Journal of Business, Ethics and Society(October_2022)(V-2_I-2)1-32

Putting people and planet ahead of profits: Nudges in Investor Profile Questionnaires[1]

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Abstract

In light of the increasing concern about social and ecological crises facing humankind, this experimental study uses nudge theory to examine whether Investor Profile Questionnaires can be redesigned so that retail investors are nudged *towards* investments that place social and ecological returns ahead of financial returns, and *away from* investments that (merely) seek to maximize financial returns. Contrary to our predictions, our findings indicate that adding sustainability-oriented awareness and attitudinal nudges to Investor Profile Questionnaires did not result in participants decreasing the proportion of funds they invested in business-as-usual firms that focus primarily on maximizing financial returns. However, as predicted, the awareness and attitudinal nudges did increase the proportion of funds invested in firms that *compromise* financial returns in order to *optimize* social and ecological well-being. Moreover, investors' attitudes towards sustainable investing were more positive after they received an action nudge versus (merely) an awareness nudge. Implications are discussed.

Keywords: Corporate Social Responsibility, *homo economicus*, Investor Profile Questionnaires, nudge theory, Socially Responsible Investing, Sustainable Impact Investing

[1] The study was approved by the Psychology/Sociology Research Ethics Board at the University of Manitoba, and used funding from the F. Ross Johnson Professorship in Marketing. The authors report there are no competing interests to declare.

Introduction

People are becoming increasingly aware of the role that business plays in contributing to the growing social and ecological issues facing the world, and how investors can influence business to address these issues (Maltais & Nykvist, 2020). For example, increasing levels of economic inequality — caused, to a great extent, by the emphasis on shareholder wealth maximization (Bapuji, Ertug, & Shaw, 2020) — have resulted in decreasing the overall quality of life for both the rich and the poor (Wilkinson & Picket, 2010). With the richest 5 percent of people gaining 95 percent of the financial benefits arising from globalization (Stiglitz, 2002), the wealth gap between the rich and the poor has grown markedly over the past 60 years (Tsui, Enderle, & Jiang, 2018), and has continued to grow even during the COVID pandemic (Yonzan, Lakner, & Mahler, 2021).

Regarding ecological issues, the economic costs to society due to environmental damage caused by the pollution and excess use of natural resources by the world's 1,200 largest corporations was estimated to be US$5 trillion in 2018, an amount greater than their total profits (Fortune, 2020), and an increase of about 50 percent from 5 years earlier (Makower et al., 2020). Moreover, even if all these corporations met their carbon targets, it would represent only 25 percent of the greenhouse gas emission reductions required from them to achieve the Paris Agreement goal of limiting global temperature increase to below 2°C (Makower, 2020). On an average, these firms' negative financial externalities represent an annual corporate 'subsidy' of over US$650 per person in the world, which further widens economic inequality, because the poor are most affected by the negative effects of climate change but do not benefit from owning shares in businesses that contribute to it (Marotzke, Semmann, & Milinski, 2020).

Observations such as those mentioned above, have been prompting change; both in terms of business generally and among investors specifically. For example, the Business Roundtable — a group of 200 large corporations that includes giants like Amazon, Apple and JPMorgan - issued a new 'Statement on the Purpose of the Corporation' that challenges the long-held view that corporations should primarily serve the interests of its shareholders: "we share a fundamental commitment to *all* of our *stakeholders*" (Gelles & Yaffe-Bellany, 2019; italics added). Meanwhile, survey data suggests that 82 percent of retail investors around the world (72 percent in the USA) are interested in investing in firms that are ecologically and socially responsible, with 32 percent having already increased their investments along these lines (Caporal, 2022).

This is consistent with the overall transition away from what we call Financial Only Investing (FOI) — which focuses solely on maximizing financial returns, and leaves other stakeholders (e.g., government) to care for social and ecological well-being (consistent with Friedman, 1970) — and towards Socially Responsible Investing (SRI), with its emphasis on maximizing financial returns via strategically reducing negative social and ecological externalities. SRI emphasizes Corporate Social Responsibility and developing the business case (i.e., the economic argument) for pursuing sustainable development. In 2021, about US$70 billion was invested in mutual funds that emphasize social and ecological well-being, a 35 percent increase from 2020 (which had been the previous high point) (Caporal, 2022).

Whereas both FOI and SRI share a focus on maximizing profits, there has been less study of a third type of emerging investing — Social Impacting Investing (SII) — which, as used here, refers to investments that seek to optimize social and ecological well-being without a need to *maximize* financial returns (Maltais & Nykvist, 2020; Nilsson, 2009). Some research

suggests that up to one-third of investors willingly compromise their financial returns in order to optimize social and ecological well-being (Delsen & Lehr, 2019; Morgan Stanley, 2019).

Previous research had begun to examine personal and contextual factors that influence sustainable investing. For example, research suggests that investors' propensity to engage in sustainable investing may be influenced by personal characteristics, such as their views about the natural environment, collectivism, materialism, religious values, and risk tolerance (Vyas, Mehta, & Sharma, 2022), and their gender, age, employment status, educational attainment, and value orientation (Delsen & Lehr, 2019; Nilsson, 2008; Pilaj, 2017).

