Nudging Retail Investors towards Sustainable and Responsible Mutual Funds: A Study of Financial Advisors and Retail Investors in Hong Kong

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Abstract

Sustainable and Responsible Investments (SRI) allocate funds for transition to a more circular economy. Hong Kong, as one of the leading international financial centres, trails its global peers in terms of SRI market development despite some efforts paid by the government. Hong Kong retail investors also exhibited a seemingly lukewarm response towards sustainable and responsible mutual funds (SRMF). On the other front, many surveys suggested that the percentage of retail investors showing interest in SRI far outweighs the percentage actually holding SRI investment instruments.

Advance in behavioural economics provided a possible explanation that their intention may not be reflected in their actions because of cognitive biases. Nudge theory of behavioural economics further suggested that we can steer people to better decision-making without abridging their freedom of choice. The prevalence of nudge theory prompted some researchers to explore the application to SRI and SRMF, and some policies and practices are suggested. But nudge practices in the financial markets can be controversial, and we need a sound basis for policies. Accordingly, our study sets up a discrete choice experiment and purposively sampled 218 financial advisors and 475 retail investors.

Through conjoint analysis, we investigated whether financial advisors underestimated the importance of SRI strategy adoption placed by retail investors on mutual fund selection and whether the ranking of SRI strategy adoption attribute can be changed by different nudge wordings. Our results showed that there was no significant difference in the importance attached to the SRI strategy attribute between the investors and advisors. Some more proactive nudge policies to retail investors in Hong Kong cannot be justified. The effect of nudge practices also varies, but overall only performance nudge can cause a marginally significant increase in preference put on the SRI strategy attribute. The implications to policymakers and researchers of these findings are further discussed.

Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed: Mike Shun Fuk Hui

Date:

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used, the extent and nature of the corrections are clearly marked in a footnote(s). Other sources are acknowledged by footnotes giving explicit references. A bibliography is appended.

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Acknowledgement

Writing this thesis has taken up much of my time and effort, but I would not have completed it without the love and patience of many great people I tested throughout the journey. It is only right that I recognise their substantial contributions.

First and foremost, I wish to thank my wife and son, Winnie and Ivan, for their unrelenting support. Were it not for their sacrifice and encouragement, I could not have embarked on this arduous journey in the first place nor persevered until the completion of this thesis. I am also deeply obliged to my mother, whose love I can never fully repay.

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Table of Content

List of Abbreviations

CAPM	Capital Asset Pricing Model
CBC	Choice-based conjoint
CFA	Chartered Financial Analyst
CFAI	Chartered Financial Analyst Institute
DIS	Default Investment Strategy
EMH	Efficient Market Hypothesis
ESG	Environmental, Social and Governance
ETF	Exchange-traded Fund
EUROSIF	European Sustainable Investment Forum
FSDC	Financial Services Development Council
GSIA	Global Sustainable Investment Alliance
HKIFA	Hong Kong Investment Funds Association
HKMA	Hong Kong Monetary Authority
IFEC	Investors and Financial Education Council
IFPHK	Institute of Financial Planners in Hong Kong
IPCC	Intergovernmental Panel on Climate Change
KIID	Key Investor Information Document
MAUT	Multiple attribute utility theory
MPF	Mandatory Provident Fund
MPT	Modern Portfolio Theory
Morningstar	Morningstar Manager Research
OECD	Organization of Economic Corporation and Development
PRI	Principles for Responsible Investment
RI	Relative importance
SDGs	Sustainable Development Goals
SFC	Securities and Futures Commission
SME	Small- and medium-sized enterprises
SRI	Sustainable and responsible investments
SRMF	Sustainable and responsible mutual fund
TPB	Theory of planned behaviour
UN	United Nations
UNEP FI	United Nations Environment Programme Financial Initiative
UWTSD	University of Wales Trinity Saint David

List of Tables

List of Figures

Chapter 1 Introduction

Little research has been carried out in Hong Kong to understand investors' attitudes towards sustainable and responsible investments (SRI). SRIs are investments that take into consideration both financial and non-financial factors, with a focus on factors such as environmental, social, and governance (ESG) concerns (GSIA, 2019; Baker, Filbeck and Kiymaz, 2016). SRIs are also investment vehicles that allocate funding for transitioning to a more circular, low-carbon economy (Schoenmaker and Schramade, 2019). Through SRIs, investors can promote sustainability and social responsibility, whilst simultaneously optimising their investment risk/return trade-off (Scholtens, 2014).

Nowadays. SRI is no longer a niche investment market. According to the Global Sustainable Investment Review – published by the Global Sustainable Investment Alliance (GSIA), an international collaboration of organisations representing professionals, firms, institutions, and others engaged in SRI – more than $1 of every $4 under professional management incorporated SRI strategies in 2016 (GSIA, 2016). Globally, in 2018, 75% of all SRI assets were institutional investment assets managed by professional asset managers on behalf of pension funds, universities, foundations, and insurance companies (GSIA, 2019). The remaining 25% were retail assets, mainly sustainable and responsible mutual funds (SRMFs) purchased by retail investors through banks or other platforms (GSIA, 2019). Indeed, retail SRMFs have increased their global market share significantly in recent years, growing from 11% in 2014 to 25% in 2018 (GSIA, 2019). The retail demand growth is particularly strong in Europe, the world's largest SRI market, surging from 3.4% in 2013 to 30.7% in 2017. Retail investors are considered the key to making SRI truly mainstream (EUROSIF, 2018).

Although SRI has become a considerable segment of the Western investment communities, its development in Asia was lagging behind, accounting for 0.2% of worldwide SRI assets in 2016 (GSIA, 2017). Whether Asian investors disfavour SRI and, if so, why are questions that remain unanswered. Particularly, are SRI not favoured by Asian investors even in international financial centres like Hong Kong? How to spur retail SRI market growth is of interest to many parties. Other than traditional tools such as promotion and education, are there any means to attract retail investors to SRI?

1.1 Nature of the study

The literature on SRI has so far not provided a clear picture of investor motivation or behaviour. Most studies, especially the earlier ones, focused on SRMFs' financial performance, as revealed by two systematic studies of previous literature (Hoepner and McMillan, 2009; Capelle-Blancard and Monjon, 2012). Although a strand of studies emerged after the turn of the century, other than agreeing that financial motives are only one concern, the question of why retail investors buy or do not buy SRMFs remains largely unanswered (Apostolakis, G. et al., 2018; Mervelskemper, 2018; Riedl and Smeets, 2017; Hafenstein and Bassen, 2016; Wins and Zwergel, 2016; Døskeland and Pedersen, 2015; Hood, Nofsinger and and Varma, 2014; Adam and Shauki, 2014; Berry and Junkus, 2013; Berry and Yeung, 2013; Pérez-Gladish, Benson and Faff, 2012; Renneboog, Ter Host and Zhang, 2011; Nilsson, 2009; Glac, 2009; Hofmann, Penz and Kirchler, 2009; Nilsson, 2008; Hofmann, Hoelzl and Kirchler, 2008; Bollen, 2007; Beal, Goyen and Phillips, 2005). In addition, previous studies have mainly focused on Europe, the US, and Canada. (Talan and Sharma, 2019; Carolina Rezende De Carvalho Ferreira, M. et al., 2016). Little research has addressed either the underdeveloped SRI market in Asian countries like Hong Kong or Hong Kong investors' seemingly lukewarm response towards SRIs. Talan and Sharma (2019) conducted a systematic review of 213 studies on SRIs and identified two major SRI research gaps: 1) why SRI is not popular in Asia and other developing countries, and 2) the barriers to SRI's further popularisation. Døskeland and Pedersen (2015) proposed that we can further investigate investors' perceptions of the wealth and moral components of their investments. This study aims to shed light on these research gaps, particularly the second.

SRI predominantly refers to SRMFs managed by professional asset managers for institutional investors or sold in the retail market through retail investment channels (GSIA, 2016). As this study investigates the behaviour of retail investors, we will limit our discussion to retail SRMFs.

Hong Kong is a leading international financial centre and Asia's number one international fund management hub (HKMA, 2019a). However, it trails its global peers in terms of SRI market development, especially in the retail market (Leung, 2017; Asia Asset Management, 2017; GSIA, 2017), with one high-level government advisory body warning that Hong Kong risks "being left behind" (FSDC, 2018a). The Hong Kong government has acknowledged the need to foster the SRI market and exhibited some determination to develop Hong Kong as a "regional green finance hub" ("Hong Kong eye 100b fund", 2018; Chief Executive's 2017 Policy Address, 2017). Specific actions taken by the government include issuing government-backed green bonds, increasing the requirements for listed companies to issue sustainability reports, and requiring the Hong Kong Monetary Authority to employ external managers with higher ESG standards to

manage government foreign reserves (HKMA, 2019; Loh, 2019). Most of these measures, however, are regulatory or supply-side in nature. Eventually, supply must be matched with demand, and adequate local demand is needed to sustain healthy SRI market growth.

Meanwhile, preliminary information from many surveys seems to suggest that the percentage of retail investors showing interest in SRI far outweighs the percentage actually holding SRI investment instruments (HKIFA, 2019; Schroders, 2019; Asia Asset Management, 2017). Are investors overstating their intention to buy SRMFs because social responsibility and sustainability are socially desirable behaviours (Nilsson, 2008; Glac, 2009), or is there a verifiable latent demand for SRMFs from retail investors? Investor education is a common practice for many governments; is there any empirically justifiable alternative approach to spurring SRI market growth? Policies and measures need to have a solid empirical foundation and be carefully implemented, even if there is potential demand, because it could be controversial to interfere with investors' investment decisions and capital allocation activities. So far, no related research has been conducted in Hong Kong. Filling this research gap will not only contribute to the literature but could also provide government officials a sound basis for future policies.

Furthermore, if investors are to be steered to SRMFs at their moment of choice, the focal persons are naturally financial advisors (Pilaj, 2017; Hafenstein and Bassen, 2016; Wins and Zwergel, 2016; Adam and Shauki, 2014; Nilsson, Nordvall, and Isberg, 2010; Statman, 2008b); however, little research has been conducted on the SRI client-advisor relationship (Schrader, 2006; Heinemann et al., 2018). Heinemann et al. (2018) suggested examining whether retail investors expect financial advisors to propose or recommend SRMFs. This study will do so.

In sum, this study is a response to the above practical concerns and research gaps, especially the issues raised by Talan and Sharma (2019), Heinemann et al., (2018) and Døskeland and Pedersen (2015).

1.2 Conceptual Framework

As discussed, previous studies have shown that fewer investors actually held SRI compared to those exhibiting an interest in it (Nilsson, 2008, Glac, 2009). This phenomenon is also observed in different surveys in Hong Kong (Schroders, 2019; HKIFA, 2019; Asia Asset Management, 2017; The Asset, 2019). This "attitude-behavioural gap" is widespread in socially responsible products (Boulstridge and Carrigan, 2000, Glac, 2009) and can be attributable to the fact that emphasis on social responsibility is socially desirable behaviour and survey participants display

inflated intention to purchase SRI in surveys (Nilsson, 2008, Glac, 2009). But this is not the sole explanation. Advance in behavioural economics and behavioural finance provides an alternative explanation.

Starting from the bounded rationality of Herbert Simon (1956,1979), the development in behavioural economics and behavioural finance has added to our understanding of the process of decision making and investment judgement. Amo Tversky and Daniel Kahneman (1974) were the first researchers who pioneered research on heuristics and biases. After that, the behavioural scientists posit that individuals cannot make fully rational choices as presumed by classical economists because of heuristics and biases such as limited attention (Lim and Teoh, 2010; Simons and Chabris, 1999; Kahneman, 2012), non-salience of choices (Odean, 1999; Huberman and Regev, 2001; Fiske and Taylor, 1991; Nisbett and Ross, 1980; Barber and Odean, 2008) and framing biases (Tversky and Kahneman, 1974; Tversky and Kahneman, 1981; Kahneman and Tversky, 1983; Nofsinger, 2018). Because of heuristics and biases, consumers may make choices that are not to their own best interest (Pilaj, 2017; Sunstein, 2013). Sometimes market participants can even fail to follow through on their intention because of heuristics and biases (Madrin, 2014), and this is considered a behavioural market failure (Sunstein, 2013). In our case, the reason for the underdevelopment of the SRI market in Hong Kong may be due to the disfavour of SRI by retail investors. However, it can also well be the result of a gap between investors' sustainability intention and actual behaviour.

The behavioural economics findings opened up a new realm of how policymakers can assist investors. Thaler and Sunstein (2008) summarised the findings of behavioural economics and provided a novel policy-making approach called nudging (Thaler and Sunstein, 2008). If investors do not make decisions for their own benefit, policymakers could steer them to that end without abridging their freedom of choice. In general, nudging practices fall into three clusters, namely, information framing, use of socio-cultural norms, and resetting of defaults (Whitehead et al., 2014). Many governments have embraced this approach (Van Bavel, Herrmann, Esposito, and Proestakis, 2013; Ly and Soman, 2013; Whitehead et al., 2014; Sunstein, 2014; OECD, 2017a; OECD, 2017b) and to a considerable extent, this has led Richard Thaler to the Nobel Memorial Prize in Economic Sciences in 2017 (Earl, 2018). To this end, this study will test whether there is a discrepancy between sustainability intention and fund purchase decision among retail investors. The theories of behavioural economics, behavioural finance (Camerer 1999; Thaler, 2000; Madrian 2014) and nudging (Thaler and Sunstein, 2003, 2008) will be drawn upon in this study.

Pilaj (2017) pioneered the idea that nudging can be applied to promoting SRIs. When it comes to investment decisions, the conventional wisdom is that they should be left to investors.

However, following the logic of nudging, if some investors commit behavioural market failures (suboptimal decisions), one possible reason is that the SRMF choice is unnoticed or not salient enough (Pilaj, 2017). This is further justified by the fact that the financial performance of SRMFs is similar to the conventional funds (Morningstar, 2016; Friede, Busch and Bassen, 2015; Humphrey and Tan, 2014; Rathner, 2013; UNEP FI, 2007; Bauer, Derwall and Otten, 2007; Bauer, Otten and Rad, 2006; Statman, 2000; Hamilton, Jo and Statman, 1993). Accordingly, Pilaj (2017) suggests financial advisors to proactively explore clients' interest in SRI at the moment of investment choice. The policymakers and regulators can encourage or even require the action (Pilaj, 2017). Pilaj even proposes that policymakers may make SRI a default choice in the future and allow investors to opt-out if they do not like it.

While the proposal of Pilaj (2017) is beneficial to the retail market development of SRMFs, the measure should be taken with care. The original proposal of Thaler and Sunstein (2008) emphasises that nudge policies should be based on scientific evidence. For example, when the UK government established a Nudge Unit in 2010 and proposed new policies, they always specify their theoretical assumptions and conduct small scale experiments to verify the effectiveness. So far, however, limited empirical evidence has been provided in the literature pertaining to nudging the SRMF products. Furthermore, nudging can be controversial even it takes a soft and choice-preserving approach, since it involves guiding the direction of other people's decision making (Reisch and Zhao, 2017; Lehner, Mont and Heiskanen, 2016; Hansen and Jespersen, 2013; White, 2013; Hausman and Welch, 2010; Desai, 2011).

The above development in behavioural finance literature inspires this study. Until we can take one step backwards and test whether there is a discrepancy between financial advisers and investors in valuing sustainable and responsible concerns in choosing mutual funds, we would be able to provide a solid empirical foundation for policymakers, regulators, and financial advisors to inform their practices and further actions in Hong Kong. For instance, if advisors underestimate investors' interest in environmental and social responsibility performance, behavioural market failure will be highly likely, and nudging policies such as increasing the salience of SRMF can be justified. On the contrary, if investors attach much less importance to environmental and social responsibility performance, or if investors and financial advisors all rank it very low, traditional measures like education and media promotion should probably take precedence over nudging policies. In short, this study can serve as a concrete policy reference for Hong Kong's policymakers. It is also considered as a response to the research gaps proposed by Pilaj (2017), Talan and Sharma (2019) Heinemann et al., (2018) and Døskeland and Pedersen (2015), and serves as maiden research on nudging SRI by financial advisors.

This study utilises conjoint analysis to explore the relative importance of the ESG factor on

financial advisors and investors' decision making. Conjoint analysis is a research technique popular for marketers to determine what features a product or service should have (Curry, 1996). It works on the assumption that consumers' choice of products or services stems from the combined value of aggregated attributes that constitute the product or service. The quintessence of the method is that hypothetical mutual fund profiles are constructed to describe fund alternatives in characteristics assumed to influence investor preference or choice (Molin, 2011). The characteristics or attributes of the mutual funds can be previous fund performance, fund charges, or the adoption of a sustainable and responsible investment strategy. The values of attributes are called attribute levels; for instance, the existence or absence of a sustainable or responsible investment strategy. Respondents were presented with product profiles that shared the same attributes but whose attribute levels varied from one product profile to another, and were asked to choose which product they preferred. That is, mutual fund investors examined different fund features or attribute levels to make trade-offs and finalised their mutual fund choice.

Conjoint analysis investigates such choices and trade-offs between several product profiles in a choice set and identifies the important attributes in choice (Ramasamy and Yeung, 2003). The responses are then decomposed into the part-worth utility that each attribute level contributes to the overall utility that respondents derive from mutual fund alternatives. The analytic result is a utility function depicting the extent to which each attribute contributes to the overall utility. In other words, the dependent variable of this study is the respondents' choice representing the highest utility in the utility function. The independent variable is the part-worth of the attributes in the utility function. In this case, the impact of the attribute "sustainable and responsible investment strategy adoption" on mutual fund choice can be decomposed and identified. This exactly matches our research objective to identify the importance of sustainable and responsible factors in choosing mutual funds and their ranking (relative importance) among different fund attributes.

As discussed in section 2.6, we argue that if financial advisors underestimate investor interest in environmental and social responsibility performance, the client's preference cannot be realised, and behavioural market failure will be highly likely. Many nudging intervention measures discussed in chapter 2 will then be justified. This can also mitigate the concerns from some scholars about the intrusion of nudging policies, especially with the existence of antecedent preference to reduce controversy of nudging as proposed by Sudgen (2017; 2018), which is discussed in section 2.5.3. Therefore, it is a research aim to check whether financial advisors and investors treat the ESG factor differently in selecting mutual funds. That means our conjoint analysis experiment will examine if there is a significant difference in utility levels and relative ranking of the sustainable and responsible strategy attribute in the conjoint analysis experiment between financial advisor respondents and base case investor respondents.

The related specific aim and hypotheses are listed as follows:

Specific aim 1: To identify whether financial advisors and investors treat the ESG factor differently in selecting mutual funds

Hypothesis 1: the ESG strategy will be a significant attribute in determining an investor's preference when deciding a mutual fund investment choice, whereby the existence of ESG strategy will be associated with a higher probability of a mutual being selected, all else being equal.

