected are the following: Austria, ATX 20; Canada, Canada S&P/TSX Index; Denmark, OMX Copenhagen; Finland, OMX Helsinki; France, CAC 40; Germany, DAX 30; Ireland, ISEQ. 20; Italy, FTSE MIB; Israel, TA 35; Japan, Nikkei 225; Netherlands, AEX 25; Norway, OBX 25; Portugal, PSI 20; Poland, WIG; Spain, IBEX 34; South Korea, KOSPI; Sweden, OMX Stockholm; Switzerland, SMI 20; UK, FTSE 100; US, S&P 500 |
| Environmental Performance Index | An index measure across 180 countries on 24 performance indicators across 10 issue categories covering environmental health and ecosystem vitality. These metrics provide a gauge at the national scale of how close countries are to established environmental policy goals. The data are derived from the Yale Center for Environmental Law and the Center for International Earth Science Information Network of Columbia University. |
| Employment Rights | An index measure of the strictness of employment protection legislation in regular employment from the OECD. |
| EIU Democracy Index | An index measure of the democracy level in a country, ranging from 0 (least democratic) to 10 (most democratic). The index is based on five categories: electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture. |

(Continues)

| Variable | Description |
|--------------------------------|--|
| Index of Economic Freedom | <p>An index measure from the Heritage Foundation based on 12 quantitative and qualitative factors grouped into four broad categories, or pillars, of economic freedom. A country's overall score is derived by averaging these 12 economic freedoms, with equal weights on each one:</p> <ul style="list-style-type: none"> • Rule of law (judicial effectiveness, property rights, government integrity) • Government size (government spending, tax burden, fiscal health) • Regulatory efficiency (business freedom, labour freedom, monetary freedom) • Open market (trade freedom, investment freedom, financial freedom) |
| GDP Growth Rate (%) | An index measure capturing the annual GDP growth rate. The data are derived from the World Bank. |
| KOF Globalization Index | An index measure of a country globalization. The index considers economic dimensions (actual flows of trade, foreign direct investment, and portfolio investment, as well as the restrictions applying to these flows), social dimensions (spread of ideas, information, images, and people), and political dimensions (degree of political cooperation). This variable takes a value between 0 and 10. The data are obtained from the KOF Swiss Economic Institute. |
| Ease of Doing Business | An index measure capturing the extent to which the regulatory environment is conducive to the start and operation of a local firm. The index captures 12 areas of business regulation: starting a business, dealing with construction permits, obtaining electricity, registering property, obtaining credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. |
| New Acquisitions | A variable calculated as an ESG holdings-based score that considers only stocks newly added to the portfolio. We do not consider funds newly added to the database. |
| Increased Weight | A variable calculated as an ESG holdings-based score that considers only stocks whose difference between the percentage change in value for two consecutive years minus past stock returns ranks in the top 40% of the portfolio. |
| Decreased Weight | A variable calculated as an ESG holdings-based score that considers only stocks whose difference between the percentage change in value for two consecutive years minus past stock returns ranks in the bottom 40% of the portfolio. |
| Divestment | A variable calculated as an ESG holdings-based score that considers only stocks divested from the portfolio. |
| Fund Flow | <p>The yearly change in total net asset adjusted for the annual return:</p> $Fund\ Flow_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1} \times Annual\ Return_{i,t}}{TNA_{i,t-1}} \times 100$ |
| Hofstede's cultural dimensions | Power Distance, Individualist/Collectivist, Masculine/Feminine, Uncertainty Preference, and Short-/Long-Term Perspective are extracted from Hofstede Insights (https://www.hofstede-insights.com/). |
| Financial Developments | We follow Khurana et al. (2006) and construct financial development measures as follows. <i>Financial Intermediary Development</i> is calculated as the sum of the ratio of liquid liabilities to the GDP and the credit going to the private sector over the GDP and <i>Stock Market Development</i> index as the sum of market capitalization over the gross domestic product (GDP), total value traded over GDP, and total value traded over market capitalization. <i>Financial Development</i> is the sum of <i>Financial Intermediary Development</i> and <i>Stock Market Development</i> . |