The current study is unique, because it focuses on structural conditions that influence retail investors vis-a-vis choosing between FOI, SRI, and SII. In particular, our paper draws on nudge theory (e.g., Thaler & Sunstein, 2008) to suggest that simple changes to the nudges embedded in Investor Profile Questionnaires (IPQs) — which financial advisors ask retail investors to complete prior to making investment decisions — can influence the level of sustainable investing (building on Pilaj, 2017). Our study examines how two variations of an IPQ may influence retail investors' decisions. We posit that because the questions in conventional IPQs focus primarily on financial issues, for example, questions about investors' financial knowledge and about how compounded interest works, they will serve to nudge investors toward FOI (Hypothesis 1). We posit that when sustainability-informed questions are added to IPQs, for example, questions that ask about the relative importance of financial, social, and ecological aspects of their investments, they will serve to nudge investors toward SII (Hypothesis 2). Finally, we posit that simply offering investors an occasion to choose among FOI, SRI and SII options will have a positive effect on their attitudes towards sustainability (Hypothesis 3).

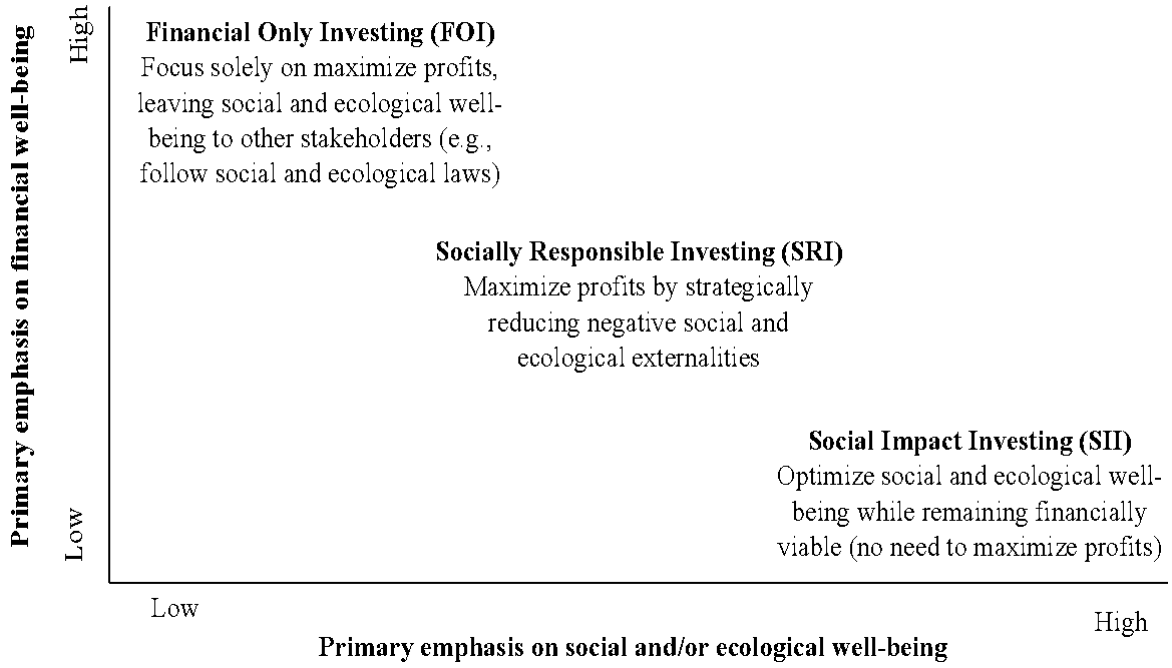
The paper is divided into four parts. The first part develops three hypotheses based on our review of the literatures on FOI, SRI, SII, IPQs, and nudge theory. The second describes our method and research design, including our sample and survey instrument. The third part presents our results, and in the final part we discuss implications of our findings.

Literature Review

Three Kinds of Investments

As depicted in Figure 1 below, our study examines three kinds of investments. The first two, FOI and SRI, have been the focus of previous research in this field (e.g., Glac, 2009; Pilaj, 2017). The third, SII, shares with SRI an interest in social and ecological well-being, but differs from both SRI and FOI in that SII does not seek to *maximize* profits (for similar three-part typologies, see Dyck & Manchanda, 2021; Nilsson, 2009). We will describe each type in turn.

Figure 1: Three Types of Investing vis a vis Focus on Financial vs Social-Ecological Well-Being



Source: Authors' own

Finance-Only Investing (FOI) is consistent with Nobel laureate Milton Friedman's (1970) idea that it is ethical for firms to maximize their financial self-interests within the social and ecological laws of the land, and that beyond this it would be unethical for firms to compromise profits, even if doing so improved social and ecological well-being. FOI aligns with the *homo economicus* (economic man) view that is considered to be the foundation of the neoclassical approach to economics and the firm. *Homo economicus* treats people as though they are like machines who consistently make rational decisions that maximize their personal utility and wealth (Kluver, Frazier, & Haidt, 2014; Pilaj, 2017). *Homo economicus* is based on a mainstream understanding of utilitarian ethics, which assumes that it is in the best interests of society at large if every actor in it acts in their own self-interest (Kluver et al., 2014). In sum, from an FOI *homo economicus* investing perspective, when making financial investment

decisions, it is not rational or ethical to consider non-financial factors that might compromise financial returns.