Hypothesis 2: other attributes we choose in our conjoint analysis experiment will be all significant attributes in determining an investor's preference when deciding a mutual fund investment choice.

Hypothesis 3: the overall conjoint analysis utility model can significantly explain investors' mutual fund selection

Hypothesis 4: there are significant differences in the ranking of ESG strategy between financial advisors and investors' base case selection

Pilaj's (2017) original proposal was to confront investors with direct moment-of-choice questions (e.g., 'In addition to financial success, are you also concerned about the social and environmental performance of your investments?'') to overcome limited attention and lack of salience, behavioural biases discussed in Section 2.4.2. This qualifies as a nudge because it does not compromise freedom of choice (Pilaj, 2017). Similarly, in our conjoint experiment, we will remind investors of the prevalence of SRI strategy in many mutual funds and its availability in Hong Kong as the salient nudge. Meanwhile, Døskeland and Pedersen (2015) utilized moral and wealth-framed wordings to present and promote SRMF in a large-scale study and obtained concrete academic evidence. Glac (2009) also demonstrated that framing effect, a behavioural bias discussed in section 2.4.3, had significantly different effects on SRMF purchases in the US. Reframing also qualifies as nudging with no abridgement of freedom of choice. This study will reference Døskeland and Pedersen (2015) and emphasize SRIs' moral benefits and historical absence of underperformance as a Moral Nudge and Performance Nudge, respectively.

The related specific aim and hypotheses are as follows:

Specific aim 2: To determine whether a nudge changes investors' ranking of the ESG strategy and what types of nudge wording can effectively increase the importance of the ESG strategy

Hypothesis 5: the salient nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Hypothesis 6: the moral nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Hypothesis 7: the performance nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Figure 1 summarises the hypotheses as a conceptual model of the whole study. The detailed methodology is illustrated in Chapter 3. The relevant concepts of limited attention, lack of salient, framing effect, and nudging, and the controversy of nudging are discussed in Chapter 2.

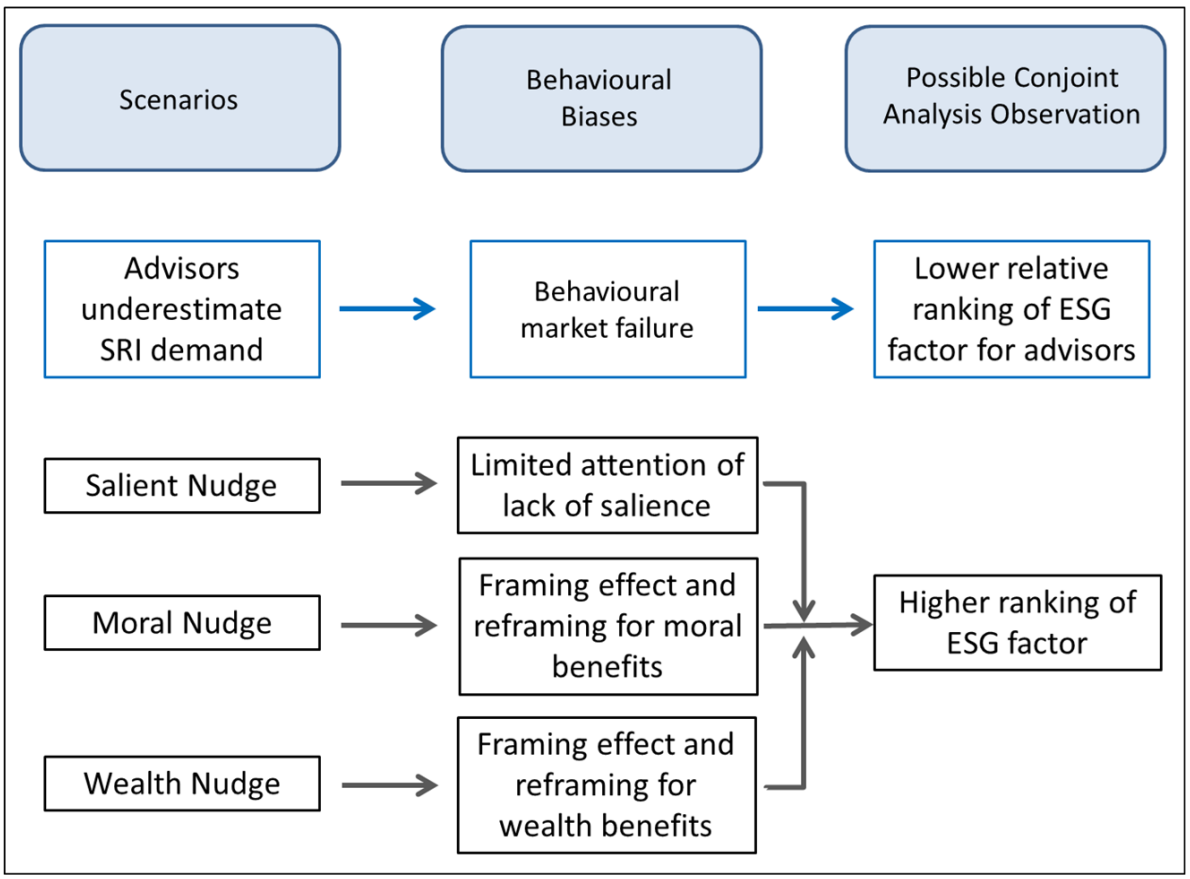


Figure 1.1 Conceptual map of this study

1.3 Purpose of the Study

This study explores the relative importance of the ESG factor as perceived by financial advisors and retail investors when recommending or selecting mutual funds and whether the ESG factor's

ranking will be affected by nudging. Summarising the research aims and hypotheses in the previous section, the two overarching research questions of this study are:

Is nudging practice justified, based on our experiment, and what type of nudging wording can effectively promote SRIs?

To answer this overarching research question, the author will analyse the responses of financial advisors and retail investors to an online choice-based conjoint (CBC) survey to answer the following research questions and objectives:

1. What factors do financial advisors and retail investors consider important when selecting a mutual fund?
2. Are ESG concerns one of the significant decision variables?
3. Are there any differences in the ranking of the ESG factor between advisors and investors?
4. Could a nudge change investors' ranking of the ESG factor?
5. Could different types of wording effectively change investors' ranking of the ESG factor?

1.4 The significance of the Study

To the best of our knowledge, few studies have examined advisors' and retail investors' attitudes towards SRIs in Hong Kong or other parts of the world although advisors appear to play a significant role throughout the investment process. The results not only add to the growing body of knowledge on nudging but also offer useful insights to policymakers. Specifically, the contributions of this research are fourfold. First, we provide empirical evidence of whether advisors and investors treat the ESG factor differently in selecting mutual funds. Second, whether this latent demand can be provoked by nudging. Third, the effectiveness of different nudge wordings emphasis. Finally, this study can serve as a reference for policymakers, regulators, and practitioners in Hong Kong to determine whether nudging intervention can be put into practical use.

1.5 Summary & Structure of the research

SRIs not only provide investors with optimised risk and return trade-off but also include value-expressive benefits that respond to their environmental, social and governance concerns.

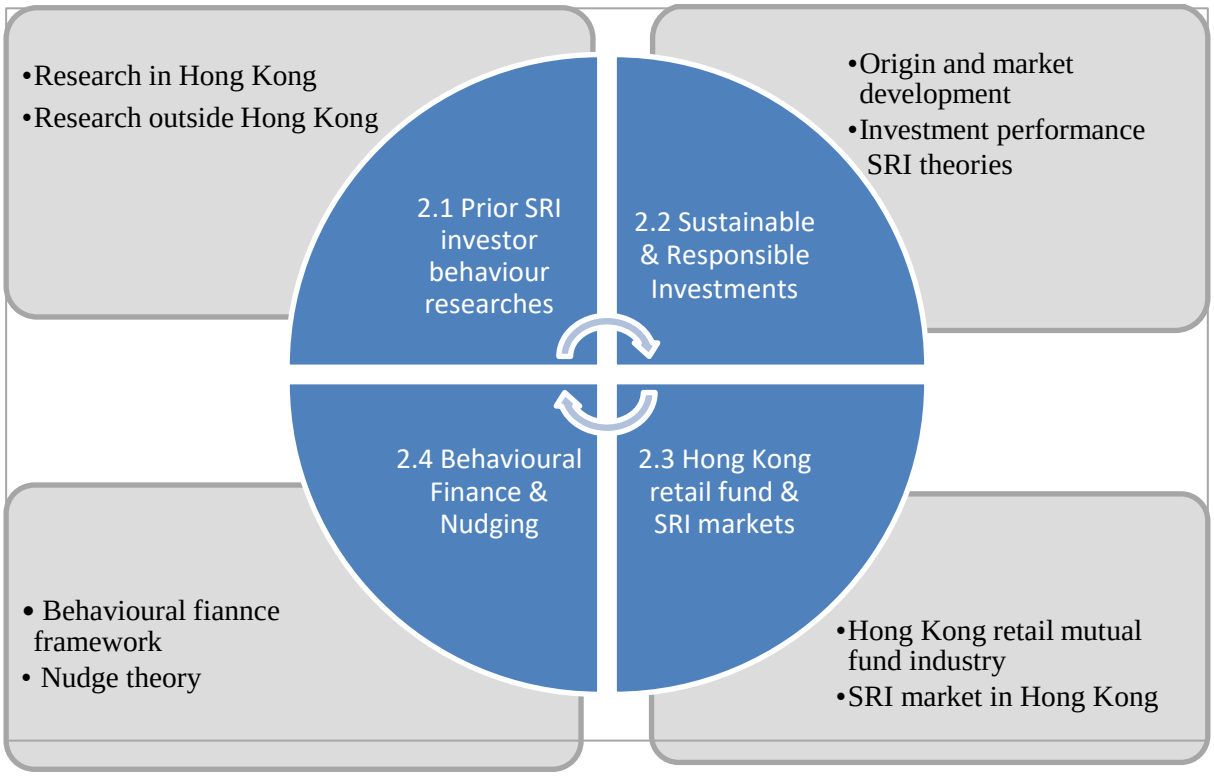
Cognitive biases, however, may hinder its development, as demonstrated in some empirical studies. If the thriving behavioural economics and nudging research provides a useful tool to foster the market, is nudging practice in the form of increasing the salience of SRI something that the policymakers, financial institutions and financial advisors worth to pursue? This study will examine if there are ESG concerns in mutual fund investments that are unserved by the financial advisors and the effects of nudging on investors' mutual fund choice.

This dissertation is organised into five chapters. The present chapter (chapter one) introduces the background and rationale of the study. It also covers the research questions, research objectives and the significance of the study. Chapter two presents the literature on SRIs, behavioural finance and nudging. The SRI market in Hong Kong is also discussed. Chapter three introduces the research methodology, the choice-based conjoint analysis and the research process. Chapter four discusses and interprets the data collected from the advisors and investors. Finally, chapter five concludes by discussing the key insights of this study, along with a discussion of the limitations of the study and recommendations for future research.

Chapter 2: Literature Review

This study explores the possible ways to promote SRMFs and involves literature that crosses several disciplines. Against this backdrop, this chapter is divided into four sections. The first section reports research pertaining to retail investor behaviour in different markets. The second section describes the market development of SRIs as well as their financial performance. The financial theories relating to SRIs are also discussed, which offers an explanation of its proliferation. The third section describes the SRI market in Hong Kong. The last section reviews the concepts and theories that form the foundation of this study. Figure 2.1 summarises the structure of Chapter 2.

Figure 2.1 Summary of Literature Review



2.1 Prior research on SRI investor behaviour

Investor behaviour combines finance and psychology to understand and elucidate investors decisions (Baker and Ricciardi, 2014, Nagy and Obenberger. 1994). This section will cover investor behaviour literature relating to SRIs.

2.1.1 Investor Behaviour Research in Hong Kong and other countries

While the retail SRMFs are relatively new, three studies have been conducted in Hong Kong (Chow, 2015; Sjöström, 2009; Park, 2009). SRI investors' behaviour and attitudes are not covered in any of the three papers, however. All three studies are mainly exploratory and discuss the underdevelopment of the market and impediments to growth. Chow (2015), for example, recorded a more recent market environment of SRI retail funds and retirement funds and explained the slow adoption of ESG strategy, particularly in the retirement fund market. Some of the information in these three studies will be discussed in Section 2.3. No SRI investor behaviour and attitude is explored in these papers.

Though not directly related to SRI, Fung (2000) examined the behaviour of mutual fund investors in Hong Kong. The results indicated that Hong Kong investors selected mutual funds mainly based on criteria such as fund company's name, performance track record and investor privacy. These selection criteria will be referenced in Section 3.2, and we will see whether ESG sustainability concern can be another meaningful criterion for investors in Hong Kong. No consideration of ESG factors has been studied here. The study also found that Hong Kong buyers sought recommendations from financial advisors and purchased mutual funds mainly through banks. This substantiates our position on promoting SRIs through financial advisors and financial planners. Unfortunately, no more up-to-date and comparable research has since been carried out in Hong Kong.

The regulatory body, some fund houses and banks have conducted surveys on investors in Hong Kong. According to a survey of over 1,000 respondents commissioned by the Hong Kong Investment Funds Association (HKIFA) in late 2018, 16% of respondents from Hong Kong expressed an interest in ESG products (HKIFA, 2019). The SRI market potential for mainland Chinese investors was even higher with 38% of respondents from the other three nearby mainland cities expressed the investment interest. Given that there is no empirically proven underperformance of SRMF (discussed in Section 2.2.3) and the increasing convenience for investors from Guangdong cities to come to Hong Kong to invest, there should be latent demand for SRI products in Hong Kong. In the study, 50% of respondents saw no link between ESG consideration and investment return, 26% did not know the relationship and another 8% thought the inclusion of ESG consideration drove down their investment return. It seems that Investors did not buy SRIs because they did not know the investments' content and financial performance. Lack of knowledge and salience of SRIs seems to be the primary reason for investors' lack of interest in SRIs. Similar to the surveys conducted elsewhere, younger and more affluent investors expressed more interest in SRI: 19% of respondents aged between 18 and 29 exhibited interest

in investing in SRI, compared to only 10% of respondents aged between 45 and 55. Meanwhile, 29% of survey respondents with a monthly income of HK$100,000 or above were interested, while nobody with an income of HK$10,000 or less demonstrated any interest.

Hong Kong investors also took part in a global survey conducted by Schroders (2019). It was found that although most respondents (53%) in Hong Kong claimed to value the ESG concept, only 13% turned it into action and invested sustainably. These figures were slightly lower than the global peer investors. The two most important factors that would encourage the respondents to increase the asset allocation to SRMFs are first, the presence of a sustainability rating granted by an independent company and second, easy-to-understand information can be provided by financial advisors. The lack of information and salience of SRIs were again an issue. Prior to the study, a survey on global investors also found that Hong Kong retail investors generally displayed sustainable behaviour, but they lagged behind their global and Asia counterparts to turn it into investment action (Asia Asset Management, 2017).

Another official large-scale survey echoes this view. The Investor and Financial Education Council (IFEC) (a subsidiary of the Securities and Futures Commission (SFC)) conducted a survey with more than 1,000 retail investors in Hong Kong in 2019. One of the sections was specifically related to green finance and SRMFs (IFEC, 2019b). Although only about half of the respondents had heard about green finance and only 1.1% had ever bought retail SRMFs, 7% of investors expressed interest in investing in them in the coming twelve months, with a considerably larger interest level (14%) among investors under the age of 30. Among those interested, 93% opined that SRMFs carried good growth potential, 70% believed they could provide better investment return, and 43% wanted to support sustainable development. Of the respondents who expressed no interest in SRMFs, 76% were unfamiliar with the products, 28% found the product choice too limited, and 20% assumed they would deliver an inferior return. Despite the latent interest indicated by the above figures, how to bridge awareness with action and increase the salience of SRMF among retail investors remain an issue, given the vast amount of available investment instruments in Hong Kong.

Some other surveys concerning retail mutual fund investors, including a few examining SRI investors, can be located, but their targets are predominantly affluent private banking clients or institutional investors. Some relevant background market information is summarised in Section 2.3 and Section 3, which introduce the SRI market background in Hong Kong and select the attributes of conjoint analysis, respectively. Some fund houses may have in-house surveys for SRI investors, but they are proprietary studies that are not available to the public.

Outside Hong Kong, there has been increased research on SRI and SRI investor behaviour over the last three decades, the same period when SRI has come into the mainstream. Most SRI literature, especially from earlier times, focuses on the financial performance of SRIs. Capelle-Blancard and Monjon (2012) conducted a simple content analysis of 673 archived journal articles and 540,000 documents on web pages and in newspapers. They found that 54.2% and 72.5% of all the SRI research from 1982-1999 and 2000-2009, respectively, were related to the performance. Hoepner and McMillan (2009) also found that 20 of the 50 most-cited papers studying SRI analysed financial performance; they also concluded that SRI studies were also under-theorised. Capelle-Blancard and Monjon (2012) characterised the predominance of performance analysis as "looking for the keys under the lamppost" syndrome. They claimed that researchers follow trends, use similar methodologies, and obtain similar results because the academic literature on SRI is primarily data-driven, like many financial studies. According to these authors, the performance issue is not immaterial, but prior research seems to over-emphasise this area.

After the turn of the century, a strand of research shed light on SRI investors' behaviour and why investors chose SRI. Many investigated investment motives (Apostolakis, G. et al., 2018; Mervelskemper, 2018; Riedl and Smeets, 2017; Hafenstein and Bassen, 2016; Wins and Zwergel, 2016; Døskeland and Pedersen, 2015; Hood, Nofsinger and Varma, 2014; Adam and Shauki, 2014; Berry and Junkus, 2013; Berry and Yeung, 2013; Pérez-Gladish, Benson and Faff, 2012; Renneboog, Ter Host and Zhang, 2011; Nilsson, 2009; Glac, 2009; Hofmann, Penz and Kirchler, 2009; Nilsson, 2008; Hofmann, Hoelzl and Kirchler, 2008; Bollen, 2007; Beal, Goyen and Phillips, 2005). The results are mixed, and answers are neither exhaustive nor exclusive, but SRI investors generally consider three benefits: financial return, psychic return, and social return. The relative importance of these three motives can differ between investors.

In other words, financial return is not the sole motive in SRI, but its priority varies in different circumstances in different studies. In addition to financial return, psychic return (emotional feeling, self-image, social signalling effect) seems important (Mervelskemper, 2018; Hafenstein and Bassen, 2016; Hood, Nofsinger and Varma, 2014; Bénabou and Tirole, 2010; Beal, Goyen and Phillips, 2005). Non-financial returns are similar to expressive benefits and emotional benefits, in Meir Statman‘s terms, when discussing behavioural finance (Statman, 2017). Meanwhile, the social return of promoting social change appears to be a weaker force (Hafenstein and Bassen, 2016; Glac, 2009; Berry and Junkus, 2013), probably because of the indirect linkage between SRI and corporate social responsibility (Beal, Goyen and Phillips, 2005). This analysis is consistent with Beal, Goyen and Phillips' (2005) consolidation of earlier SRI literature. The result also aligns with Riedl and Smeets (2017), the only researchers we found who combined survey data, experimental data, and actual investment data, therefore directly linking purchase

intention with investment behaviour. Riedl and Smeets (2017) found that, although financial motives are not the predominant factor in SRI investment, social motives have no relationship with SRI fund holding percentages.

MacKenzie and Lewis (1999), using qualitative analysis, discovered investors commonly adopted a portfolio approach and allocated a small portion of their money to SRI to accommodate conscience but avoided rigorous sustainable and responsible thinking. Berry and Junkus (2013) surveyed 5,391 individual investors in the US and identified that both investors and non-investors in SRI agreed that environmental and sustainability concerns were the most important factors in ESG consideration; however, investors in SRI were more inclined to reward companies with overall positive social performance (in a holistic sense) rather than penalise underperforming companies via exclusion, as many SRMFs are now doing. Investors' perceptions are not synchronised with what SRMF vendors provide (Berry and Junkus, 2013).

The theory of planned behaviour (TPB) of Ajzen (1991) is commonly adopted as a theoretical model to explain sustainable and responsible investment behaviour and explanatory power varies (Adam and Shauki, 2014; Hofmann, Penz and Kirchler, 2009; Apostolakis, G. et al., 2018; Hofmann, Hoelzl and Kirchler, 2008). According to the theory, sustainable and responsible investment behaviour is attributable to sustainable and responsible investment intention, which is attributable to three factors: attitude toward SRI, subjective norms, and perceived behavioural control. Subjective norms are social pressures, while perceived behavioural control concerns whether a behaviour is easy to implement. Hofmann, Hoelzl and Kirchler (2008) compared TPB using multiple attribute utility theory (MAUT) and an issue-contingent model of ethical decision-making (Jones, 1991) in a simulated shares trading experiment. They found that socially responsible consideration affected trading decisions and was better captured by MAUT. Nilsson (2009) developed a model and found that, in addition to financial perceptions, pro-social attitude, and perceived consumer effectiveness, subjective confidence in ethical behaviour efficacy also affected people's capital allocation to SRMF. Apostolakis, G. et al. (2018) replaced the perceived behavioural control factors in TPB with perceived consumer effectiveness, resulting in better explanatory power to predict respondents' intention to include SRI into their pension schemes.

Wins and Zwergel (2015) reviewed 20 survey-based SRI investor behaviour searches from 1991 to 2015 to investigate investor perceptions of SRIs' potential risks and returns. Although different from the empirical evidence discussed later, the review found that SRI investors generally expect lower returns and less risk. Scholars also seem to agree about SRI investors' demographic characteristics, saying they are predominantly female, younger, and well educated (Lapanan, 2018; Hood, Nofsinger and Varma, 2014; Beal, Goyen and Phillips, 2005; Schueth, 2003; Pérez-Gladish, Benson and Faff, 2012, Nilsson, 2008). Bollen (2007) and Renneboog, Ter Horst, and

Zhang (2011) confirmed that SRMF investors in the US and worldwide exhibit a larger response to prior positive returns and a smaller response to prior negative returns than conventional fund investors, demonstrating a higher sense of loyalty. However, despite these initial commonalities, it should be stressed that the empirical evidence is very diverse and far from conclusive. The vast difference in the survey population, the data collection and analysis processes, and even the definition of SRI investors make direct comparison challenging. For instance, although Riedl and Smeets (2017) combined different data sources, the actual investment transaction data are all collected from one single brokerage firm. All in all, our understanding of SRI investor behaviour remains limited. This makes seeking to understand SRI investor behaviour a valuable effort.

There is also a strand of studies advocating that financial advisors are essential to provide information and educate SRI investors (Pilaj, 2017; Hafenstein and Bassen, 2016; Wins and Zwergel, 2016; Adam and Shauki, 2014; Nilsson, J., Nordvall, and Isberg, 2010; Statman, 2008b). Investment decisions and financial products are complex, and advisors are key to supporting investors, especially those with less financial knowledge, like retail investors (Nilsson, J., Nordvall, and Isberg, 2010). The communication and consultation difficulties intensify for SRI because of its sustainability dimension and social responsibility orientation; financial advisors, as focal persons, bear an even higher burden when guiding SRI purchase (Schrader, 2006). Further highlighting the importance of the advisor role is investors' tendency to misjudge the financial performance of SRI (Hafenstein and Bassen, 2016; Wins and Zwergel, 2016). Schrader (2006) pointed out through mystery shoppers that advisors in German were not knowledgeable about SRI and did not take the initiative to promote it. Heinemann, K. et al. (2018), employing qualitative analysis, concluded that advisors in Germany were not proactive enough to explore investors' potential demand for SRMF. Given the issue's importance, it is surprising that these were the only two studies we found that investigated the advisor-investor relationship in SRI. We do not have empirical evidence, for instance, indicating whether advisors understand or underestimate their clients' potential demand for SRI.

To summarise, local SRI markets and related investor behaviour are largely unexplored research areas. Some published surveys have demonstrated certain latent interests among local retail investors but whether and how to promote SRI to investors remains largely unanswered. There is a stream of studies about investor behaviour outside Hong Kong, but there is still a dearth of consensus about investment motives and a surprising lack of knowledge about the advisor-client relationship in SRI.

Next, we study the market history and characteristics of SRI. In particular, we examine whether investors' perceptions of SRI conform to the empirical evidence.

2.2 Sustainable and Responsible Investment

2.2.1 SRI definition, sustainable development and evolution of SRI market

SRI is defined by the European Sustainable Investment Forum (EUROSIF) as:

> A long-term oriented investment approach which integrates ESG factors in the research, analysis and selection process of securities within an investment portfolio. It combines fundamental analysis and engagement with an evaluation of Environmental, Social and Governance (ESG) factors in order to better capture long term returns for investors, and to benefit society by influencing the behaviour of companies (EUROSIF, 2018, p.12).

This definition, however, only represents a consensus view at the European level (EUROSIF, 2018). A globally accepted definition or nomenclature has not yet been established (EUROSIF, 2018; Heinemann et al., 2018; Scholtens, 2014), and there are ambiguity and overlap in the terms used for SRI (Talan and Sharma, 2019; Höchstädter and Scheck, 2015). SRI is also a generic term covering sustainable, responsible, socially responsible, ethical, environmental, or social investments (GSIA, 2016, p.26), and SRI is often used interchangeably with these terms. Notably, the term SRI itself used to mean socially responsible investment, but is currently cited as sustainable and responsible investment by market practitioners (Lapanan, 2018).

Per the above definition, SRI relates to strategies and practices used for portfolio construction and security selection or held by an investment fund (CFA Society of the UK, 2019). The only exception is corporate engagement strategy, which will be discussed in the next subsection. Morningstar (2020a) also defines SRI in its latest categorization framework as investment funds emphasizing 'sustainability, impact, or ESG factors in its fund prospectus or other fund regulatory filings'. Indeed, in the market, SRI mainly refers to SRMFs managed by professional asset managers for institutional investors such as pension funds and insurers or sold in the retail market through banks and other investment channels (GSIA, 2016).

In terms of investment channels and financial instruments, SRI includes SRMFs actively managed by fund companies, SRMFs passively managed as index-linked exchange trades funds, green bonds (a type of sustainability themed investing and/or impact/community investing, discussed later), and social impact bonds (a type of impact/community investing, discussed later) (CFA Society of the UK, 2019). In Hong Kong, both green bonds and social impact bonds are predominantly products for the institutional investor market and not sold as the retail investment products because of the high minimum investment amount. Per our research objective, our

emphasis is on SRMFs sold to retail investors.

Earlier SRI definitions usually grouped areas of concern under social, environmental and ethical (SEE) categories (Adam and Shauki, 2014). Currently, the factors under consideration are more commonly summarised as ESG, as stated in the above definition, and the approach is sometimes called ESG investing (Statman, 2007). In this regard, ESG investing recognizes that the generation of long-term sustainable return is dependent on stable, well-functioning and well-governed social, environmental and economic systems. There is a two-way relationship between social and environmental and governance issues and investment: such issues may impact the risk, volatility and long-term return of securities as well as the markets, and investments can have both a positive and negative impact on society and the environment (CFA Society of the UK, 2019). In its broadest sense, from an investment process perspective, SRI considers non-financial criteria (Scholtens, 2014), and SRI investors express their willingness to promote ethical issues and sustainable development through SRI (Pilaj, 2017).

The concept of SRI is also connected to the concepts of corporate sustainability. A broader but related business concept, corporate social responsibility, describes a company's commitment to conducting business ethically (CFA Society of the UK, 2019). SRI recognizes the benefits of a company effectively managing its sustainability and considers it in the context of portfolio construction.

Through content analysis, Capelle-Blancard and Monjon (2012) found that newspapers and academics predominantly used the term ethical investment before 2000, after which it was gradually replaced by socially responsible investment (Sparkes and Cowton, 2004) and finally by sustainable and responsible investments. These semantic shifts reflect changes in investment focus and are best understood through the evolution of SRI and the proliferation of the sustainable development concept as discussed below.

2.2.2 Evolution of SRI

SRI evolves from ethical investing, which has ancient roots in Jewish, Islamic, and Christian traditions (Baker et al., 2012; Renneboog, Ter Horst, and Zhang, 2008). Judaism has rules to utilise money ethically. According to Koranic teachings, Islamic investors must refrain from investing in pork production, alcohol, pornography, gambling, and financial instruments that promise a fixed interest rate or invest in high-leverage companies. Similar restrictions among Christian sects include the Quakers' rejection of benefiting from the weapon and slave trades in North America and the Methodist Church's refusal to invest in companies associated with alcohol,

gambling and tobacco production during the 1920s in the UK (Baker et al., 2012). Christian investors played a pioneering role in the development of SRI (Sullivan and Mackenzie, 2006). Their religious beliefs made it natural for them to focus on negative exclusion screening to avoid investing in 'sin industry' stocks (e.g., tobacco, alcohol, gambling) in early forms of modern SRI like the Pioneer Fund. The Pioneer Fund, the world's first SRI mutual fund, was launched in 1928 in the US and incorporated negative screening criteria in the late 1940s. Although its parent company, Pioneer Investment, has been acquired by an asset management firm, the fund is still operating (Lapanan, 2018).

Whilst early SRI was based on religious principles, modern SRI also considers investors' social convictions (Krosinsky and Robins, 2008) in response to such major geopolitical issues as the Vietnam War, Apartheid, serious environmental crises, substantial governance failures, and concerns about executive pay (Sullivan and Mackenzie, 2006). For instance, the PAX Fund, set up in 1971 in the US, excluded investment in companies that benefited from the Vietnam War in addition to traditional tobacco and gambling industries. Apartheid in South Africa also stimulated the SRI market. After the country declared a state of emergency in 1985, anti-South Africa activists successfully pressured state pension funds in New York and pension funds in California to divest their holdings in companies with South African operations (Krosinsky and Robins, 2008). A further spur to the market growth came from environmental crises such as the Three Mile Island Incident in 1979, the nuclear power plant explosion at Chernobyl in 1986, and the disastrous Exxon Valdez oil spill near Alaska in 1989 (Krosinsky and Robins, 2008). These and other incidents heightened investors' concerns about the environment, social justice, and corporate social responsibility. As a result, the term ethical investing was gradually replaced by socially responsible investment. This transition reflected practitioners' reluctance to place too much emphasis on mere religious and moral considerations (Capelle-Blancard and Monjon, 2012).

It appears that what brought SRI to the mainstream investment market was the development of the sustainability movement and government pension policies.

The sustainability movement seeks to counterbalance the moribund economic system that originated in the eighteenth century due to the industrial revolution, growth-based economics, and the mass consumption of products (termed the consumer revolution) (Caradonna, 2014). The UN gathered an international group of environmental experts, politicians, and civil servants to establish the World Commission on Environment and Development, also known as the Brundtland Commission, to promulgate the movement. In 1987, the commission issued a report titled *Our Common Future* (also called the Brundtland Report) to promote the concept of sustainable development, which the Commission defined as 'development that meets the needs

of the present without compromising the ability of future generations to meet their own needs' in the report (Brundtland Report,1987). However, there are different interpretations of the term and at least 80 different current definitions (Williams and Millington, 2004). In 2015, the UN enumerated 17 sustainable development goals (SDGs) in its 2030 Agenda for Sustainable Development – one overarching goal and 16 environmental, economic, and societal goals – to promote the movement (Schoenmaker and Schramade, 2019).

Of all sustainable development goals and challenges, the most pressing issue to handle is climate damage. Among the many analyses produced, the Stern Review on the Economics of Climate Change was particularly significant to the investment industry (Stern, 2007). At the request of the British government, economist Nicholas Stern led a major review of the economics of climate change to understand the nature of the economic challenges and how they could be met. The review concluded that climate change is the largest and widest-ranging market failure ever seen and presented unique economic challenges; it also noted that the costs of inaction far outweighed those of early action. According to the report, without action, the overall costs of climate change would be equivalent to losing at least 5% of global gross domestic product (GDP) each year, now and forever. Including a wider range of risks and impacts could increase this to 20% of GDP or more. The report significantly influenced how investors understood climate change in the UK and globally (CFA Society of the UK, 2019).

Furthermore, the Paris Agreement, negotiated by 196 states and countries in 2015, targeted limiting the increase in global temperature to less than 2°C above pre-industrial levels. Subsequently, in October 2018, the Intergovernmental Panel on Climate Change (IPCC) published a special report that stressed replacing the previously-emphasised 2°C scenario with a tightened 1.5°C scenario and urged accelerating the global transition towards a more sustainable and low-carbon society. Otherwise, we are only a few decades away from catastrophic climate change (IPCC, 2018, EUROSIF, 2018). Failures in climate change mitigation and adaptation were ranked among the top five most likely global risks in the World Economic Forum's Global Risks Reports 2019 (World Economic Forum, 2019). Even achieving the 2°C scenario would cost around US$ 90 trillion globally from 2015 to 2030, as projected by the Global Commission on the Economy and Climate (Our Hong Kong Foundation, 2017). The transition to a low-carbon economy provides ample financing opportunities for the growth of SRI. In addition to climate change, the Earth's ecological ceiling has been exceeded in such areas as biosphere loss, land-system changes, biochemical flow, and ocean acidification (Steffen et al., 2015).

With the popularisation of the sustainability movement, SRI evolved to promote the concepts of sustainable development (Schoenmaker and Schramade, 2019; Caradonna, 2014). In 1988, the UK company Merlin set up the Merlin International Green Fund, which revolutionised SRI funds

by formally establishing sustainable development as a profit potential strategy and adopting a best-in-class approach rather than pure negative exclusion (Sullivan and Mackenzie, 2006). Since then, retail SRI funds have grown substantially in the UK, the US, and elsewhere in the Western world.

The movement's influence can be seen by name changes, such as the UK Social Investment Forum becoming UK Sustainable Investment and Finance (UK SIF) in 2009 and the US Social Investment Forum calling itself the Forum for Sustainable and Responsible Investment in 2011 (Capelle-Blancard and Monjon, 2012). Substantial growth was also signified by the explosive growth in the number of advocates of UN-supported Principles of Responsible Investment (PRI), launched in 2006. By the end of 2018, the number of signatories had reached 1,951 and assets under management were up to US81.7 trillion. Signatories, mostly fund houses and other institutional investors, must commit to incorporating sustainability issues into their investment processes. This period also witnessed SRI's gradual semantic shift from socially responsible investment to sustainable and responsible investment (Capelle-Blancard and Monjon, 2012).

Operationally, SRI promotes sustainable development by addressing ESG concerns. The term ESG was coined in a 2004 UN report called *Who Cares Wins* (CFA Society of the UK, 2019). In the report, UN Secretary-General Kofi Annan, under the authority of the UN Global Compact and with the support of the International Finance Corporation, invited top management from large financial institutions to integrate ESG into capital markets (UN Global Compact, 2004). The term ESG signify "an effort to group all the issues that fall under the umbrella of sustainability" (Khan, Serafeim, and Yoon, 2016); the classification is promoted by global sustainability reporting standards like Global Reporting Initiative and UN Global Compact (Hafenstein and Bassen, 2016). There is no undisputed classification of ESG criteria in SRI definitions (Schoenmaker and Schramade, 2019). It is also prevalent for each investor or business to view each of the three factors as a number of different concerns that may, more or less, overlap. Some typical but non-exclusive examples of the three factors are shown in Table 2.1. Studies specifying the scope of ESG factors include Wins and Zwergel (2016), Hafenstein and Bassen (2016), Berry and Junkus (2013), Statman (2007) and Statman (2005).

Table 2.1 Examples of ESG issues

Environmental	Social	Governance
➢ **climate change**	➢ human rights	➢ anti-bribery and corruption
➢ **biodiversity**	➢ child labour	➢ executive remuneration
➢ **resource depletion**	➢ employee relations	➢ corporate risk management
➢ **waste**	➢ product safety and liability	➢ succession planning
➢ **pollution**	➢ supply chain management	➢ political lobbying and donations
➢ **deforestation**		

Source: PRI, 2020; FSDC, 2018a

A critical trigger for SRI market development was the 2008 financial crisis (Revelli, 2017; Puaschunder, 2018; Apostolakis, 2018; Bilbao-Terol, A. et al., 2016; Ng, 2017, Pilaj, 2015), which led the World Bank president to herald a "new era of responsibility" (Puaschunder, 2018; Bilbao-Terol, A. et al., 2016). Financial experts, policymakers, and academics consider SRI a potential solution to financial turmoil or, at least, an instrument to prevent future crises (Bilbao-Terol, A. et al., 2016). Particularly, when the 2008 crisis demonstrated that decisions made by corporations like financial institutions could have a profound effect on national or even global economies, the corporate governance perspective of the ESG system was increasingly emphasised (Bilbao-Terol, A. et al., 2016). SRI is considered a way to re-establish trust in financial markets and ensure financial market stability (Puaschunder, 2018), particularly when the corporate governance side of the ESG categories is emphasised.

Government regulatory initiatives further triggered SRI's journey to the mainstream. In 2000, the UK government became the first to require pension funds to disclose the extent of social, environmental and ethical consideration in their securities selection process (Renneboog, Ter Horst, and Zhang, 2008); the governments of Australia, France, Belgian, Germany, and Sweden and Italy soon followed suit (Renneboog, Ter Horst, and Zhang, 2008). As a result, pension funds like the California Public Employees' Retirement System, the world's largest pension fund, started to engage with companies to actively strengthen their socially responsible behaviour. After the turn of the century, pension funds and insurance companies overtook church investors and charities as the primary SRI market players (Sullivan and Mackenzie, 2006).