Depicted on the opposite side, **Social Impact Investing** (SII) explicitly rejects the profit-maximization ethic, and places social and ecological returns *ahead* of financial returns while remaining financially viable and offering adequate (though lower-than-market-rate) financial returns (Nilsson, 2009). Social impact investors willingly compromise their financial returns (e.g., expect their earnings to be lower-than-market average) in order to optimize social and/or ecological well-being. Because SII relaxes the need for firms to *maximize* financial returns to investors, and instead allows firms to remain financially viable and offer *enough* financial returns, businesses enjoy more degrees of freedom to address pressing social and ecological issues (Kaplan, 2020). For example, such business practices are evident in B Corps like Patagonia (and its famous "Don't buy this jacket" ad campaign) and Greyston Bakery, which hires multi-barriered people (e.g., ex-convicts, thereby reducing recidivism and enhancing quality of life) and uses organic ingredients (thereby reducing soil degradation and enhancing soil and farmer well-being), and has the motto: "We don't hire people to bake brownies; we bake brownies to hire people." B Corps are legally mandated to enhance social and/or ecological well-being, even if it reduces their ability to maximize profits (Steingard & Gilbert, 2016).

Previous research has shown that investors are attracted to SII (e.g., Delsen & Lehr, 2019; Glac, 2009; Nilsson, 2009). One study found that about 33 percent of investors willingly choose investments that enhance social and ecological well-being, even though they expect that this will reduce their financial returns (Morgan Stanley, 2019), suggesting that many investors' interests go beyond financial wealth-maximization (Guitián, 2021). Other

research suggests that 66 percent of consumers indicate willingness to pay extra for products and services that enhance social and ecological sustainability (Nielsen, 2015).

Note that, whereas SII is both irrational and unethical according to orthodox financial theory and utilitarian ethics, SII is both ethical and rational according to virtue ethics (Dyck, Caza, & Starke, 2018). Virtue ethics explicitly oppose the idea of using money to maximize financial returns (Leshem, 2016), and deliberately focus on developing flourishing communities (*eudaemonia*) (whereas utilitarian ethics tend to focus on the individual) (Clegg, 2000; MacIntyre, 1981).

Finally, **Socially Responsible Investing** (SRI) may be perceived to provide the 'best of' both FOI and SII. Like SII, but unlike FOI, SRI seeks to reduce the negative social and ecological externalities associated with FOI business. Like FOI, but unlike SII, SRI seeks to maximize profits. Although SRI has a variety of definitions, SRI funds have been developed based on criteria such as negative or positive screens, meeting minimum norms or having high scores on standardized ESG measures provided by third parties, and offering strategic opportunities to participate in shareholder action, corporate engagement or community investing; there is general agreement that SRI has both social and ecological dimensions (Berry & Junkus, 2013; Pilaj, 2017).

In general terms, SRI aligns with firms that follow what is often called a Triple Bottom Line approach — where the three bottom lines refer to people, planet, and profit — that seeks to create financial well-being by addressing social and ecological issues (Elkington, 1997). In the past decade or two, this approach has arguably become the new mainstream, and is consistent with leading thinkers in business strategy (e.g., Hart, 1995; Porter & Kramer, 2011). It calls for firms to develop a business case to enhance profits while at the same time

addressing negative social and ecological externalities. Although the Triple Bottom Line moniker may imply that the three bottom lines are equal, in practice the financial bottom line is generally treated as 'the first among equals' (Dyck & Manchanda, 2021, p. 116; similar assumptions are evident in Hart, 1995; Porter & Kramer, 2011). While some research suggests that SRI may financially outperform FOI, several meta-analyses and studies suggest that at the very least, SRI does not underperform FOI in terms of average risk-adjusted financial returns (Friede, Busch, & Bassen, 2015; Revelli & Viviani, 2015; see also Caporal, 2022).

Taken together, SRI can be seen as a new-and-improved variation of FOI. SRI allows investors to maintain or enhance financial returns (compared to FOI) by taking advantage of the strategic opportunities to reduce negative social and ecological externalities (e.g., reduced packaging simultaneously reduces negative ecological externalities and financial costs). Thus, SRI is both rational and ethical according to an enlightened view of utilitarian ethics, in that it draws attention to instances where caring for social and ecological well-being enhances profits (Elkington 1997; Friede et al., 2015; Hart, 1995; Porter & Kramer, 2011; Revelli & Viviani, 2015).

Investor Profile Questionnaires and Nudge Theory

We speculate that retail investors may be drawn to FOI because of the default 'nudges' implicitly built into the conventional context (e.g., the 'choice architecture') in which they make decisions. This context includes unspoken assumptions and nudges that investors should seek to maximize their financial returns, and includes financial advisors' use of financial tools that reinforce the financial-return-maximization mantra (Ferraro, Pfeffer, & Sutton, 2005; Foerster, Linnainmaa, Melzer, & Previtero, 2017; Gonin, Palazzo, & Hoffrage, 2012).

Nudges, as used here, refer to the elements of 'choice architecture' that influence people's behaviors in a predictable way, but without forbidding people from choosing alternative options (e.g., a law mandating vaccination is not a nudge) and without providing significant economic incentives (e.g., paying or bribing someone is not a nudge). Nudges should be easy and inexpensive to implement (Thaler & Sunstein, 2008). An example of a nudge might be a poster in a financial advisor's office that says: "Social and ecological well-being can be just as important as financial well-being."