It is also worth mentioning that the People's Bank of China and six state ministries and government agencies issued a guideline to establish a green financial system including green securities, lending, insurance, and environmental rights trading markets in 2016 (China Daily, 2016). This guideline signifies that government policies are no longer only reactive to issues and crises but proactively promote an integrated and interconnected financial system (PRI, 2019).

Currently, 48 of the world's 50 largest economies have some form of policy designed to help investors consider sustainability risks, opportunities or outcomes. Across these economies, there have been over 730 hard and soft law policy revisions that encourage or require investors to consider long-term value drivers, including ESG factors (CFA Society of the UK, 2019).

SRI market growth was further fueled by the emergence of ethical research organisations like EIRIS and KLD, the establishment of national and regional social investment forums (SIFs) across Europe, North America, and the Asia-Pacific, and the launch of indices like the DS400 Index, Dow Jones Sustainability Index, and FTSE4Good Index (Krosinsky and Robins, 2008). The use of indices is critical for the investment industry, as they are performance benchmarks and the basis for passive investment funds such as ETFs. There are currently over 1,000 ESG indices, providing a strong foundation for developing passive exchange-traded funds (ETFs) (CFA Society of the UK, 2019). The offering of indices and passive ETFs with ESG integration started 20 years after that of active investments. The growth is also attributable to investors' higher education level (Baker et al., 2012).

Currently, SRI is a significant segment of the mainstream investment market (Asia Asset Management, 2017; Eurosif, 2016; Ng, 2017). The GSIA's 2016 Global Sustainable Investment Review, using a broad definition of SRI, reported that US$22.9 trillion (26% of all global professionally-managed assets) were managed under various SRI strategies in 2016, an increase of 25 per cent from 2014 (GSIA, 2018). The 2018 Review only covers the five major markets (Europe, United States, Japan, Canada, and Australia/New Zealand), where total SRI assets climbed to US$30.7 trillion at the start of 2018, a 34% growth from 2016 (GSIA, 2019). At the start of 2018, more than half of all assets in Europe and Australia/New Zealand were managed based on one or more of the seven SRI strategies (discussed later), compared to over one-third in Canada and one-fifth in the US (GSIA, 2019). Europe has long been the leading SRI market (Scholtens, 2014), accounting for €12.3 trillion (46%) of the five markets' total SRI assets at the start of 2018 (GSIA, 2019).

GSIA categorized SRI into seven strategies in 2012. While the classification has become a popular standard (GSIA, 2019), there is still no global standard classification in the industry, and SRI types overlap and evolve over time (CFA Society of the UK, 2019). The seven strategies are listed in Table 2.2.

Table 2.2 SRI Strategies

Strategy	Form
1. Negative/exclusion screening	- excluding sectors or companies by ESG criteria
2. Positive/best-in-class screening	- investing in sectors or companies based on superior ESG performance relative to industry peers
3. ESG integration	- incorporating ESG criteria into traditional financial analysis process
4. Norm-based investing	- screening by international norms
5. Sustainability themed investing	- investment in themes or assets related to sustainability
6. Impact/community investing	- targeted investments aimed at solving social or environmental issues, and including community investing, where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose
7. Corporate engagement/shareholder action	- exercising shareholder influence for corporate behaviour

Source: GSIA, 2019; Scholtens, 2014

The first six categories are all fund portfolio construction strategies, although impact/community investing is more concerned with direct investment (CFA Society of the UK, 2019). The last category, corporate engagement/shareholder action, mostly involves how an investor, usually a large institutional investor, can encourage and influence a corporation's behaviour on ESG matters, either through dialogue with corporate officers or votes at a shareholder assembly in the case of equity. Therefore, it can be seen as complementary to the other approaches to SRI to succeed in getting companies to act more responsibly (CFA Society of the UK, 2019). In terms of strategy popularity, negative/exclusion screening is most commonly espoused, followed by ESG integration and corporate engagement/shareholder action. (GSIA, 2019). In terms of investor mix, institutional investors still dominate the market, but the number of retail investors is growing. In the four major markets of Europe, United States, Japan, and Canada, retail investors took 25% of the total market in 2018, up 5% from 2016, whilst the remainder was taken up by institutional investors, such as pension funds and insurers. The retail investment sector mainly consists of professionally-managed retail SRMFs and they mainly implement strategies

for screening (negative or positive) and ESG integration (Statman, 2007; GSIA, 2019). The number of SRMFs has grown substantially. Morningstar, a research firm that offers an investment platform for retail investors, reports that 2018 saw an increase over two years of 60% in European SRMFs launches. Moreover, the rate at which funds were repositioning to adopt ESG strategies was also very high, with double the amount in 2018 over the previous year (Morningstar, 2020b). In terms of asset allocation, 51% of SRMFs are equity funds, 36% are bond funds, and 3% are real estate funds (GSIA, 2019).

A review of the evolution of SRI and its semantic changes enunciates the difficulties in defining SRI specifically. Ethical, social responsibility, and sustainable development concerns are intertwined in its development, and the specific factors emphasised in the analysis can be discretionary. For instance, it is arguable whether financing a nuclear power plant reduces carbon emissions or promotes a dangerous power source (Pilaj, 2017), not to mention many other related social and ethical debates. Finally, SRI's definition can only be "in the eye of the beholder" (Pilaj, 2017). To sum up, first, SRI addresses investors' concerns about "people" and "the planet" in addition to financial returns (Scholtens, 2014). Second, the heterogeneity of SRI criteria makes wide-varying investment motives understandable. Third, in this study we have adopted the EUROSIF definition, which is the dominant consensus.

2.2.3 SRI financial performance

There has been intense research interest in the financial performance of SRI in recent decades. Most studies showed that SRI demonstrated at least no underperformance compared to conventional funds (Morningstar, 2016; Friede, Busch and Bassen, 2015; Humphrey and Tan, 2014; Rathner, 2013; UNEP FI, 2007; Bauer, Derwall and Otten, 2007; Bauer, Otten and Rad, 2006; Statman, 2000; Hamilton, Jo and Statman, 1993). As early as 1993, Hamilton, Jo, and Statman found that the returns of 17 SRI mutual funds were not statistically different from those of conventional mutual funds (Hamilton, Jo, and Statman, 1993). Later studies used an even larger sample size. The United Nations Environment Programme Financial Initiative (UNEP FI) Asset Management Working Group issued a report summarising 20 academic studies on the performance of mutual funds, stocks, and companies and found no performance penalty for considering ESG factors in the portfolio management process (UNEP, 2007). Rathner (2013) conducted a meta-analysis of 25 studies with more than 500 observations and concluded that 75% did not find any significant performance difference between SRI and conventional funds; underperformance and outperformance were found to the same degree. Friede, Busch, and Bassen (2015) published a broad historical study that extracted all available primary and secondary data from around 2,200 academic review studies and conducted a second-order meta-

analysis. They found that 73% reported neutral or mixed fund performance, reinforcing Rathner's conclusion: at worse, SRMF investors can expect to lose nothing compared to conventional fund investors (Friede, Busch and Bassen, 2015).

To conclude, despite differences in individual studies' risk factor modelling, multicollinearity of risk factors, research period, and geography coverage issues, it can be generalised that SRI mutual funds do not underperform conventional mutual funds. That is, coupled with other performance results (discussed later), SRIs can be instruments for "doing well and doing good" (Hamilton, Jo and Statman, 1993). This builds a strong premise for SRI to be promoted in financial hubs like Hong Kong.

That is also important for asset managers' fiduciary duty concerns. Asset managers have a fiduciary duty to act in the best interests of the investors, their beneficiaries, but those interests are defined in financial terms. The misconception that ESG factors are financially immaterial or even detrimental was considered a barrier to considering ESG factors within investments for many years (CFA Society of the UK, 2019). The above empirical results increasingly showed that considering ESG factors in portfolio selection did not breach managers' fiduciary duty to the investor (Scholtens, 2015; Statman, 2008) and could help address different investors' non-financial concerns.

In its 2005 report, *A Legal Framework for the Integration of Environmental, Social and Governance Issues into Institutional Investment*, known as the Freshfields Report, the UNEP FI concluded that, from a legal perspective, "integrating ESG considerations into an investment analysis so as to more reliably predict financial performance is clearly permissible and is arguably required in all jurisdictions (UNEP FI, 2005, p.13)". PRI (2019) published a report named *Fiduciary Duty in the 21st Century-Final Report* and argued that institutional investors have fiduciary duties to incorporate ESG factors into investment analysis and decision-making processes, consistent with their horizon of the obligation. Failing to encompass ESG factors is failing one's fiduciary duty and increasingly vulnerable to legal challenge (PRI, 2019). A study of 300 global institutional investors found that 46% of respondents cited the need to fulfil their fiduciary duty and regulations as the key drivers of their adopting ESG principles (Pensions & Investments, 2019).

Meanwhile, it is puzzling that many studies found that negative/exclusion screening strategies lead to negative relative performance, and the sin stocks usually avoided by this strategy yield higher risk-adjusted returns (Trinks and Scholtens, 2017; Hong and Kacperczyk, 2009; Fabozzi, Ma and Oliphant, 2008; Adler and Kritzman, 2008). Using the Monte Carlo Simulation, Adler and Kritzman (2008) randomly selected stocks from four major indices and compared their

returns to those of randomly selected stocks from restricted samples. They showed that the cost of socially responsible investing could be substantial under different scenarios. Fabozzi, Ma and Oliphant (2008) tested 267 stocks from six sin industries in 21 markets (including Hong Kong) across a 37-year sample period. They found that sin stocks earned a risk-adjusted return in all industries and nearly all countries. Trinks and Scholtens (2017) expanded the sample size and found similar results. Hong and Kacperczyk (2009) attributed similar results to the neglected-effect caused by norm-constrained investors. These studies suggest that the reason some pre-2000 studies found SRI strategies negatively affect fund performance (Viviers and Eccles, 2012) is that earlier ethical funds predominantly employed negative exclusion strategies.

Recent studies suggest the reason SRMFs show no underperformance while the sin stocks they usually shun demonstrate superior performance is that ESG active inclusion strategies are based on ESG-based security selection criteria, including best-in-class and ESG integration, and tend to have a positive relative performance (Statman and Glushkov, 2016; Verheyden and Deiner, 2016; De and Clayman, 2015; Fulton, Kahn and Sharples, 2012; Derwall, Koedijk and Ter Horst, 2011, Statman and Glushkov, 2009, Derwall et al., 2005). Derwall et al. (2005) found that high-ranked portfolios (in terms of eco-efficiency scores) in the US earned significantly higher returns than low-ranked portfolios from 1995-2003. Fulton, Kahn and Sharples (2012) reviewed over 100 studies and concluded that firms with high ESG ratings have a lower cost of capital for debt and equity; 89% of the reviewed studies showed firms with higher ESG ratings exhibited market-based outperformance. De and Clayman (2015) found that, on average, stocks with higher returns had a higher ESG rating, and that maximum return stocks always came from the higher ESG profile group. A significant negative correlation between ESG rating and market volatility was further discovered (De and Clayman, 2015). Also, De and Clayman created restricted portfolios by deleting the lowest ESG performance companies from the investible universe, then creating a randomly generated portfolio. In 75% of the cases, they found higher average returns and maximum returns, leading the authors to opine that active fund managers should use ESG information, especially the methodology of eliminating the worst ESG stocks.

More importantly, Statman and Glushkov (2009) studied the effect of negative/exclusion screening and positive/best-in-class screening at the same time. Using a Capital Asset Pricing Model, Fama and French's (1992) three-factor model, and Carhart's (1997) four-factor model, they found that negative/exclusion screening that shunned six industries (tobacco, alcohol, gambling, firearms, military, and nuclear operations) reported significant negative return whilst positive/best-in-class screening reported positive excess return for the period 1992 to 2007. The same two authors modified Carhart's (1997) four-factor model by adding two risk factors from another study (Statman and Glushkov, 2016). The first was positive/best-in-class screening top-bottom factor, comprising the difference between stock returns for top- and bottom-third

companies, based on five ESG standard criteria: employee relations, community relations, environmental protection, diversity, and products. The second factor was the negative/exclusion screening accepted-shunned factor, comprising the difference between the stock returns of companies commonly accepted by socially responsible investors to those of the companies they commonly shun – i.e., companies in the same six sin industries listed in their 2009 study. The best-in-class screening factor could contribute annual excess return of up to 0.55%, while exclusion factor contributed to annual excess returns of up to negative 0.36% from 1992 to 2012. Since SRI mutual funds usually adopt both positive/best-in-class strategies (which have a positive effect) and negative/exclusion strategies (which have a negative effect), the overall SRI performance was not significantly different from that of conventional funds (Statman and Glushkov, 2009). Proper evaluation of SRI mutual fund performance requires separate consideration of the effects of these two factors (Statman and Glushkov, 2016).

All in all, if SRI investors want to do both well and good, they should probably implement best-in-class strategy and ESG integration. Still, if they think conforming to social convictions and environmental concerns requires excluding industries they abhor, like tobacco, they should stick to negative/exclusion strategies. But is there any explanation or theory for why SRI would financially perform like this? Many earlier studies note that SRI was under-theorised (Capelle-Blancard and Monjon 2012; Hoepner and McMillan, 2009), but more recent research offers some preliminary elucidation.

2.2.4 SRI theories

SRI is an exception to traditional financial theories, namely modern portfolio theory (MPT) (Markowitz, 1952), efficient market hypothesis (EMH) (Fama, 1970) and capital asset pricing model (CAPM) (Sharpe, 1964). MPT postulates that investors should consider only three variables: expected return, standard deviation, and correlation. On condition that personal ethical value and sustainable development concerns do not affect the three variables, they should have no place in investment decision (Beal, Goyen and Phillips, 2005). Any action to shun certain securities would limit the risk diversification potential and affect the mean-variance optimisation. This is in line with Adler and Kritzman (2008) we discussed earlier, who held that the random deletion of securities from a portfolio in a Monte Carlo simulation bears a substantial cost. Even if an SRI analysis strategy is not a random process, EMH (Fama, 1970) assumes that market prices, on average, fully and correctly reflect all information. SRI investors cannot earn a higher return without bearing higher risk. Moreover, SRI investment strategies inevitably incur an additional administrative cost for securities selection and portfolio monitoring, further dragging down performance (Apostolakis et al., 2018). The empirical evidence that SRMF, in general,

performs on par with conventional funds and positive/best-in-class screening strategy enhances risk-adjusted return, therefore, seems perplexing. Taken to extremes, as Milton Friedman argued, firms should not consider social responsibility in the first place, as the sole purpose of business in a free-enterprise system is to maximise profit (Friedman, 1970).

Over the years, a growing body of knowledge has acknowledged that actual investor behaviour deviates from that postulated by normative standard financial theories (Beal, Goyen and Phillips, 2005). Not only are the investors not homogenous towards mean-variance optimisation (as assumed by CAPM), they also behave far different from the full rationality assumed by standard finance theories (Beal, Goyen and Phillips, 2005). In particular, behavioural finance systematically advances and applies psychology to explain the cognitive biases observed in financial behaviour (Singh, 2010). Our study uses behaviourial finance as a theoretical framework to explain investment behaviour in SRI and promote market development. Behavioural finance will be discussed in the next section; this section focuses on the theoretical justification for SRI financial performance and the theoretical grounds underlying SRI's existence.

Initially, research attributed SRMF and conventional funds' similar performance to sustainable and socially responsible characteristics being unrelated to the risk and return trade-off of stocks, and therefore not reflected in their price (Hamilton, Jo and Statman, 1993). But this cannot explain why sin stocks and positive/best-in-class screening both outperform. Derwall, Koedijk, and Ter Horst (2011) provided a framework that complements the literature and sheds light on empirical observations. They posited, through a review of the literature, that the SRI market is not homogeneous but dominated by two categories of players—value-driven and profit-driven investors. Value-driven investors' major investment motive is non-pecuniary social responsibility and ethical value. They use negative/exclusion screening to shun stocks, in line with Renneboog, Ter Horst and Zhang's (2011) contention that money flows to SRMF, by primarily adopting negative screens, are less sensitive to prior financial loss. This is also consistent with SRI's religious and social movement origins (Derwall, Koedijk, and Ter Horst, 2011). The limitations of the investment universe jeopardise the performance of the screened portfolio, as shown by Adler and Kritzman's (2008) Monte Carlo simulation test.

Meanwhile, the sin and controversial stocks shunned have a narrower investor base, limiting their risk diversification potential. According to Merton's (1987) incomplete information model, some unsystematic or idiosyncratic risks that can be diversified away and are not priced in the equilibrium capital market model become crucial because of constrained risk-sharing. One of the potential risks is litigation risk, for which Hong and Kacperczyk (2009) believed higher sin stock

returns might compensate. Based on risk and return trade-off logic, a higher risk would drive down the price of shunned stocks and result in higher returns.

Alternatively, the excess return from sin and controversial stocks can also be explained by their having higher a future cash flow that is underestimated and unexpected by the market. The outperformance of sin stocks is, in this case, similar to the outperformance of socially responsible stocks selected by positive/best-in-class screening. Hong and Kacperczyk (2009), however, confounded this alternative hypothesis. They examined the return of sin stocks on earning announcement dates and found no abnormal outperformance. Therefore, a more convincing explanation is that sin stocks bear a higher return because they have a higher risk. Fama and French (2007) specified that favouring social responsibility is similar to asset tastes. Based on the effect of disagreement of distribution of asset payoff and refined modelling, Fama and French concluded that the asset pricing effect based on asset tastes would be long-lasting.

On the other front, Derwall, Koedijk, and Ter Horst (2011) also postulated that stocks of firms that scored high in sustainable development and social responsibility would have excess risk-adjusted returns for two reasons. First, sustainable and socially responsible practices would lead to price-sensitive value, as presented in the previous section. Second, this value is underestimated by the market and only reflected as an abnormal excess return. This failure to reflect price-sensitive SRI value can be attributable to the profit's multidimensional and intangible nature, accounting systems' inability to reflect the intangible features of SRI value, and greater market insensitivity to positive SRI news than negative relevant news (Derwall, Koedijk, and Ter Horst, 2011). However, the market efficiency argument expects the market to eventually recognise the value of sustainability and social responsibility information and reflect it in price, causing excess returns to diminish over time. Derwall, Koedijk, and Ter Horst tested this claim by constructing a stock portfolio high in employee-relations scores and empirically obtaining evidence. They found a statistically significant annual abnormal return of 5.6% for 1992 to 2002, but a statistically insignificant abnormal return from 2003 till 2008.

Derwall, Koedijk and Ter Horst's results are not without limitation. They reviewed the literature and found that outperformance was mainly found in the employee-relations aspect of ESG factors and sometimes in environmental and community factors, but not in others. Also, the outperformance evidence has been limited to the US market and has not been found in other studies of non-US markets (Derwall, Koedijk and Ter Horst, 2011). Additionally, the latest research suggests the growing availability of more sophisticated sustainability information can refine ESG analysis and prolong the abnormal return disappearance process. For instance, the Sustainability Accounting Standards Board, a relatively new organization, distinguished which sustainability issues are perceived by investors as material for different industries and published

reporting standards for US-listed companies. Khan, Serafeim, and Yoon (2016) employed these classifications and found that companies that performed well on material sustainability issues earned a significant abnormal return of 2.2% to 3.9% for the period 1991 to 2013, while companies that performed well in immaterial matters did not achieve any statistically significant return.

Evidence of the postulation that SRI contains positive value-sensitive information is essential to developing theories on SRI financial performance. Good performance in sustainability practices would lead to higher stock values. SRI would thus again fit the "doing well while doing good" hypothesis, i.e., it benefits investors and rewards companies for applying sustainable development policies. Scholtens (2006) discussed the transmission mechanism between finance and sustainability through public shareholder, credit, and private equity channels, opining that SRI investors need sizeable shares to influence firms' behaviour. Heinkel, Kraus and Zechner (2001) found, using negative/exclusion screening and their assumptions, that at least 25% of shareholders are required to increase the cost of capital to firms and force a polluting firm to reform. However, given the currently substantial and still-developing SRI market, the investor population may be approaching critical mass (GSIA, 2018; GSIA, 2019). There is, however, no survey that justifies these theoretical grounds with the up-to-date market situation.

In all, fewer studies investigate SRI's theoretical aspects than investigate its performance. Still, the financial performance of and preliminary theoretical basis for SRI are decent foundations for promoting its market development.

2.3 The Hong Kong SRI market

Hong Kong is one of three major global financial centres (MacAskill, 2018) and one of the largest global fund management centres (FSDC, 2018b). Hong Kong is rated third in the Global Financial Center Index and has consistently been ranked as one of the top financial hubs in Asia (Hong Kong Trade Development Council, 2019). The assets and wealth management industry in Hong Kong oversaw close to US$3.1 trillion in assets in 2018, 62% of which originated from foreign investors (FSDC, 2019). The city has 1,987 authorised mutual funds and unit trusts at the end of June 2020 (SFC, 2020c), and gross retail fund sales amounted to US$89.9 billion in 2019 (KPMG, 2020). Hong Kong investors' general investment knowledge is high. The OECD International Network on Financial Education interviewed over 125,000 adults from 26 countries and economies in a global financial literacy study; Hong Kong respondents recorded the highest financial literacy scores among global investors (IFEC, 2020a).

Despite Hong Kong's renown as a leading international financial centre, its SRMF market is

underdeveloped. The first SRMF offered, the UBS Eco-Performance Funds, dates to 1997 (Park, 2009). In 2002, Taifook Investment Management established the first local SRMF, originally called the Taifook SRI Asia Fund and later renamed the Haitong Socially Responsible Investment Asia Fund (Park, 2009, Chow, 2015). An earlier preliminary study indicates that the local public still seems 'unaware of or uninterested in' SRMF (Chow, 2015). According to the GSIA study, professionally managed assets under ESG related strategies in Hong Kong amount to only US$13.55 billion, or 0.06% of global assets (GSIA, 2017). There have been warnings that Hong Kong lags its global peers in SRI market development, especially in the retail investor market (Asia Asset Management, 2017). According to Chow (2015), the underdevelopment of the SRMF market segment in the Mandatory Provident Fund (MPF) system, the government defined contribution pension plan, can be attributed to three factors: the limited availability of SRMFs, a home region investment bias favouring the Hong Kong and China markets, and the common classification of SRMFs as higher risk. The Financial Services Development Council (FSDC), a high-level government advisor on the financial industry, in a November 2018 report called *ESG strategy for Hong Kong*, specified that Hong Kong is currently running the risk of being left behind in the fledgling global SRI market, a race it cannot afford to lose (FSDC, 2018a). The report also recommended several government initiatives to promote SRI market development through different regulators' concerted efforts.

Hong Kong's government is not ignorant of the issue and has demonstrated some determination to develop the market. However, more focus has been given to green bonds, which are "conventional bonds with a clearly disclosed 'green' use of proceeds" (Hong Kong Exchanges & Clearing Limited, 2018) that have copious potential to finance green projects in Hong Kong, Mainland China, and countries in the one-belt-one-road region (Loh, 2019). Because of massive popular demand, Mainland China has become the world's second-largest green bond market by cumulative issuance volume (Rowley, 2020). Still, mainland issuers could obtain lower funding costs and more flexibility in timing and issue size in Hong Kong (Ng, 2019a). Hong Kong issued green bonds worth US$2.3 billion in 2018, 4.6 times the issuance value in 2017 (IFEC, 2019a). In her 2017 policy address, the Hong Kong Special Administrative Region's chief executive announced the government had arranged to issue green bonds worth up to HK$100 billion, an enormous maximum limit (Chief Executive's 2017 Policy Address, 2017). The Secretary for Financial Services and the Treasury of Hong Kong also pledged, in 2018, to develop Hong Kong into a regional green finance hub (Hong Kong eyes 100b fund, 2018). The first batch of government green bonds, worth US$1billion, was issued in early 2019 (Ng, 2019b). However, green bonds are seldom sold to retail investors.

Some development has also been observed in other domains. The Hong Kong Stock Exchange has, since 2017, required all Hong Kong-listed companies to issue sustainability reports on a

"comply-or-explain" basis (Loh, 2019). The Hong Kong Monetary Authority (HKMA), the investment manager for the Hong Kong foreign reserve Exchange Fund, announced in August 2019 that it would consider ESG factors when recruiting and monitoring its external managers (HKMA, 2019b).

There have been comments that in addition to concrete developments in the green bond market, the government should encourage a change in investment behaviour to direct capital to green investment (Loh, 2019). Some measures have been implemented on the demand side. In the SRMF market, the Securities and Futures Commission (SFC), the Hong Kong stock market regulator, established a Strategic Framework for Green Finance in September 2018. It issued guidelines in April 2019 for enhanced disclosure of SFC-authorised green or ESG funds (SFC, 2019b) to enhance fund management companies' disclosures about their incorporation of ESG factors in their investment selection criteria and enrich disclosure comparability and transparency. In early 2020, following the enhanced disclosure, the SFC established a central database of SFC-authorised green or ESG funds on its website to heighten the visibility of SRMF. The centralised database lists only 29 SFC-authorised green or ESG funds in Hong Kong (SFC, 2020b), an insignificant number when compared to the HKSAR's 1,987 SFC-authorised mutual funds and unit trusts (SFC, 2020c). Among the 434 constituent funds in the MPF system (SFC, 2020c), only one has an explicit ESG focus and is included in the SFC centralized database (SFC, 2020b). Similarly, among the 140 listed exchange-traded funds (ETF) in Hong Kong (SFC, 2020c), only one is ESG-related (SFC, 2020b). Within the 30 authorised funds in the central database, 20 mutual funds were incorporated or had adopted their current investment policy within the past three years. Whilst this signifies that the growing importance of sustainable development ideology and ESG consideration is driving the increased supply of SRMFs in Hong Kong, the relatively short history of most SRMFs shows a rather constrained historical performance that could somewhat limit their attractiveness to retail investors.

As discussed in Section 2.1.1, the market is underdeveloped in both supply and demand (Leung, 2017). According to the HKIFA's late 2018 survey, only 1% of retail investors in Hong Kong, Guangzhou, Shenzhen, and Zhuhai invested in ESG products (HKIFA, 2019); this figure was endorsed later by a 2019 IFEC survey (IFEC, 2019b). Of the roughly 1,000 retail investors in Hong Kong's MPF pension system, only 1.1% invested in retail SRMFs and 1.9% in SRMFs.

2.4 Behavioural Finance and Investor Behaviour

2.4.1 Behavioural Finance and Behavioural Economics

In Section 2.2.4, we mentioned that SRI is an exception to traditional financial theories, and that

behavioural finance could, to some extent, explain the deviation from normative traditional financial theories. This study applies a theoretical framework of behavioural finance and behavioural economics to understand SRI investors' behaviour and promote investors' acceptance of SRI. Behavioural finance, in its simplest sense, can be defined as the application of psychology to finance (Pompian, 2012). More specifically, behavioural finance is a part of behavioural economics and a new subfield of finance that, with the assistance of behavioural sciences theories, especially psychology and sociology, aims to understand the implications of psychological decision-making for systematic financial markets and improve financial decision-making (Deshmukh and Joseph, 2016; Frankfurter and Mcgoun, 2002; Thaler, 1999b). Many heuristics and cognitive biases in financial decision-making have been identified by studies on behavioural finance, some of which will be discussed later. Regarding this study, we can view behavioural finance as a discipline that combines finance, psychology, and other social sciences to explain people's behaviour when they invest. Before the development of behavioural finance, behavioural economics was a new branch of economics that studied what happens in markets when some participants exhibit "human limitations and complications" (Mullainathan and Thaler, 2000). So far, six behavioural economists—George Akerlof, Robert Fogel, Daniel Kahneman, Elinor Ostrom, Robert Shiller, and Richard Thaler—have been awarded Nobel Prizes in Economics, accounting for 6% of all Nobel Laureate economists (Shiller, 2017). It should be noticed that the term behavioural economics is sometimes used interchangeably with behavioural science. The pioneer of this field, Nobel Laureate Daniel Kahneman, opined that the subject predominantly adopts findings from psychology and the social sciences but not economics; thus, behavioural science is a more suitable term (Kahneman, 2013).

Behavioural finance was gradually established as a subfield of standard finance, based on Daniel Kahneman and Amo Tversky's Prospect Theory (Kahneman and Tversky, 1979). When behavioural finance studies continue to stagger, the subject has become a popular topic (Pompian, 2012). Behavioural finance established its position based on Kuhn's (1962) famous scientific revolution structure process. A paradigm shift occurs when a new theoretical framework of knowledge can explain adequate and important anomalies in an adequately simple way (Bloomfield, 2010); behavioural finance provides modest but important deviations from traditional finance theories. Whilst traditional finance remains canonical, behavioural finance has entered the mainstream. Behavioural finance also described investment behaviour at an individual level more accurately than standard finance. As an alternative to traditional finance theories, some researchers have adopted behavioural finance to explain the behaviour of SRI investors, as detailed later.

Traditional finance defends against the challenge of behavioural finance through the epistemological position of instrumental positivism (Bloomfield, 2010), which holds that as long

as an economic theory has predictive power for the association of its variables, it is not important whether its assumptions are correct. In other words, as long as the market behaves as if all decision-makers are Homo Economicus, the external reality or realism of this patently impractical assumption is irrelevant. Traditional finance criticises that behavioural finance focuses too much on individual irrationality and becomes simply a collection of anomalies stories. Behavioural finance is also difficult to apply to the whole market because market learning opportunities and competitive forces correct irrationality (Singh, 2010). From a market-level perspective, traditional finance is still attractive (Baker and Nofsinger, 2010). Despite advances in behavioural finance, Olsen (1998) and Lo (2005) argued that no cohesive theory in this field exists that explains all cognitive biases. It seems difficult to develop a consistent theory that captures all the complex emotions experienced by human beings in financial decision-making. Behavioural finance attempts to apply psychological principles to improve financial decision-making but does not reject traditional finance's sound economic concepts and principles.

The differences in traditional and behavioural finance are reflected in their research methodologies. Traditional finance uses economic modelling and econometric analysis of data archives, whilst behavioural finance research, following psychological research traditions, uses more circumstantial experiments to vary respondents' behaviours (Baker and Nofsinger, 2010). Traditional economics is widely considered a non-experimental science that hinges on observing real-world field data, because other important factors cannot be controlled easily (Kahneman and Smith, 2002). Experimentalists claimed that, much as small-scale laboratory results can inform the development of natural science theories, microeconomic behaviour in laboratory results can promote the development of economic theories (Kahneman and Smith, 2002). Experimental economics can isolate the psychological traits and heuristics researchers want to test but are harder to generalise in real market settings (Baker and Nofsinger, 2010). The experimental economics approach was popular in studies during the 1960s, influenced by Noble Laureate Vernon Smith. The current study adopts behavioural finance's laboratory experiment methodology, as detailed in the methodology section.

It can be observed from early behavioural finance studies that the field focuses on individual investors' cognitive biases; the cognitive biases relevant to our study are highlighted below.

2.4.2 Limited attention and salience effect

The Homo Economicus assumption of standard finance assumes that investors consider all available information in making decisions. However, psychological literature suggested that this

is not true (Lim and Teoh, 2010), as humans have limited attention. A dramatic experiment in this regard is The Invisible Gorilla (Simons and Chabris, 1999). In the experiment, subjects watch a ninety-second movie in which six people pass a basketball to each other; experimenters instruct the viewers to count the number of passes made by the white-shirted team. The task draws the viewers' attention and is completely absorbing. In the middle of the movie, an actor wearing a gorilla suit enters the scene and stays for nine seconds, thumping his chest, before leaving. Thousands of people have seen the video, about half of whom do not notice the gorilla. Those who do not are initially certain the gorilla is not there. Kahneman (2012, p.24) commented that "we can be blind to the obvious, and we are also blind to our blindness". We 'pay' a limited budget of attention we can allocate to activities, and if we try to exceed our budget, we will fail (Kahneman, 2012). Because of our limited attention, we risk missing much that happens in the background (and even the foreground) of our lives (Sunstein, 2013).

The amount of information relevant to the purchase of financial instruments is vast, and the time and cognitive efforts required to deal with that information are demanding. Therefore, because of investors' limited attention, some information is ignored. Odean (1999) proposed that individual investors choose between numerous stock purchase candidates by limiting their search to stocks that have recently drawn their attention. They make their final purchase decision based on personal preference, but only from those attention-drawing stocks. Some information is reflected in stock prices only when it is more salient. Huberman and Regev (2001) found that the stock price of the biotechnology firm EntreMed surged 331% on 3 May 1998 based on a New York Times news report about the company's research breakthrough on a new cancer-curing drug. The stock price increase remained over 165% for the next three weeks and even spread to the whole biotechnology sector. But the striking fact is that the news was not fresh; the content had been published in a journal and the popular press, even the New York Times itself, more than five months earlier, but influenced stock prices in May because it was now more salient.

We are only influenced by what we notice, and there is a lot we do not notice; thus, there is a lot that does not influence us. A simple step toward fostering important goals is to make certain product features more salient to people (Sunstein, 2013). The salience effect is common and pervasive in psychology (Fiske and Taylor, 1991). When some information is more salient, people can receive and handle certain information more easily. Information is more salient if it stands out from or contrasts other stimuli (Lim and Teoh, 2010). In addition, information that is 'adjacent in a sensory, temporal or spatial way' is more salient (Nisbett and Ross, 1980, p.45). Barber and Odean (2008) found that stocks are more salient when they are in the news, experiencing abnormally high trading volume, and have extreme one-day returns. Limited attention and salience effect also inform other cognitive biases, such as mental accounting (Lim and Teoh, 2010), as discussed in Section 2.4.4.

We have discussed limited attention and salience effect here because the researcher speculated that SRI is not popular because SRMFs are not salient enough in the financial markets (Pilaj, 2017). The nudge policy interventions in Section 2.5.3 also consider the salience effect. Whether increasing SRMFs' salience can raise their acceptance remains unanswered in the literature (Pilaj, 2017) and becomes one of our research objectives. We will investigate whether salience nudging can increase the importance of the ESG factor in our mutual fund selection experiment.

2.4.3 Framing effect

A decision frame is one's conception of the acts, outcomes, and contingencies associated with a particular choice; the framing effect is the systemic reversal of preference by variations in the framing of acts, contingencies, or outcomes (Tversky and Kahneman, 1981). Simply put, it means that how a question is asked has a sizable impact on the answer given or decision made (Nofsinger, 2018). A famous example is the Asian Disease Problem, an experiment in which respondents must choose between two treatment programmes designed to combat a disease predicted to kill some people. The first experiment is framed as a decision between a positive option certain to save some lives and a risky option with a higher probability of saving no lives; most people preferred the certainty option. The second experiment is framed as a decision between a negative option certain to cause some death and a risky option with a lower probability that no one will die; most people favour the risky option in this case. However, the two experiments are essentially the same in substance, with the only difference being the emphasis is on lives saved or lives lost (Tversky and Kahneman, 1981; Kahneman and Tversky, 1983). Even if an event occurs without an emotional context, like a human living or dying, the framing effect still applies. Tversky and Kahneman (1974) conducted a simple, intuitive numerical estimation exercise: when estimating the product of 8 x 7 x 6 x 5 x 4 x 3 x 2 x 1, subjects' answers were much larger than when estimating the result of 1 x 2 x 3 x 4 x 5 x 6 x 7 x 8 because, in the first case, the respondents were anchored to the larger initial number in the descending order sequence, but the smaller initial number in the ascending order sequence. However, the framing effect violates the principle of invariance of rational choice theory (Kahneman and Tversky, 1984). Invariance means that the preference order between subjects should not depend on how they are described. Different experiments have demonstrated that when investors frame an investment decision within a risk and return context, they usually get a positive stock performance risk and return relationship correct (Nofsinger, 2018). However, when they use a different frame, they fail to conform to the relationship and instead think of whether the stocks are better or worse, based on other comparative criteria.

The framing effect is important for our study because it has been adopted in a couple of studies of SRI nudging. For instance, Døskeland and Pedersen (2015) found that when the SRMFs offered on an online banking platform in Norway were presented or framed to emphasise their performance perspective, 21% more investors bought them than if they were promoted by emphasising their moral benefits. Glac (2009) also found different frames had significantly different effects on SRMF purchases in the US. Our survey experiments will also try nudging measures that emphasise different decision frames.

2.4.4 Mental accounting and behavioural portfolio theory

Investors with limited attention tend to frame decisions in narrower contexts and ignore broader considerations (Tversky and Kahneman, 1981). Mental accounting is one such example. Mental accounting is defined as how people code, categorise, and evaluate events by grouping their assets into non-interchangeable, or non-fungible, internal mental buckets (Richard Thaler, 1980, 1985, 1990, 1999). In terms of investment, investors place each investment decision into a separate accounting-like profit and loss file and periodically try to balance the perceived gain and loss. This conforms to Prospect Theory, in that individuals value gain and loss more than risk and return (Kahneman and Tversky, 1979). Individuals need to record, summarise, analyse, and report transaction results and other financial events; mental accounting is a heuristic by which they track their money and keep spending under control. Mental accounting is a framing bias because, under different categorisations, people will attach different value and risk tolerance to each account, ignore the principle of fungibility of money. When people exhibit mental accounting bias, they focus on 'balancing' individual mental accounts and ignore the correlations between them, ignoring the diversification effect in Markowitz's (1952) classical MPT.