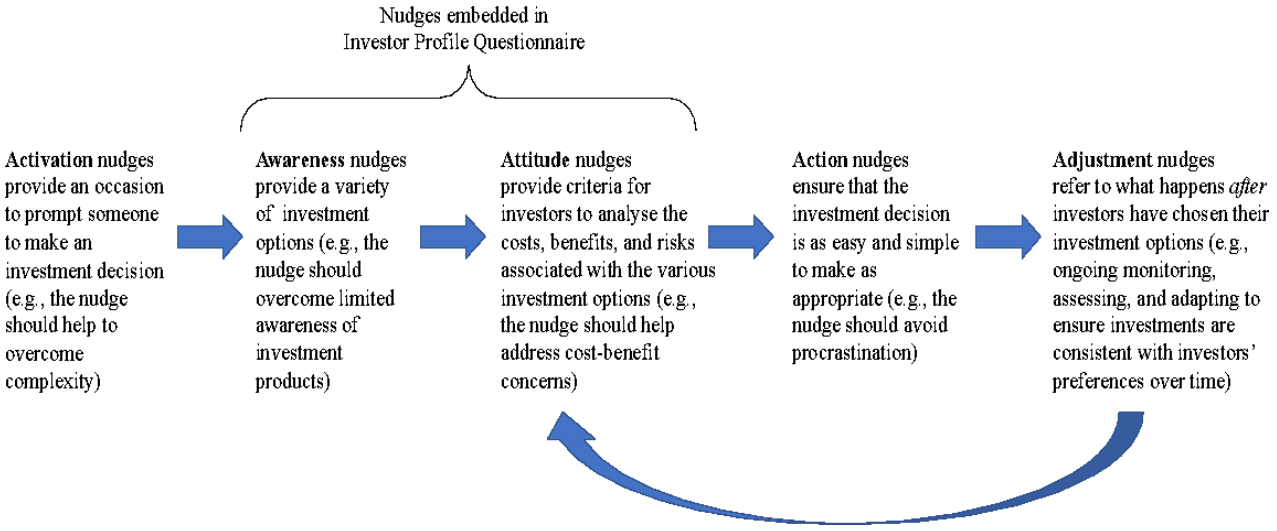
This paper responds to Pilaj's (2017) call for further empirical examination of the context in which retail investors make their decisions, and in particular, a response to his call to examine the effect of IPQ nudges on people's consideration of social and ecological returns when making investment decisions. Financial institutions are required to administer an IPQ to assess and ensure that the products or services its advisors provide are appropriate and suitable for clients (this is consistent with the EU's Market in Financial Instruments Directive, and the USA's Financial Industry Regulatory Authority Rules 2011). IPQs seek to ensure that investors have the knowledge, financial capacity, and ability to assess the risks associated with the investment decisions they make. IPQs typically ask questions related to clients' 1) goals (e.g., whether this a long-term or short-term investment); 2) risk tolerance and capacity (e.g., what is their attitude towards risk, and how much risk they can afford); 3) financial knowledge and expertise (e.g., whether clients understand how interest grows over time, and know the difference between stocks and mutual funds); and 4) socio-demographic and economic characteristics (Mazzoli & Marinelli, 2011).

Nudges are particularly relevant when people make decisions that are relatively rare, difficult to put into understandable terms, and do not provide prompt feedback (Thaler &

Sunstein, 2008), which are all characteristics of financial investment decisions for retail investors. The items in conventional IPQs typically nudge investors to consider their financial goals and risk tolerance when making investment decisions. Our study examines the effect of adding questions to IPQs that deliberately ask about nonfinancial goals and risks related to social and ecological well-being.

Nudge theorists argue that well-designed nudges can facilitate shifts away from *homo economicus* (Pilaj, 2017; Thaler, 2000) and towards a broader understanding of ethics. In particular, the shift away from FOI *homo economicus* can be facilitated by changing the 'choice architecture' (i.e., the way choices are presented to consumers) that influences investment decision making (Pilaj, 2017; Thaler, 2000). Pilaj (2017) offers what he calls a 5A model - referring to Activation, Awareness, Attitude, Action, and Adjustment — that helps explain key factors in the choice architecture that influence retail investors' decision-making, and can be used to develop IPQs that nudge investors toward SII and away from FOI investments. A visual depiction to help understand the interplay among the 5 As for our study is provided in Figure 2 below; we will look at each in turn.

Figure 2: Five Different Types of Nudges Related to Retail Investment Decisions



Source: Authors' own

Activation nudges prompt people to invest money in an investment vehicle (versus keeping it in their savings account, storing it under their mattress, or spending it). Many people may be reluctant to make investment decisions because of their perceived complexity, which helps to explain why financial institutions provide the services of financial advisors to simplify the process. We used Glac's (2009) study to illustrate how elements in the 5A model may be used to nudge retail investors away from FOI and towards SRI. In her study, Activation was accomplished by simply running a lab experiment where participants were recruited to make investment decisions. Activation is not part of the IPQ per se, but Awareness and Attitude can be.

Awareness nudges make investors aware of the kinds of investment options available to them. For example, many retail investors are not made aware of SRI options, which may limit their ability to connect their personal ethics with their investment decisions (Caporal, 2022; Pilaj, 2017). In Glac's (2009) study, participants were nudged to become aware of two types of funds they could choose to invest in: conventional, and socially-responsible.