The mental accounting perception adopted by investors can explain why financial planners and financial advisors always consider clients' investment goals when advising on investment portfolio-building. Goal-based financial planning is not justified by standard finance, as the MPT framework only considers a portfolio's overall risk and return and downplays the importance of achieving investors' individual investment goals. Because clients allocate their wealth to different mental accounts with different investment goals and have different risk attitudes towards each goal, financial planners are justified in linking investment strategy selection to different life goals. In other words, financial planners leverage mental accounting to help build long-term stable portfolios that benefit their clients (Nofsinger, 2011; Nevins, 2004). Mental accounting is also important to sustainable and responsible investments. Statman (2017) specifies that sustainability and social responsibility are common investment goals and mental accounts for investors.

Mental accounting also leads to individual investors' more established investment portfolio-building mentality. Shefrin and Statman (2000) proposed the Behavioural Portfolio Theory (BPT) framework, which indicates that investment portfolios are built as pyramids with different asset layers, each corresponding to a particular mental account. At the top of the pyramid are risky assets; at the bottom are risk-free assets. Risky assets satisfy clients' desire for potential dramatic wealth growth, whilst risk-free assets satisfy their need for security or a minimum living standard to avoid poverty. The results of this multiple-account structure are that average investors possess numerous discrete sub-portfolios. The structure of the overall portfolio is designated and altered by investment goals and associated mental accounts. Investors ignore the interactions among mental accounts and correlations among investment assets.

However, behavioural portfolios are not considered efficient from an MPT perspective. The issue of violating the mean-variance optimisation principle and portfolio suboptimality under BPT is finally resolved. MPT founder Harry Markowitz and three other well-known scholars published two papers (Das et al., 2010; Das et al., 2011) that combined MPT mean-variance criterion and BPT into a new framework called Mental Accounting Portfolio Theory, which features goal-based financial planning. It shows that if sub-portfolios are optimised using the risk definition adopted by BPT, then all sub-portfolios are also optimised using the mean-variance criterion, and the aggregate portfolio will be mean-variance efficient. In other words, an academic imprimatur was obtained that goal-based financial planning practice is theoretically justified (Pompian, 2012). More importantly, SRI fits well into the mental accounting portfolio theory model as a typical mental account (Bilbao-Terol, A. et al., 2016; Statman, 2017). All in all, BPT provides a comprehensive theoretical base for SRI as a potential mental account layer to be included in individual investment portfolios.

2.4.5 Dual system theory

Many of the biases highlighted in behavioural finance may be traceable to the evolutionary biology of the human brain (Baker and Nofsinger, 2010). Psychologists and neuroscientists have been converging on a description of the brain's functioning and the distinction of two cognitive systems (Thaler and Sunstein, 2008): Intuition System 1 and Reasoning System 2 (Kahneman, 2003). System 1 operations are fast, automatic, effortless, involuntary, associative, and habitual; they can procrastinate and be impulsive, be excessively fearful and too complacent, and can be complexity averse. System 2 operations are slower, serial, effortful, deductive, deliberately controlled, rule-governed, and can handle complex computation (Kahneman, 2003, 2011;

Sunstein, 2013). Kahneman (2011) discussed, in his groundbreaking book *Thinking, fast and slow*, how these two systems' operations relate to many cognitive biases. System 1 runs automatically, and System 2 is normally only partly active, and the division of labour between the two can optimise performance and minimise human efforts in most circumstances. However, System 1 is subject to systematic biases in specified circumstances but cannot be shut down. Meanwhile, System 2 requires attention and is disrupted when attention is drawn away (Kahneman, 2011). The salience effect is thus ubiquitous because salient information is likely to have a much larger impact on people's System 1 behaviour than statistical or abstract information.

With attention being a scarce resource, salient stimulus prompts immediate responses from the automatic and rapid System 1, while statistical and abstract information cannot (Sunstein, 2013). Furthermore, different frames will bring different associations to System 1, resulting in logically equivalent events like treatment programmes in Asian disease problems triggering different choices. Reframing is effortful, and System 2 is normally lazy. Without obvious reason, most people passively accept decision problems as they are framed. Choices are not reality-bound because System 1 is not reality-bound but rather frame-bound (Kahneman, 2011).

The above biases and many others suggest a gap between decision-makers' intentions and behaviours (Pilaj, 2017). Even if a decision-maker is well notified and assured of the benefits of a specific transaction, this may not be reflected in their behaviour due to cognitive biases and bounded rationality. By the same token, SRI's low popularity can be due to of investors' rational choices, but may also be due to investors' limited attention and narrow framing; increasing the salience of SRI and reframing the investment option to suit investors' potential mental account may help to overcome this.

With the accumulation of studies and more understanding of investor behaviour, Meir Statman, another behavioural finance pioneer, announced, in his 2017 book *Finance for Normal People: How Investors and Markets Behave*, that the field has entered behavioural finance generation 2.0 (Statman, 2017). He considered that people's desire for high returns and low risks is just their utilitarian want for wealth, which is the only want admitted by standard finance and even behavioural finance 1.0. However, people also want expressive and emotional benefits from their investments. Utilitarian benefits concern financial products' and services' contributions to people and their wealth. Expressive benefits answer the question, "What does something say about me to others and me?" while emotional benefits answer the question, "How does something make me feel?" (Statman, 2017). These types of benefits were discussed more in consumption markets earlier. However, according to Statman, it is often hard to divide the creation of wealth from its consumption and separate utilitarian costs and benefits from expressive and emotional ones (Statman, 2017). Consequently, there is no clear difference between making money in the

investment market and spending money in the consumption market; people consider all three kinds of benefits in both circumstances (Rusoff, 2016).

As defined by standard finance, rational people are only concerned about the utilitarian benefits of their investments. However, as defined by behavioural finance 2.0, normal people are also concerned about expressive and emotional benefits, such as social responsibility and social status. The acknowledgement that people's normal wants include all three kinds of benefits can guide people's direction to use shortcuts and avoid errors. Some behaviours previously considered irrational errors by standard finance and behavioural finance 1.0 stem from people's various normal wants. More importantly, through financial products and services, people try to satisfy various wants such as reflecting their value, raising their families and children, and enjoying games and winning.

If the latest behavioural finance admits that investors have normal wants beyond simply maximising wealth, SRI investors' motives become more reasonable. SRI investors have demands for all utilitarian, expressive, or emotional benefits. For instance, SRMF expresses environmental responsibility and makes people feel virtuous, representing the latter two benefits. SRMF investors are concerned about their investments' expressive and emotional benefits, but most also care about utilitarian benefits (Statman, 2011). Behavioural finance 2.0 provides a more cohesive structure that includes many different newly-developed theories to explain investment market behaviour, in response to criticism that the theories in this field are not unified (Statman, 2018). One of the foundation blocks of behavioural finance theories is the behavioural portfolio theory, in which people's portfolio wants are more than risk and return but also have wants, like social responsibility and social status (Statman, 2017; Statman, 2018).

Behavioural finance 2.0 also reiterates the importance of financial advisors probing their clients' various wants (Statman, 2018). Some clients would like to combine wealth-pursuit wants with wants to be true to environmental protection and social responsibility. Sustainability and social responsibility are implicitly admitted as investors' wants here. This provides another solid foundation for our research; specifically, that, contrary to standard finance traditions, financial advisors should explore clients' SRI interests.

2.5 Behaviourally Informed Policy and Nudging

2.5.1 Behaviourally-informed policies

Traditional policymaking rests on the same Homo Economicus assumption of standard economics and finance (Lehner, Mont and Heiskanen, 2016; Pilaj, 2017). Against this backdrop, if the decision is irrational or even against the decision-makers' preferences, the problem lies in a deficiency of information or erroneous incentives (Lehner, Mont and Heiskanen, 2016). Therefore, policy tools usually involve providing information, education, and advice and, in more extreme situations, imposing laws, regulations, subsidies, or fines (Reisch and Zhao, 2017). In Daniel Kahneman's terminology, these policies focus on reflective System 2. The decision-makers' discretion should be respected and paternalism not favoured, as long as no harm is imposed on other people, because decision-makers know what is in their best interests. The former belief is John Stuart Mill's Harm Principle (Mill, 1901; Sunstein, 2014); the latter claim, coined as an epistemic argument, is considered the strongest point in favour of the Harm Principle (Sunstein, 2014). Evidence of behavioural biases and heuristics strategies are considered non-systematic and irrelevant to policymaking (Reisch and Zhao, 2017). However, the provision of information does not necessarily lead to behavioural change (Abrahamse, W. et al., 2005), and attempts to guide behaviour are too often ineffective and inefficient because they run against the grain of human nature (Reisch and Zhao, 2017). In the consumer market, in contrast, the consumer choice imperative leads to hyperchoice, which can be psychologically draining (Mick, Broniarczyk and Haidt, 2004) and, in complex financial market decisions like pension schemes and health insurance, to increased use of mental shortcuts and rules of thumb (Reisch and Zhao, 2017).

The financial landscape changed radically during the first decade of the new century (Kahneman, 2013). Studies from behavioural finance and, to a broader extent, behavioural science have established a more systemic body of knowledge that explains the deviation from the rational agent theory and can be consolidated into conceptual frameworks that assist policy formulation (Camerer, 1999; Camerer et al., 2003; Thaler and Sunstein, 2003, 2008). An approach called Nudging was made popular by Richard Thaler and Cass Sunstein in their canonical 2008 book *Nudge: Improving decisions about health, wealth and happiness*. Drawing on topics in cognitive bias literature like limited attention, salience effect, narrow framing, and mental accounting, we understand that people make choices that are not in their interests, even when the stakes are high (Sunstein, 2013a). Examples include excessive drinking, obesity, junk food consumption, and failure to save for retirement; all bad decisions individuals should not have made if they had focused their full attention and acquired complete information, unlimited cognitive abilities, and

complete self-control (Thaler and Sunstein, 2008). Because of cognitive limitations, there may be a gap between investors' intentions and behaviours, resulting in a situation called behavioural market failure (Collins, 2012; Sunstein, 2013; Madrin, 2014). In Kahneman's terminology, many decisions are made automatically, almost unthinkingly, by following System 1, which is sometimes subject to errors despite often helping us avoid incapacitation due to overthinking.

It is, therefore, irresponsible to base policy solely on rational agent theory (Pilaj, 2017). If individuals are cognitive misers, then supposedly irrelevant heuristics strategies are crucial to decision-making, and a small change in decision context can make a big difference (Halpern, 2016). The decision context—the informational and physical background against which decisions are made—is called choice architecture (Thaler and Sunstein, 2008; Sunstein, 2013b). Whether we are aware of it or not, choice architecture is ubiquitous and inevitable and can be decisive in choosing our direction (Sunstein, 2014). For example, a double-sided, rather than single-sided, default printer setting saves more paper than a moral appeal message; background choices like this are unavoidable in many situations (Egebark and Ekström, 2016). A nudge is defined in Thaler and Sunstein's framework as

> "any aspect of choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic consequences. To count as a mere nudge, the intervention must be easy and cheap to avoid" (Thaler and Sunstein, 2008, p. 6).

As the authors only defined nudging in their book by two exclusion conditions, Pelle G. Hansen (2016) summarized their illustration and examples, several studies by Cass Sunstein, and other scholarly discussions and refined the definition as follows:

> "A nudge is a function of any attempt at influencing people's judgment, choice or behaviour in a predictable way, that is (1) made possible because of cognitive boundaries, biases, routines, and habits in individual and social decision-making posing barriers for people to perform rationally in their own self-declared interests, and which (2) works by making use of those boundaries, biases, routines, and habits as integral parts of such attempts. Thus a nudge amongst other things works independently of: (i) forbidding or adding any rationally relevant choice options, (ii) changing incentives, whether regarded in terms of time, trouble, social sanctions, economic and so forth, or (iii) the provision of factual information and rational argumentation."

In short, the essence of nudging is that knowledge of behavioural economics can be used to redesign the choice architecture so that investors' automatic System 1 response is more likely to align with their deliberative preferences.

In the policymaking domain, nudging is the application of a broader conceptual framework called libertarian paternalism. Before Thaler and Sunstein published their best-selling book *Nudge* in 2008, they had already presented a study named *Libertarian paternalism*, in 2003 (Thaler and Sunstein, 2003). Libertarian paternalism, on its face an oxymoron, means, on the one hand, adopting paternalism to authorise private and public institutions to inspire affected parties' behavioural change in ways that will benefit those parties (measured by as objectively as possible), while, on the other hand, favouring libertarianism because it is liberty-preserving (Thaler and Sunstein, 2003). In the book, *Nudge,* the definition of libertarian paternalism is further refined as "influence choices in a way that will make chooser better off, as judged by themselves" (Thaler and Sunstein, 2008, p.5); that is, nudging and libertarian paternalism are two distinct concepts (Hansen, 2016; Hansen and Jesperson, 2013). The two concepts overlap if nudging is intended to steer nudged agents from making choices they would not make "if they had complete information, unlimited cognitive abilities, and no lack of willpower" (Thaler and Sunstein, 2003, p.175). If nudging is, in practice, just a marketing tool intended to manipulate people's purchase decisions, it does not fall under libertarian paternalism (Hansen, 2016). The book *Nudge* then mainly quotes circumstances and instances in which applying nudging policies is within the spirit of libertarian paternalism. Liberal paternalism ideology with nudging measures opened a novel perspective on policymaking considerations and became increasingly popular, especially in public policy realms (Cai, 2019; Lehner, Mont and Heiskanen, 2016).

Market failure in traditional economics includes negative externalities, which are harms imposed on others that require government intervention. If our behaviour can be against our intentions and interests, behavioural market failure also includes harms imposed on ourselves, called negative internalities (Oliver, 2017). Because of negative internalities, behavioural market failure rejects the Harm Principle's epistemic argument that we act in our best interests. When choice architecture is unavoidable, behavioural market failure, similar to traditional market failure, justifies a particular form of paternalism (Sunstein, 2014). Sunstein called this the first law of behaviourally-informed regulation, saying, 'In the face of behavioural market failure, nudges are usually the best response, at least when there is no harm to others' (Sunstein, 2014, p.17). The only exception to this law is that regulatory responses should be based on an analysis of the impact on people's welfare, which requires an evaluation of both costs and benefits (Sunstein, 2014).

We can summarise the features of the nudging approach from Thaler and Sunstein's book and related studies (Thaler and Sunstein, 2008; Sunstein, 2013a; Sunstein, 2013b Sunstein, 2014, Oliver, 2017). In particular, Adam Oliver gave a detailed account of the general features of the nudging approach (Oliver, 2017). First, since most cognitive biases are related to System 1's automaticity and errors in achieving one's ends, nudging does not intend to change judgement

based on deliberate decisions through, for example, persuasion or education programmes. The approach is intended to reduce restraining force rather than increase driving force (Kahneman, 2013). Nudging is, therefore, a type of means paternalism, but not ends paternalism (Sunstein, 2014). Second, as the objective is to enhance the welfare of the individuals being nudged rather than limit the costs imposed on others, the focus, as highlighted in the previous paragraph, is on internalities rather than externalities. Third, as libertarian paternalism is intended to preserve freedom of choice, it does not employ hard paternalism, like jail sentences or outright bans; rather, it favours soft paternalism, like disclosure policies, default rules, or warnings (Sunstein, 2014). Fourth, by the same token, as stated in the definition, the nudging approach will not materially change the economic incentive informing decisions. Fines are not used; at most, a small economic incentive is used as a supportive reminder that the action would benefit the decision-makers. Last, nudging should be based on empirical evidence of behavioural economics and behavioural science.

Nudges use subtle tools like making cost and benefits more salient and understandable, disclosure policies, warnings as feedback, default rules, and simplifying and reframing choices, particularly through social norms (Thaler and Sunstein, 2008). For commonly adopted policy tools, nudges are also alternatively defined as "low-cost, choice-preserving, empirically informed approaches to regulatory issues, including disclosure requirements, default rules, simplification and use of salience and social norms" (Reisch and Zhao, 2017). Nudges are particularly helpful when decisions are complicated and uncommon; when feedback is unavailable to promote learning; when it is difficult to simplify the environment into a straightforwardly comprehensible position; and when the connection between decision and consequence is vague (Thaler and Sunstein, 2008; Lehner, Mont and Heiskanen, 2016). Financial decisions are classic examples of infrequent and difficult circumstances (Thaler and Sunstein, 2008), such as choosing in which mutual funds to invest in our study.

2.5.2 Popularity and acceptance of nudging

There has been a widespread and growing interest among governments and leading institutions in adopting nudge policies (Van Bavel, Herrmann, Esposito, and Proestakis, 2013; Ly and Soman, 2013; Whitehead et al., 2014; Sunstein, 2014; OECD, 2017a; OECD, 2017b). In 2010, two years after *Nudge* was published, the United Kingdom became the first central government to establish a Behavioural Insights Team (called a "Nudge Unit") to integrate knowledge of human behaviour into policy initiatives (Sunstein, 2014). Richard Thaler, the originator of the nudge approach, acted as an advisor to the team. The Behavioural Insight Team has conducted over 150 randomised control experiments involving behaviourally informed policy in numerous areas (OECD, 2017b). In the US, Cass Sunstein, another nudge approach pioneer, was named

administrator of the Office of Information and Regulatory Affairs in the Obama administration (Ly and Soman, 2013; Sunstein, 2014). Later, in 2014, Obama established (by executive order) a similar Social and Behavioural Sciences Team (called a "Nudge Squad") to promote the application of behavioural insights in policy formulation among federal agencies (Reisch and Sunstein 2016; Whitehead et al., 2014; OECD, 2017b).

To date, we have seen behavioural sciences groups advise national and regional governments in such countries as Australia, Germany, Canada, The Netherlands, France, the European Commission, the Western Cape Government of South Africa, and the city of Philadelphia (OECD, 2017a, Whitehead et al., 2014). Behavioural insights organisations and academic centres like the European Nudging Network, ideas42 at Harvard, the Behavioural Science and Policy Association, the Behavioural Insights Group, Behavioural Economics in Action at Rotman centre, and the Centre for Analysis of Risk and Regulation at the London School of Economics are all engaged in the application of behavioural science to policy (OECD, 2017a). Advocacy from international organisations like the Organisation for Economic Cooperation and Development, the World Health Organization, the United Nations Population Fund, the European Union, and many others is also in evidence (Whitehead et al., 2014, Sunstein, 2014). An Economic and Social Research Council report called *Nudging all over the world* revealed that 51 countries had centrally directed policy initiatives influenced by the nudging approach and behavioural economics (Whitehead et al., 2014). When public initiatives that were not centrally controlled were included, the report found that the nudging approach had impacted public policy delivery in 69% of all independent states (135) (Whitehead et al., 2014), indicating the increasing importance of 'the rise of the psychological state' (Jones, Pykett and Whitehead, 2013).