Attitude nudges provide investors with the criteria they can use to undertake cost-benefit analyses that inform their investment decisions. Of particular interest in our study are the nudges built into IPQs that are designed to identify the key factors and risks that should inform investors' attitudes when choosing investments. To nudge investors' Attitude away from FOI and towards social and ecological well-being, IPQs could add questions that ask investors to consider the relative emphasis they place on financial versus social versus ecological returns, and about their perceptions of social and ecological risks associated with business-as-usual. Such attitudinal nudges would be expected to make non-financial issues more salient, thereby presumably reducing the likelihood that investors will disregard non-financial considerations in their decision-making. For example, Glac's study (2009, pp. 45-46) was designed so that participants had either a 'financial frame' (e.g., default attitude of self-interested utility maximization consistent with *homo economicus*) or were nudged to have an 'expressive frame' (which prompted investors to consider their identity and social beliefs when making investment decisions) (see also Delsen & Lehr, 2019; Vyas et al., 2022).

Action nudges make investment decisions easy and simple to make, and thus reduce the likelihood of investors procrastinating. In this research, action refers to the actual investment decisions investors are prompted to make after having completed the IPQ. In Glac's (2009) study, Action toward SRI investment was nudged by asking investors to choose between two

basic funds, FOI versus SRI, thereby making it relatively easy to behave in ways consistent with their attitudes and values. As expected, Glac (2009) found that participants whose Attitudes had been nudged to have an 'expressive frame' were more likely to choose SRI than participants nudged to have a 'financial frame.'

Adjustment nudges facilitate ongoing monitoring, assessing, and adapting that ensures investments are consistent with investors' preferences over time. Extending the depiction in Pilaj (2017), Figure 2 highlights how investors' Actions may influence their subsequent Attitude. For example, if someone's Action is to make an FOI investment, then this would be expected to reinforce their FOI Attitudes. In contrast, if another person's Action is to make an SRI investment, then this would be expected to reinforce their SRI Attitudes. Glac's (2009) study did not measure Adjustment.

Hypotheses

Our first hypothesis suggests that investors will reduce their FOI after completing IPQs that have a combination of sustainability-informed Awareness and Attitudinal nudges that prompt them to think about social and ecological well-being considerations. Such an Awareness nudge could be as simple as a sentence informing IPQ readers that other people are increasingly making investment decisions based on social and ecological considerations. Previous research suggests that letting people know about *others'* sustainable actions is a more effective way to nudge sustainable behavior change than are pleas to save the environment, to save money, or to safeguard future generations (Sleek, 2013).

Thus, alongside asking questions on IPQs about clients' attitudes toward *financial* returns, new questions could be added about investors' attitudes to non-financial (e.g., social

and ecological) returns. For example: "How would you prioritize the relative importance of the following three types of well-being when you make investment decisions: financial, social, and ecological?" Akin to the 'expressive frame' in Glac (2009), asking such questions should, presumably, make non-financial considerations more salient for investors when making investment decisions (especially when coupled with an Awareness nudge that suggests that other investors are acting on similar non-financial considerations).

Hypothesis 1 suggests that adding sustainability-informed Awareness and Attitude nudges will influence the proportion of investment funds that participants allocate to FOI (versus SRI and SII) when subsequently prompted to do so by an Action nudge.

Hypothesis 1

Compared to investors who receive only conventional Awareness and Attitudinal nudges, investors who also receive sustainability-informed Awareness and Attitude nudges will allocate fewer resources to investment products that focus exclusively on financial returns (FOI).

Our second hypothesis examines whether adding sustainability-informed Awareness and Attitudinal nudges to the IPQ will increase the portion of money investors allocate to SII (versus FOI and SRI). Note that our focus is on SII specifically, and including it in addition to SRI, is new both to the literature specific to the effect of investing nudges and to the larger literature on sustainable investing (Friede et al., 2015; Pilaj, 2017; Revelli & Viviani, 2015). Our hypothesis builds on the idea that sustainability-informed nudges will be particularly salient for people who are willing to compromise financial returns in order to enhance social and ecological well-being (Delsen & Lehr, 2019; Morgan Stanley, 2019).

Hypothesis 2

Compared to investors who receive only conventional Awareness and Attitudinal nudges, investors who also receive sustainability-informed Awareness and Attitude nudges will allocate more resources to investment products that compromise their financial returns in order to optimize social and ecological well-being (SII).

Hypotheses 1 and 2 both suggest that Attitude has an effect on Action (investing); conventionally-nudged Attitudes will result higher FOI (Hypothesis 1), and sustainability-nudged Attitudes will result in higher SII (Hypothesis 2). Our third hypothesis is related to the Adjustment nudge, and examines the difference in the two ways to nudge Attitude depicted in Figure 2. The first is via the Awareness nudge only (left-to-right arrow) (examined in hypotheses 1 and 2). The second is via the Adjustment nudge (the feedback arrow that essentially connects Action to Attitude). Hypothesis 3 suggests that the Adjustment nudge will have a greater effect on Attitude than the Awareness nudge. Hypothesis 3 is consistent with research that suggests that the effect of Action on Attitude may be greater than vice versa (Walker, Dyck, Zhang, & Starke, 2019).

Note further that, taken together with Hypotheses 1 and 2, Hypothesis 3 implies that there is a self-reinforcing relationship between Attitude and Action. In particular, Hypothesis 3 suggests that simply providing a sustainability-informed Action nudge, that is, giving investors an opportunity to choose among more-and-less sustainable investment options (SII, SRI, and FOI) will increase subsequent sustainable Attitudes.