Nudge policies are also considered well accepted by citizens of different countries (Felsen, Castelo and Reiner, 2013; Jung and Mellers, 2016; Reisch and Sunstein 2016; Sunstein, Reisch and Rauber, 2018). Felsen, Castelo and Reiner (2013) found that respondents in the US and Canada generally favoured nudge approach policy interventions. More specifically, the respondents preferred System 2 nudges, containing informational reminders and educational opportunities, to System 1 nudges, containing defaults and sequential ordering. System 2 nudges influence the individual through System 1 but target the attention and premises of System 2 reflective thinking, while System 1 nudges influence automatic behaviour without going through reflective thinking (Hansen and Jespersen, 2013). Jung and Mellers (2016) found a high level of public support for nudging policies among US citizens. Again, System 2 nudges were comparatively more favoured. Reisch and Sunstein (2016) surveyed 7,079 respondents in the United States, United Kingdom, and five other European countries about 13 typical nudges and found the majority supported 11 of them. The two rejected nudges involved default rules about air ticket carbon emission charges and donations to the Red Cross in tax returns, from which the

user could opt out. Two additional policies, including manipulative subliminal advertising about overeating and smoking and mandatory meat-free days in cafeterias, were also not supported but did not qualify as nudges (Sunstein, Reisch and Rauber, 2018). Reisch and Sunstein (2016) accordingly concluded that people in different European countries and the US showed consensual approval of nudges, as long as there were legitimate purposes and the nudges conformed to the interests and values of most citizens. The only exception was that the government should not take citizen‘s money, even in small sums, without their explicit consent, as indicated by the above two rejected default rule policies.

In a similar study, strong majority support for nudges was found in many other places worldwide, including Asian countries (Sunstein, Reisch and Rauber, 2018). Sunstein, Reisch, and Rauber (2018) extended the same survey to 7,927 respondents in eight countries (Australia, Brazil, Canada, China, Japan, Russia, South Africa, and South Korea) and confirmed worldwide acceptance of nudges. Political affiliation did not affect support for nudges in either study. In particular, China and South Korea, both Asian Confucian countries, reported the overwhelmingly highest approval rate of nudges among all eight countries. However, another Asian country, Japan, showed a lower average endorsement rate. The authors speculated that China’s high approval rate could be attributable to citizens’ strong trust in government, severe environmental issues, a preference for less authoritarian policies, or feeling pressured to support government policies (Sunstein, Reisch and Rauber, 2018). In sum, based on governments’ and institutions’ adoption and recipients’ acceptance worldwide, it can be concluded that nudging policies are well advocated, provided the policy objective is legitimate and conforms to the recipients’ values and interests (Reish and Zhao, 2017).

The popularity of Nudge policies by governments and institutions is primarily attributed to its liberty-preserving nature, which crosses partisan divides (Thaler and Sunstein, 2008; Lehner, Mont and Heiskanen, 2016; Oliver, 2017). Globalisation has limited governments’ capacity to steer people’s behaviour through regulations and taxes (Lehner, Mont and Heiskanen, 2016) and nudge policies are inexpensive to implement (Thaler and Sunstein, 2008; Oliver, 2017). In addition, they signify doubts about over-reliance on rational agent theory since the 2008 financial crisis (Oliver, 2017). Lastly, acceptance is also due to the promotion of the concept of libertarian paternalism through the book *Nudge*, which was written as a popular science work (Oliver, 2017) and named by the Economist as one of the best books of 2008 (Cai, 2019).

Below, we examine the major realms of nudging intervention application. Additionally, we summarise current evidence on the effectiveness of nudges in the domains relevant to our studies, namely financial decisions and, in particular, SRI.

2.5.3 Nudging interventions and applications

Nudging is a valuable tool for marketers because it utilises subtle psychological hints to drive people's behaviour at a low cost (Cai, 2019) and boost sales (Mongin and Cozic, 2018). For instance, Thaler and Sunstein (2008), in their book *Nudge*, noted that how the food in a cafeteria is displayed and how the menu is designed (Bowen and Morris, 1995) can profoundly affect customers' food choices. The food that is displayed first and at the eye level can sell better (Thaler and Sunstein, 2008). Marketers can adopt designs to maximise profit, and regardless of whether supermarkets, restaurants, and cafeterias recognise it, they are using nudging strategies to maximize profit (Hansen, 2016). In his best-selling book *Predictably Irrational* (Ariely, 2009), behavioural economist Dan Ariely cited many economics-related examples of nudging and behavioural science used by marketers to change consumers' decisions—for example, steering customers to buy a magazine through a more expensive print-and-Internet subscription than a cheaper Internet-only subscription. The original offer is shown in Figure 2.2.

Figure 2.2 Decoy effect 1

Choices	Plan details	Price
Choice 1	Print-and-Internet subscription	HK$1,000
Choice 2	Internet-only subscription	HK$500

By Huber, Payne and Puto's (1982) decoy (or asymmetric dominance) effect, one can add a Choice 3, print-only subscription, that is obviously dominated by Choice 1, which is depicted by Figure 2.3:

Figure 2.3 Decoy effect 2

Choices	Plan details	Price
Choice 1	Print-and-Internet subscription	HK$1,000
Choice 3	Print-only subscription	HK$1,000
Choice 2	Internet-only subscription	HK$500

The results of adding Choice 3 are that significantly more people subscribe to Choice 1 (Ariely, 2009). That is, Choice 3 is a decoy that makes Choice 1 dominate both Choice 3 and Choice 2, which is irrational. The addition of rationally irrelevant Choice 3 can be qualified as a nudge since it does not forbid any option or change any incentive; it works by using human bias to change behaviour (Hansen, 2016), conforming to the definition of nudging offered by Thaler and Sunstein (2008) and revised by Hansen (2016).

Nowadays, when Internet platforms sell food or even music, they can adjust or sort the available

choices and be confident the products are more likely to be purchased (Abdukadirov, 2016). All of us are nudged. Giant technology companies like Amazon, Apple, and Microsoft studied personalised nudge marketing. Virtual assistants like Amazon's Alexa collect data on many people's preferences and might influence decision-makers' choices without the chooser knowing it (Cai, 2019). Given these companies' massive data-handling capacity, they have the potential to influence many people at the same time. Google, for example, has adopted nudging practices to improve knowledge workers' productivity (Ebert and Freibichler, 2017).

However, the main focus of adopting nudging practices is not commercial but policymaking, in the spirit of libertarian paternalism. Public nudging policies are even used to counter commercial nudging in many circumstances (Oliver, 2017). Referring to the cafeteria example they cite in their book *Nudge*, Thaler and Sunstein assert that school cafeterias should display food choices to improve students' health rather than maximize profits (Thaler and Sunstein, 2008). The literature on nudging, commencing from the seminal book *Nudge*, is dominated by policies to benefit nudged agents or society's general interests. Szaszi, B. et al. (2018), in the first domain-general systematic review of nudge theory, identified 116 empirical intervention studies on nudging or choice architecture from 2008, after the nudging approach was announced, to 2016. The major domain (42%) of nudge application was health, mainly targeting eating- and drinking-related behaviour, while 19% addressed sustainability issues, 10% consumer choice, 9% finance, and 8% prosocial behaviour. Thus, the study indicated that nudging had been applied to realms related to SRI, such as sustainability, finance, and prosocial behaviour. The geographical coverage was dominated by the US (49%) and Europe (38%); the only Asian countries in which nudge intervention has been studied include Bangladesh, Japan, and Vietnam. Therefore, the study also confirmed that no nudge intervention research had been conducted in Hong Kong. Prior to this study, Lehner, Mont and Heiskanen (2016), using different classifications, conducted a qualitative review of academic knowledge of nudging, choice architecture, and the effectiveness of nudging intervention in sustainable consumption realms and found nudging interventions in sustainable food consumption, efficient energy use, and, to a lesser extent, personal transport enjoyed similar popularity.

Cai (2019) noted that nudging is well accepted to influence consumer behaviour and financial markets are just markets in which people trade for different financial contracts, meaning nudging intervention should also be applicable to influence the behaviour of financial market participants. The main themes of behavioural finance include the study of cognitive errors, psychological biases, and emotions in the investment process and how they can be the detriments in making rational investment decisions (Nofsinger, 2018; Baker and Nofsinger, 2010; Shefrin, 2002). Institutions and governments are starting to learn how to utilise biases to benefit investors in the investment process through choice architecture (Nofsinger, 2018). Still, research about nudging

investment products in financial markets remains scarce. In a study named *Nudging the financial market*, Cai (2109) utilised bibliographic mapping to pinpoint nudge-related literature from 2003 to November 2018. In total, 199 relevant papers were identified, of which only 12 were related to applications in financial markets. Among these 12 papers, five were related to pension saving, two to health insurance, and the remaining five to disclosure in various domains, including credit card borrowing, risky mortgage loan contracts, and financial product labelling. In sum, no direct study about application of nudging to SRI was found.

Historically, the most prominent examples of nudge policy use in the finance realm have concerned retirement savings contributions. Even before Cai's (2019) search period, Madrian and Shea (2001) had already found that automatic enrollment could considerably increase participation in the US 401(k) retirement plan and help maintain higher contribution rates. Later, Thaler and Benartzi (2004) enhanced the design and launched a Save More Tomorrow program that employed a two-choice architecture: first, the automatic enrollment of new employees into the retirement saving plan and, second, pre-commitment, in which employees agree in advance to increase their retirement saving rate when they receive pay raises. By the first choice architecture, inertia works to the participants' advantage because a suboptimal decision is to change once the initial decision to enroll in the program is made. By the second measure, 'future lock-in' can overcome participants' self-control problems and effectively enable individuals to select what they 'should' do. The program also mitigates feelings of loss by timing the contribution rate increases with future raises. But the program still conforms to libertarian paternalism as employees may opt-out at any time. The Save More Tomorrow program recorded very encouraging results (Thaler and Benartzi, 2004). The first implementation of the program showed dramatic increases in savings for participants, and few people dropped out. After the fourth pay raise, participants contributed on average 13.6 percent to the plan, compared to an 8.8 percent contribution rate for those who instead consulted with an advisor. The contrast was even more significant when comparing contribution rates with those who opt not to see the financial consultant (6.2 percent) or decline participation in the plan (5.9 percent). The percentage increase in retirement savings could increase US national retirement savings by up to $125 billion per year (Thaler and Benartzi, 2004).

Nudging in retirement schemes is also adopted in Hong Kong. The public retirement investment policy in Hong Kong, called the Mandatory Provident Fund (MPF), is a defined contribution pension scheme requiring all Hong Kong full-time employees and their employers to allocate a certain percentage of salary to discretionary investment funds, with scheme members bearing the investment risk. In 2015, the government passed a Mandatory Provident Fund Schemes (Amendment) Bill 2015 (Financial Services and the Treasury Bureau, 2015) to launch a Default Investment Strategy (DIS). Basically, the DIS is a default option investment arrangement: if an

MPF scheme member does not specify an investment strategy, all future MPF benefits will be invested in a globally diversified portfolio with fund charges capped and investment risks automatically reduced according to the member's age. The Secretary of Financial Service and the Treasury Bureau openly admitted, in his blog (Chan, 2015), that through this application of nudge theory, the government would like to alleviate the home bias and myopic speculative investment strategy of Hong Kong citizens in handling pension assets.

According to Cai (2019), the most popular nudging interventions in the pension scheme, health insurance, and credit card transaction domains are default options and presenting, reframing, and increasing the salience of information. Some policy implementation trials and randomised control experiments related to financial decisions have been mentioned in behaviourally-informed policy reports by the OECD and World Bank (OECD, 2017a; World Bank, 2015). When the cases are related to nudging, they are usually related to retirement savings, information disclosure, and insurance. Again, the intervention categories of presenting, reframing, and increasing the salience of information and default options are the most commonly tested. The consensus seems to be that nudge intervention effectively directs people to a designated desired outcome (Cai, 2019; Hansen and Jesperson, 2013). It should again be noted that no application of nudging to SRI was found.

Pilaj (2017) was the first to propose promoting SRI from the demand side using insights from behavioural economics. The author postulated that the comparatively slack demand for SRI in the retail sector worldwide could be (at least partly) attributable to investors' cognitive biases and limited attention. In this case, nudging is an appropriate intervention policy to cater to potential unsettled SRI demand. A 5A model was developed to illustrate the five behavioural bottlenecks in the SRI decision process, from which choice architects could derive nudge intervention policies. The 5A model of Pilaj (2017) is depicted in Figure 2.4.

Figure 2.4 The 5A model of SRI decision

	Activation >	**Awareness >**	**Attitude >**	**Action >**	**Adjustment**
ACTION	Address savings decision	Recognize ethics of savings decision	Form informed attitude toward SRI	Execute decision	Monitor, assess, and adjust savings
BEHAVIOURAL BOTTLENECKS	Complexity	Limited attention	Cost-benefit concerns	Procrastination	

Source: Pilaj (2017)

The second A in the model is awareness, which means that investors must be aware of the availability of SRI options at the moment of investment choice but before purchase. The paper explicitly proposed a nudge via a prompted choice question—i.e., asking clients whether they care about their investments' social and environmental performance—to overcome clients' limited attention and SRI's lack of salience. This exploratory paper proposed further research using an experiment to test this nudge' empirical effectiveness and the efficacy of different framings and wordings used within this nudge intervention.

Bassen et al. (2019) followed Pilaj's (2017) proposal to test ways of promoting SRI-related climate funds using behaviour insights, but their focus was different. They verified that different label designs for climate information could vary the relative importance of climate performance factors among different fund attributes considered in conjoint analysis. In other words, variations in the simplification and salience of climate information would differ in their potential to impact investors' decisions. In terms of Pilaj's (2017) 5A model, they mainly focused on the third step (attitude) to help integrate climate information into investors' cost-benefit analyses and foster an informed attitude toward SRI, though they also increased salience of the climate information in the second step (awareness). Prior to this, Døskeland and Pedersen (2015) conducted a distinctive field experiment to see what drove investors to buy SRI mutual funds in an online banking context. They followed 142,000 investors and found that, compared with moral-framed fund information, wealth-framed information attracted 13% more investors to click for more details about SRMFs and 21% more investors to buy SRMFs. Therefore, SRMFs should be promoted by emphasising their performance rather than their moral benefits. Although this is not a purposeful application of behavioural economics and nudging, it demonstrates the framing effect's importance in retail SRMF purchases.

A literature review reveals that nudging intervention in financial markets has only been studied in limited domains; there is limited knowledge about the application of nudging intervention in SRI. Meanwhile, as stated in Thaler and Sunstein's book, intervention strategies are context-specific and hard to generalise (Bassen et al., 2019; Lehner, Mont and Heiskanen, 2016; Ly, and Soman, 2013; Felsen, Castelo and Reiner, 2013). The efficacy of nudging intervention is contingent upon context and policymakers' control of the environment, and the outcome of one study in a certain domain cannot be indiscriminately applied to different domains or populations (Lehner, Mont and Heiskanen, 2016). Szaszi, B. et al. (2018) summarized the nudging intervention across various domains and found inconsistency in experimental and reporting practices, unclear nomenclature of intervention techniques, and (sometimes) non-rigorous methodology. Therefore, the field has substantial limitations to accumulate evidence, and it is hard to offer universal instructions for how and when to use specific nudging intervention techniques. In sum, nudging intervention in the domain of SRI remains a maiden area and a

research gap to explore.

2.5.3 Controversy of nudging

The fact that the application of nudging is currently limited to a relatively narrow aspect of financial markets is understandable. Although nudging is gaining worldwide advocacy, at the same time, it is not short of impeachments. Nudging has been a hot topic in policy debates since the eponymous popular book was published (Hausman and Welch, 2010). At the same time, there has been harsh criticism from academia and commentators (Hansen and Jesperson, 2013), with some UK commentators even declaring a "war on nudge" (O'Neil, 2010). Some critics doubt whether such interventions could have persistent long-term effects or unintended side-effects (Reisch and Zhao, 2017; Bassen et al., 2019). For instance, consumers who are nudged to healthy food consumption may consider having earned some self-licensing quota for unhealthy eating (Reisch and Zhao, 2017). Some critics would argue that nudging intervention may be unfair because the policies work best for those who are uninformed or uneducated, allowing the well-informed to enjoy the policy benefit without adopting the promoted behavioural change (Lehner, Mont and Heiskanen, 2016). However, such considerations are not unique to nudging policy intervention.

The central controversy is whether nudging is ethical or manipulative (Pilaj, 2017; Oliver, 2017; Hansen and Jespersen, 2013; White, 2013; Felsen, Castelo and Reiner, 2013; Hausman and Welch, 2010). Three major concerns have been raised in this regard.

First, there is sometimes no inherent reason why choice architecture should be the solution to cognitive biases, because the reasons for adopting it are not connected to specific cognitive biases (Mongin and Cozic, 2018; Desai, 2011). For example, in the previous Save More Tomorrow example, the cognitive biases involved were the bounded rationality to calculate complicated optimal retirement saving and the bounded willpower to defer gratification (Desai, 2011). The automatic enrollment nudge is to solve both by status quo bias, a bias in which consumers, due to their loss aversion, prefer maintaining their pre-set or current state to switching away from it (Reish and Zhao, 2017). This policy is just "rebiasing," as claimed by Desai (2011), not a logical solution directly targeting the original biases (Mongin and Cozic, 2018). Some critics even argue that what we consider biases are just feasible heuristics employed in a specific social context and need no correction (Lehner, Mont and Heiskanen, 2016; Grüne-Yanoff and Hertwig, 2016). If choice architects can influence choices and replace biases with other biases, we should care

greatly about how they make those choices (Desai, 2011). A real-life example involves nudging women to choose to participate in Denmark's breast screening programme. The policy was criticized on the grounds that there was insufficient disclosure of potential harms by the authority, and using an automatic enrollment nudge was not justified (Ploug, Holm, and Brodersen, 2012).