Hypothesis 3

Compared to receiving (only) a sustainability-informed Awareness nudge, receiving (only) a sustainability-informed Action nudge will have a greater effect on sustainable Attitudes vis-a-vis the prioritization of: a) financial well-being, b) social well-being, and c) ecological well-being.

Data and Methods

Procedure and Materials

Our study employed a two-factor (treated vs. control) between-subjects design where participants were randomly assigned to either a conventional-nudged (control) or a sustainability-nudged (treated) condition. At the start of the study, all participants were told that the goal of the study was to examine how people make investment decisions. They were also told that they would be asked to complete a short IPQ prior to making their investment decision.

Activation nudge. Participants in both the treated and control groups were given the same Activation nudge, which did not have a sustainability-informed component, but simply involved recruiting them to participate in the study. Similarly, participants in both groups were given a brief description of an IPQ and its purpose as an assessment tool for making investment decisions.

Awareness nudge. The sustainability-informed Awareness nudge was given only to participants in the treated condition, which was a paragraph that stated that "*a growing number of investors care about more than simply maximizing their own financial well-being"* and are making investments that address social and ecological externalities.

Attitude nudge. To be consistent with the cover story regarding the study's purpose, all participants were asked a series of questions found in conventional IPQs which were not relevant for our hypotheses (e.g., questions pertaining to risk tolerance, job security, and general financial knowledge). Only participants in the treated condition received the following sustainability-informed Attitude nudge, where participants were provided a sliding

scale and asked to allocate 100 points to indicate their relative emphasis on three types of well-being —financial, social, and ecological — in making their investment.[2]

> Consider the following three types of well-being and then indicate how you would prioritize their relative importance when you make investment decisions. In particular, which investment goals are you especially interested in pursuing (or avoiding)?
>
> I want my investments to contribute to:
> ___ financial well-being (e.g., optimize my financial returns, earn more than inflation)
> ___social well-being (e.g., reduce sweatshops, facilitate healthy work-life balance)
> ___ ecological well-being (e.g., reduce climate change, support sustainable agriculture)

Action nudge. Upon completion of their IPQ, participants in both the treated and control condition received the Action nudge that asked them to allocate $10,000 among three types of investment products:

> As described below, each of the three types of investments vary depending on the relative emphasis they place on financial, ecological, and social well-being.
>
> **Type A [SII]** investments focus on businesses that have the strongest commitment to enhancing positive social and ecological outcomes, in addition to reducing negative ones, while maintaining sufficient financial well-being.
>
> **Type B [SRI]** investments focus on businesses that seek to maximize financial well-being in part by opportunistically reducing social and ecological costs of doing business.
>
> **Type C [FOI]** investments focus on businesses that seek to maximize financial well-being and do not deliberately consider social and ecological well-being.

In addition to briefly explaining each type of investment, participants were also provided with examples and a table summarizing key characteristics of each type. A two-item manipulation check was included to ensure that participants understood the three types.

[2] The sustainability-informed Attitude nudge also included questions about the risk of business-as-usual to the long-term well-being of humankind. Recall that prior research has generally found that questions related to financial risk on IPQs are not related to investors' investment decisions (e.g., Foerster et al., 2017).

The final part of the Action nudge included the following question (which was used to measure our key dependent variables for Hypotheses 1 and 2).

> Suppose you had $10,000 to invest. What percentage of your $10,000 would you invest in each of the following (Please ensure the percentages add up to 100).
>
> _____Type A [SII] investments seek to optimize social and ecological well-being while ensuring enough financial well-being
>
> _____Type B [SRI] investments seek to maximize financial gain by attending to social and ecological well-being
>
> _____Type C [FOI] investments seek to maximize your personal financial gain while not considering ecological and social well-being

Adjustment nudge. We did not develop a stand-alone Adjustment nudge per se. Rather, after participants in the control condition had completed the Action nudge, they were asked the same sustainability-informed Attitude question as the participants in the treated group had been asked in their IPQ (i.e., regarding the relative priority participants place on financial, social, and ecological returns when making investments). Note that the responses to this question in the treated group came after receiving (only) the Awareness nudge, whereas the responses in the control group came after receiving (only) the Action nudge. This design enabled us to use the Attitude nudge question to test Hypothesis 3.

The study closed with demographic questions.

Sample

Our sample was comprised of 471 participants from the USA recruited through Amazon's Mechanical Turk, each of whom received $1.50 for their participation. Because data quality from Mturk workers has become increasingly criticized due to a number of concerns including participant inattentiveness and language comprehension (Litman & Robinson,

2020), we included six items — three attention checks as well as three questions (one open-ended) — to confirm that participants were being attentive and comprehending the presented material, and to ensure that respondents understood the difference between SII, SRI, and FOI. In addition, we also excluded observations where participants took more than two hours to complete the survey. Our final sample contains 245 participants who took 12.8 minutes on average to complete the survey.

Table 1 shows the summary statistics for our final sample. Participants were 37.87 years old on average, 44 percent female, and 55 percent college graduates. On average, participants allocated 30.84 percent of the $10,000 to SII investments, 44.60 percent to SRI investments, and 24.56 percent to FOI investments.

Table 1: Summary Statistics

	Mean	Median	Standard Deviation	N
Age	37.87	35.00	11.62	245
Female	0.44	0.00	0.50	242
College graduate	0.55	1.00	0.50	245
Portfolio allocation to FOI (%)	24.56	17.00	27.09	245
Portfolio allocation to SRI (%)	44.60	44.00	26.88	245
Portfolio allocation to SII (%)	30.84	25.00	27.70	245
Prioritize financial well-being (%)	61.33	60.00	25.27	245
Prioritize social well-being (%)	19.33	16.00	15.27	245
Prioritize ecological well-being (%)	19.33	18.00	14.36	245

Source: Authors' own

Notes: Age is the respondent's age. Female is an indicator variable that equals 1 if a respondent indicates they are female, and 0 otherwise. College graduate is an indicator variable that equals 1 if a respondent indicates they have graduated from college or university, and 0 otherwise. Portfolio allocation to FOI, SRI, and SII indicates the percentage of their portfolio that respondents allocated to FOI, SRI, and SII, respectively, in the portfolio allocation (the final part of the Action nudge). Prioritize financial, social, and ecological well-being indicate the percentage allocated to prioritizing financial, social, and ecological well-being, respectively, in the respondents' investments (the Attitude nudge). Variables are unstandardized.

Results

We estimated multivariate regressions using ordinary least squares (OLS) with robust standard errors. To ensure that differences in age, gender, or education were not driving our results, we included these variables as controls, since some past research suggests that younger, female, and better educated individuals are more likely to engage in SRI (Delsen & Lehr, 2019; Nilsson, 2008). Our results suggest that age and possessing a college degree are not significantly associated with portfolio allocations to SII, SRI, or FOI investments, but females invest 7.91 percent more ($p = 0.029$, t-stat = 2.20) in SII investments on average, and invest 8.41 percent less ($p = 0.018$, t-stat = 2.37) in FOI investments on average.

Our main independent variable of interest, *Treated*, compares the treated group, i.e., participants who received the sustainability-informed Awareness and Attitude nudges prior to the Action nudge (Hypotheses 1 and 2), and the sustainability-informed Attitude nudge prior to the Action nudge (Hypothesis 3), with the control group. We do not find support for Hypothesis 1; the proportion of money allocated to FOI investments is 2.54 percent lower for the treated group as predicted by Hypothesis 1, but this is not statistically significant at the 10 percent level (coefficient = -2.54, $p > 0.1$, t-stat = -0.71).

Consistent with Hypothesis 2, we find that those who received the sustainability-informed Awareness and Attitude nudges (i.e., the treated group) invested 8.04 percent ($p = 0.027$, t-stat = 2.23) more in SII investments on average relative to the control group, thus compromising their financial returns in order to optimize social and ecological well-being.

Finally, our results lend support to Hypothesis 3 that compared to a sustainability-informed Awareness nudge, a sustainability-informed Action nudge will have a greater effect on sustainable Attitudes vis-a-vis the prioritization of: a) financial well-being, b)

social well-being, and c) ecological well-being. Consistent with Hypothesis 3a, we find that investors who received the Awareness nudge prior to the Attitude nudge (i.e., the treated group) gave higher priority (coefficient = 8.78, p = 0.006, t-stat = 2.75) to financial well-being than the investors who received the Action nudge prior to the Attitude nudge (illustrated by the Adjustment nudge) (i.e., control group). Similarly, consistent with Hypotheses 3b and 3c we find that, compared to the control group, participants in the treated group place lower priority on combined social and ecological well-being. The results for social well-being are in the predicted direction but insignificantly different (coefficient = -2.82, p > 0.1, t-stat = -1.48), and the results for ecological well-being are in the predicted direction and significantly different (coefficient = -5.96, p = 0.001, t-stat = -3.24) relative to the control group.

Discussion

Our study found that adding sustainability-informed Awareness and Attitudinal nudges to IPQs did not lead to decreased investments in products that focus solely on financial returns (FOI) (contrary to Hypothesis 1), but it did yield increased investments in products where financial returns are compromised in order to optimize social and ecological returns (SII) (consistent with Hypothesis 2). We also found that a sustainability-informed Action nudge is more effective than a sustainability-informed Awareness nudge to promote an Attitude that places less emphasis on financial and more emphasis on non-financial well-being among retail investors (consistent with Hypothesis 3).

Implications for FOI (Hypothesis 1)

Our results that the treatment condition did not affect the amount of FOI investing may suggest several things. Firstly, whereas older studies like Glac (2009) found that awareness and attitudinal nudges could 'move' investors away from FOI investments, it may be that in the present market, 'default nudges' embedded in the *societal* mainstream choice architecture (e.g., the growing awareness of the merit in CSR/green/ESG investing) have already served to 'move' investors away from FOI, thereby rendering our sustainability-informed IPQ nudges redundant. In other words, perhaps the SRI approach has essentially displaced FOI and become the new-and-improved variation of profit-maximizing investing. Indeed, investing in SRI products is both rational and ethical according to an enlightened view of utilitarian ethics and its related theories (Elkington, 1997; Friede et al., 2015; Hart, 1995; Porter & Kramer, 2011; Revelli & Viviani, 2015). Taken together, over two-thirds of the investment dollars in our study were allocated to (profit-maximizing) FOI and SRI products (73 percent in control condition, 65 percent in treated condition).

Secondly, even if SRI has become the new FOI, our results nevertheless suggest that there is a core group of retail investors who remain committed to FOI investing, regardless of whether they have been nudged to consider non-financial considerations. This commitment to FOI investing could be due to investors holding utilitarian ethics that underpin capitalism generally (Friedman, 1970; Weber, 1958) and/or due to the self-fulfilling prophecies that pervade economic and business theory (Ferraro et al., 2005). In any case, from a classical capitalistic perspective, it is both ethical and rational to make FOI investments.

Finally, scholars and investors alike may be surprised that FOI represents only about 25 percent of all investing (22 percent in treatment group, 27 percent in control group). This certainly has implications for finance theory, training, and policy. Our findings suggest that

the finance theory that ignores social and ecological considerations is relevant for only 25 percent of retail investor investment capital. Similarly, finance practitioners who primarily emphasize tools such as conventional IPQs that focus on FOI are ignoring and thus doing a disservice to retail investors who, on average, allocated 75 percent of their portfolios to non-FOI investments. Our results should compel regulators to create room for products that take social and ecological well-being into account.

Implications for SII (Hypothesis 2)

Firstly, our findings that sustainability-informed nudges increased SII, but not SRI, may suggest that sustainability-informed nudges serve to disrupt rather than to merely tweak the status quo. In other words, sustainability-informed nudges permit participants to behave in ways that challenge dominant norms, which may be of particular salience for investors whose values do not align with FOI norms (Freire, 1973). In our study, the sustainability-informed nudges disrupted the *homo economicus* view that investment decisions should be based primarily on financial return criteria (FOI and SRI), and thereby 'freed' investors to compromise financial returns in order to prioritize social and ecological well-being (SII). It seems that sustainability-informed nudges in IPQs legitimated making investment decisions that put people and planet *ahead* of profit, and that this legitimation has had an effect on many participants. On average, the nudged group allocated 8.04 percent more of their portfolio to SII relative to the non-nudged group, after controlling for age, gender, and education (the nudged group invested on average about 35 percent of their portfolio to SII, whereas the control group invested 27 percent). This 'pent up demand' for SII should be of interest not

only to practitioners, but also to scholars and policy-makers. Just as FOI theory and practices have resulted in self-fulling prophecies that encourage FOI (Ferraro et al., 2005), so also SII theory and practices can contribute to new self-fulfilling prophecies that encourage SII.

Secondly, the fact that almost one-third of funds were allocated to SII is not only an affront to conventional portfolio theory and economic rationality, it is also an affront to the variation of utilitarian ethics it rests upon (Ferraro et al., 2005; Weber, 1958). From a 'pure utilitarianism' ethical perspective (Weber, 1958, p. 183), SII is unethical and irrational. However, SII is ethical and rational when viewed through a virtue ethics lens (Clegg, 2000; Dyck & Manchanda, 2021; Leshem, 2016; MacIntyre, 1981). In other words, our results challenge the utilitarian, materialistic-individualistic, moral point-of-view that contemporary capitalism is founded upon. To draw out the implications of this goes far beyond the parameters of this paper, but it points to the possibility of developing new theory and practice that allows us to escape Weber's (1958) materialistic-individualist iron cage of capitalism. Such a new approach, consistent with the significant minority of people who place people and planet ahead of profit, may be built upon a moral point-of-view consistent with virtue ethics and ideas that does not occur when everyone seeks to have as much as they can, but rather when seeking to ensure that everyone has enough (Dyck & Manchanda, 2021).

Implications beyond the IPQ (Hypothesis 3)

Our findings from examining Hypothesis 3 have several implications. Most importantly, they point to the importance of Action nudges on retail investors' subsequent attitudes. Our findings are consistent with studies in experiential learning and organizational change generally, and in particular, with the importance of *praxis* in bringing about transformational

change (Walker et al., 2019). Once investors are provided a choice between SII, SRI, and FOI investment options, their attitudes about investing shift, and they place less focus on financial and greater focus on nonfinancial returns, which in turn presumably influences their subsequent investment decisions, creating a self-reinforcing loop. Thus, proponents of SII should focus not only on adding nudges to IPQs, but place even greater focus on providing opportunities for investors to invest in SII. An implication for champions of SII investing is: "Build it, and they will come."

Unfortunately, retail investors in the real world are not likely to have opportunities to invest in SII funds for at least three reasons (Phillips & Johnson, 2019). Firstly, current intermediaries are looking for scalable projects, which counters the place-based nature of firms aligned with SII (Dyck et al., 2018). Secondly, firms that place greater emphasis on social and ecological well-being than on maximizing financial returns often lack the literacy in complex financing that is required/expected by financial institutions, in part because these firms have not needed (or wanted) such literacy (and in part because such literacy has not yet been well developed). And thirdly, our ability to measure social and ecological outcomes is still under-developed, though experts are making strides (Maltais & Nykvist, 2020).

Conclusion

Our findings present, at the very least, a compelling case for the revision of conventional IPQs, which presently serve a core of only 25 percent of investors. The literature is quite clear that the world is facing socio-ecological crises, and that businesses are major players in creating these crises and can be major players in addressing them. Therefore, investors are also major players in creating or addressing these crises. It stands to reason that investment

professionals should revise IPQs so that they ask investors about their relative desire for social and ecological returns alongside their financial returns in order to change the conversations that take place when people make investment decisions within financial institutions. In our study, more money was allocated to SII than FOI. There is a growing desire for financial theory and practice that places people and planet ahead of profit. The challenge is to develop and put more SII investment products on the market. We hope that our study will nudge such initiatives!

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