Second, many critics argue that nudging policies infringe on personal autonomy (Lehner, Mont and Heiskanen, 2016; Zoido-Oses, 2014; Felsen, Castelo and Reiner, 2013; Hansen and Jespersen, 2013; Grüne-Yanoff, 2012; Hausman and Welch, 2010). An intentional intervention to alter choices can itself be a breach of autonomy because there is no guarantee its promoted ends are good for the nudged agents (Hansen and Jespersen, 2013). Hausman and Welch (2010) postulated that when intervention does not take the form of rational persuasion, the nudged individuals' autonomy is weakened. Even worse, nudging policies in many cases work through the automatic System 1, without the nudged agents' knowledge. Some have claimed that nudging intervention works best in the dark (Boven, 2009) and denies people's right to dissent (Zoido-Oses, 2014). It is thus incompatible with the modern democratic public policymaking process (Lehner, Mont and Heiskanen, 2016; Hansen and Jespersen, 2013). Some critics assert that because it is intentional and takes advantage of nudged people's biases, it is just disguised paternalism (Grüne-Yanoff, 2012; White, 2013). Felsen, Castelo and Reiner (2013) generalized that autonomous decisions satisfy three principles; specifically, they (1) fulfil higher-order desires, (2) are rational, and (3) are free from covert external influence. Felsen, Castelo and Reiner argued that overt influence raises no issues; however, covert intervention violates Principle 3 while possibly enhancing Principle 1, and so is subject to the decision context and recipient's discretion.

Third, nudging guided by libertarian paternalism seeks to steer people's behaviour in their own best interest. However, many critics question whether policymakers can discern what represent others' best interests or "correct" behaviour (Sugden, 2018; Sugden, 2017; White, 2013; Hansen and Jespersen, 2013; Rebonato, 2014; Lehner, Mont and Heiskanen, 2016; Felsen, Castelo and Reiner, 2013; Schnellenbach, 2012). White (2013) opined that Thaler and Sunstein's economic choice model extends beyond rationality assumption but still works within the framework of preference-constraints, without considerations like principles and ideals, which represent personal interests. Human choices are far more complex. For example, when an individual is nudged to choose a healthy fruit cup instead of a less healthy muffin, the choice architect may not know whether the individual may have originally chosen the muffin in memory of their parent, as an incentive to exercise by walking to the muffin shop, or because they had a crush on the muffin bakery employee (White, 2013, p.62). If people's choices arise from complex motives, we should respect them and not assume which choice represents their best interests (White, 2013; Sugden, 2017). Hansen and Jespersen (2013) noted that when people have not expressed or thought clearly about their preferences, it is hard to identify their best interests. Schnellenbach

(2012), using the mathematical model used by behavioural economics, showed that policymakers would have difficulty extracting information from heterogeneous individuals.

Given the controversy surrounding nudging, Hansen and Jespersen (2013) developed a framework to enunciate different degrees of the controversy of nudging policy interventions. They classified interventions in which the individuals nudged cannot reconstruct the intention as non-transparent. They also differentiated System 1 from System 2 nudges, based on how the intervention is conducted. As introduced earlier, System 2 nudges influence the individual through System 1 but target the attention and premises of System 2 reflective thinking. Transparent System 2 nudges, per Hansen and Jespersen, are "transparent facilitation of consistent choice" and most favoured (Hansen and Jespersen, 2013). Typical examples of transparent System 2 nudges include increased salience of choices and emphasised commitment of choices. System 1 nudges influence people's automatic behaviour without engaging their reflective thinking. An example of a transparent System 1 nudge is playing relaxing music when travelers board a plane to calm them; an example of a non-transparent System 1 nudge is reducing the size of plates in a cafeteria to make people eat less (Hansen and Jespersen, 2013). The authors posited that non-transparent nudges and particularly non-transparent System 2 nudges are most controversial as they constitute a "straightforward manipulation of choice" (Hansen and Jespersen, 2013). Examples of non-transparent System 2 nudges include medical practitioners reframing risks to induce treatment and merchants hiring people to queue in front of their shop to simulate consumption (Hansen and Jespersen, 2013). Given the potential controversy in some nudges, Grüne-Yanoff and Hertwig (2016) favoured a Boost approach that extends individuals' decision-making capabilities by applying existing tools and skills in an educative manner without giving specific direction.

These concerns are more acute to nudges in financial markets, because financial decisions are complicated and investors' preferences vary. Even nudging employees toward participating in retirement saving plans in financial markets can be controversial, since objections to participation may stem from higher-order beliefs about investment or, for younger, less risk-averse investors, a preference for more aggressive investment alternatives (Cai, 2019; Felsen, Castelo and Reiner, 2013). When the choices are complex and too much information positively and negatively affects individuals' decisions, a more regulatory approach is usually more favoured, and financial decisions are the typical circumstance of this category (OECD, 2017 b). Lehner, Mont and Heiskanen (2016) summarized the application of nudging policies for sustainable consumption behaviour and concluded that nudging policies are less effective when there are many competing forces. Agarwal et al. (2009) doubted whether nudging policies could help older adults, especially those with lower financial literacy, avoid making financial mistakes, given the many malevolent

influences in financial markets. Ly and Soman (2013) suggested that nudging interventions should be avoided when the context may be altered by businesses already in the marketplace.

Moreover, in many circumstances, nudging intervention needs to be pursued through financial advisors. In widespread sales-driven cultures, financial advisors may have conflicts of interest and not act in the best interests of their clients (Cai, 2019). Heinemann et al. (2018) stressed that financial advisors perform conflicting roles as advisors, sellers, and intermediaries; sales specification, selling pressure, and earning interest may diffuse into the advising process, and even a disclosure requirement may not resolve the conflict (World Bank, 2015). Unbiased advisors should help alleviate investment mistakes, but people may doubt advisors' independence and ignore their advice (Nofsinger, 2018). Last, advances in fintech have brought about the common application of machine learning and artificial intelligence in the form of robo-advisors. Since their background algorithms and suggestion rationales operate as black boxes, the potential for far-reaching manipulation hazard due to malevolent nudging may be magnified (Cai, 2019).

Thaler and Sunstein (2008) cited three points in defending the legitimacy of nudging intervention (Hansen and Jespersen, 2018): (1) choice architecture is ubiquitous, therefore objection to decision influence is a literal nonstarter (Thaler and Sunstein, 2008, p.11); (2) no choice options are forbidden, and no economic incentives are significantly altered, so freedom of choice is preserved; and, (3) if an intervention policy is in the interests of the nudged agents, as judged by themselves, and the policymakers can publicly defend their position, it should be admissible, especially when other policies (bans, taxation, regulation, etc.) are more coercive and intrusive (Hansen and Jespersen, 2018). Notwithstanding the three defences, however, nudging intervention is still subject to criticism (Mongin and Cozic, 2018; Sugden, 2018; Sugden, 2017; Lehner, Mont and Heiskanen, 2016; Zoido-Oses, 2014; Felsen, Castelo and Reiner, 2013; Hansen and Jespersen, 2013; White, 2013; Grüne-Yanoff, 2012; Desai, 2011; Hausman and Welch, 2010). As discussed above, there are ethical concerns and danger of manipulation when nudging intervention drives behavioural change based on policymakers' deliberations and employment of selected nudged agent biases or heuristics, especially through automatic System 1 and non-transparent measures without the nudged agents' knowledge (Lehner, Mont and Heiskanen, 2016; Zoido-Oses, 2014; Felsen, Castelo and Reiner, 2013; Hansen and Jespersen, 2013; Grüne-Yanoff, 2012; Hausman and Welch, 2010). Unavoidable choice architecture backgrounds, apparently intact choice options, and largely unchanged economic incentives cannot alleviate many of the issues in the first two defences (Hansen and Jespersen, 2013).

The strongest argument seems to be the third principle, that nudging intervention benefits the nudged agents, based on their own judgement (Sunstein, 2018; Thaler, 2016; Sugden, 2018; Sugden, 2017). Facing criticism, Sunstein (2018, p.2) stated that "the lodestar is people's own

judgments… [which] are a good (if sometimes imperfect) way to test the question whether nudges are increasing their welfare". Richard Thaler, in his book *Misbehaving*, responded that critics clearly do not understand one point: "we have no interest in telling people what to do. We want to help them achieve their own goals… We just want to reduce what people would themselves call errors" (Thaler, 2016, p.325). This viewpoint still faces objections. In addition to the previously mentioned major concerns that human decisions are subject to complex motives and hard to differentiate, Sugden (2017) enunciated that if libertarian paternalism is to reconstitute people's correct rational choices, Thaler and Sunstein must assume there is a latent inner rational agent inside our bodies that has stable, error-free preferences for 'correct' choices. While such an inner agent may be assumed, it has no foundation in psychology (Sugden, 2017). For example, cafeteria food displays and menu arrangements evoke psychological biases. However, if error-free choices are also subject to such display and arrangement, we still satisfy their ultimate manipulated interest and have no other objective to pursue (Sugden, 2017). Cass Sunstein and Robert Sugden publicly debated this point (Sugden, 2017; Sunstein, 2018; Sugden, 2018), with Sunstein (2018) opining that it is satisfactory if the nudged results construct the nudged individuals' posterior preferences. However, Sugden (2018) argued that, given context-dependent preferences, nudged individuals might later be nudged in a different direction and regret their previous choice. Still, a stable latent inner agent would be needed to adjudicate whether nudging intervention makes individuals better off, as judged by themselves.

Notwithstanding, Sugden and Sunstein agreed that nudging intervention makes nudged agents better off in one case, as judged by themselves (Sugden, 2017; Sunstein, 2018; Sugden, 2018). If the individual has a clear antecedent preference and the intervention helps them fulfil that inclination, typically by increasing its navigability, the benefit is undeniable (Sustein, 2018). This can be identified by a response in a cool emotional-state questionnaire (Sugden, 2017). This situation usually arises when the individual has a preference but has self-control or akrasia problems (Sugden, 2017; Sunstein, 2018). An example of this was mentioned in *Nudge* (Thaler and Sunstein, 2008, p.40): when hosting a dinner, Richard Thaler once hid a bowl of cashew nuts from his guests for fear they would fill up on them before dinner, affecting their appetite. The guests immediately thanked him, as they had a clear preference for enjoying the dinner but could not resist the temptation of the nuts sitting in front of them. In this case, nudging intervention was an acceptable form of soft paternalism, i.e., paternalism of means but not ends (Thaler and Sunstein, 2008; Thaler, 2018). Cai (2019) asserted that we should identify investors' best interests when discussing nudging in financial markets. White (2013) believed that libertarian paternalism's greatest threat to autonomy is when libertarian paternalists do not know others' true interests and instead enforce their own ideas when designing paternalistic rules and policies. Therefore, libertarian paternalists and regulators must know a person's actions and evaluate their decision-making process itself. Felsen, Castelo and Reiner (2013) further posited that when we

can clarify that individuals need assistance with certain behaviours, overt and even covert nudging intervention may enhance individuals' autonomy because it aligns with their higher-order desires. Policymakers should gain a license to implement the most effective intervention, even if it is covert.

In sum, a review of the literature reveals that a hot debate on nudging intervention parallels the time it has taken to gain worldwide advocacy. Critics have expressed concern that nudging policies are deliberate interventions intended to steer people's decision-making processes, change their behaviour, and encourage them to pursue interests that may not be their own. The intervention operates through the cognitive biases and heuristics behavioural economists use, and sometimes through covert influence. Several measures have been proposed to counter the accusation and safeguard nudging from abuse. As stated in Thaler and Sunstein's book, the first is that, since intervention strategies are context-specific and hard to generalise (Ly, and Soman, 2013; Lehner, Mont and Heiskanen, 2016; Felsen, Castelo and Reiner, 2013), they must be evidence-based and verified by empirical tests. The second is to uphold the publicity principle; i.e., any policy must be publicly defensible to all citizens (Thaler and Sunstein, 2008). Thaler and Sunstein emphasized that 'transparency' and 'neutrality' are two crucial ingredients in developing helpful nudges for society. Sunstein, together with other scholars, posted a strand of empirical evidence showing that, as long as they serve legitimate purposes and respect common interests, most typical nudges have the support of most individuals in European, American, and Asian countries, including China (Sunstein, Reisch and Rauber, 2018; Reisch and Sunstein, 2016; Jung and Mellers, 2016). Acceptance from preliminary evidence seems to be cross-cultural. In fact, from the preliminary evidence, nudging policies have a even higher potential in Asian countries, which are traditionally more paternalistic areas of the world (Sunstein, Reisch and Rauber, 2018). Lehner, Mont and Heiskanen (2016) emphasized that nudging is not a panacea for all policymaking realms. At present, however, the outlook for nudging policies is still optimistic.

The author believes that nudge policy is an invaluable tool. Nudging is undeniably a relatively new policy direction, and its long-term efficacy and potential harm warrant further empirical studies. Current objection to nudging is mainly on potential moral principle concerns. On the contrary, the essence of libertarian paternalism is to have policy aims transparent and defensible. If the transparency and neutrality principles can be upheld, worldwide cross-cultural support has been evidenced, and a certain degree of paternalism is bearable in reality. Nudge policies have benefited many people, particularly in healthy consumption, sustainable development, and partly in the financial realm. It is proven to be better than taxation at least in the healthy beverage area (Petrescu, D. C. et al., 2016). Particularly, anyone with working experience in the investment and wealth management industry would agree that investment discipline and financial planning

theory work largely because humans have limited mental capability, psychological stability, and willpower to handle financial affairs. Nudge policies, through the advance of behavioural economics, help reduce cognitive limitation and is non-coercive, issue-specific and not costly to implement and have enormous potential to benefit investors in the finance industry. A successful local example in Hong Kong is the Hong Kong MPF retirement investment scheme's default DIS investment arrangement option. The core accumulation fund under DIS has received a significant HK$86.7 billion (USD 11.11 billion) in assets as of Dec 2021 since the scheme's formal launch in April 2017, and its globally diversified and less volatile annualized return of 8.7% over the period has helped investors weather local market fluctuations, especially during the coronavirus crisis period (Chung, 2021; Hui, 2022). Even from a purely ethical principle aspect, as agreed by Felsen, Castelo and Reiner (2013), as long as we fulfil individuals' higher-order desires and make the policy aims and intervention process transparent, the potential harm is considered manageable. The most crucial point is to avoid abuse of more manipulative non-transparent nudges by policymakers. For this point, a good reference would probably be the academic debate between Cass Sunstein and Robert Sugden we introduced in this section.

Summarizing the critics' argument, an ideal position to demonstrate that nudging intervention conforms to the spirit of libertarian paternalism is to show that individuals have an antecedent preference they endorse but, for some reason, have not expressed through their actions. In other words, it is better to proactively substantiate that there is a behavioural market failure rather than assume its existence; the ends are then legitimate. As for the means, we understand from the literature that transparent System 1 and System 2 nudges are more welcomed. But if antecedent preference can be established, even non-transparent nudges can be less controversial (Felsen, Castelo and Reiner, 2013; Thaler and Sunstein, 2008). This has inspired this study, which will be discussed further in the next section.

2.6 Summary of literature review and rationale of the study

This study is multi-disciplinary, covering SRI market history, SRI investor behaviour, SRI theory, SRI market situation in Hong Kong, behavioural finance, and nudging and its controversies. A review of the literature indicates that studies on SRI investor behaviour are still developing and do not provide a clear picture. For Hong Kong, we cannot even find an up-to-date study about investors' behaviours regarding conventional investment products, let alone SRI and SRMF. That makes research on Hong Kong SRI investor behaviour valuable to the literature. Our review also highlights the evolving focus in SRI history and empirical evidence on the conundrum of

historical SRMF performance. Considering the market reality of the volume growth and prevalence of sustainability/ESG ideology in investment, SRI is undeniably a fledging and mainstreaming market globally. SRMFs foster linkages between the investment market and sustainable development while recording performance on par with the market and potential outperformance opportunities; as such, they qualify as an investment market segment that is 'doing good while doing well' (Hamilton and Statman, 1993; Talan and Sharma, 2019). That provides a favourable foundation for promoting SRI. As a means of promoting the market, Thaler and Sunstein's (2008) nudging has been a popular demand-side way of steering individuals' behavioural change (Lehner, Mont and Heiskanen, 2016). Nudging is well supported by behavioural science findings and globally adopted as a soft form of intervention policymaking. Ergo, Pilaj's (2017) recommendation the choice architecture be applied to SRMF purchases seems a logical extension of its common application in environmental protection and sustainable consumption domains (Sunstein, 2016; Reisch and Sunstein 2016; Sunstein, Reisch and Rauber, 2018). Different wordings for nudging SRMFs can be tested to assess their efficacy (Pilaj, 2017).

However, the literature showed a lack of evidence and foundation in several aspects. First, there is no empirical evidence of the effectiveness of nudging SRMFs at the moment of mutual fund choice. More importantly, the literature also records controversies surrounding nudging policies, and nudging intervention in sensitive financial markets can be subject to further criticism. Pilaj (2017) acknowledged this potential issue to some degree but did not address it in detail. His suggestion of promoting SRMF as a default investment choice at some future point still lacked supporting empirical evidence. Pilaj (2017) assumes the foundation that some latent demands for SRI products has not been satisfied and therefore nudging investors toward the products benefits investors 'as judged by themselves' (Thaler and Sunstein, 2008). However, this concrete foundation has not been established in the literature.

To sum up, there is a series of unanswered questions in the SRI literature. Talan and Sharma (2019) reviewed 213 articles related to SRI from 1989 to 2018 to identify major research gaps that warrant further study. Three main research problems and seven associated research gaps were identified. One of the seven main research gaps is to investigate the barriers stopping SRI from becoming mainstream. Another research gap is to examine why SRI is not popular in Asia and other developing countries. The current study would shed light on both these questions. We conducted the study in Hong Kong because it is Asia's asset management centre, and its government has shown a determination to develop the SRI market. However, though Hong Kong investors have high financial literacy and have shown initial interest in buying SRIs, actual investment in SRMFs is slack. Therefore, Pilaj's (2017) proposal to apply behavioural finance insights and nudging strategies could inform related policy formulation and promote change in this underdeveloped market. Although related policy reception is culture-specific, initial

evidence demonstrates tremendous potential in Asia, including China (Sunstein, Reisch and Rauber, 2018). After all, behaviourally-informed policy application has been largely successful in related fields (Madrian and Shea, 2001; Thaler and Benartzi, 2004; Bassen et al., 2019; Døskeland and Pedersen, 2015; Szaszi, B. et al., 2018; Lehner, Mont and Heiskanen, 2016) and costs little to implement.

Meanwhile, nudging strategies are context-specific and hard to generalise (Bassen et al., 2019; Lehner, Mont and Heiskanen, 2016; Ly, and Soman, 2013; Felsen, Castelo and Reiner, 2013). When the Nudge Unit in the UK and many other behavioural insights organizations propose new policies, they often specify their theoretical assumptions and conduct small scale experiments to test their effectiveness (OECD, 2017a, Whitehead et al., 2014). By the same token, if the current study can demonstrate that slack SRMF demand largely reflected investors' cognitive biases and limitations, it can provide a practical foundation for related policy reference for policymakers, regulators and practitioners in Hong Kong. It can also fill a major research gap and contribute to the SRMF market development in Hong Kong, an international financial centre in Asia.

The current study can contribute to the literature on the legitimacy of nudging SRMFs in financial markets. Prior studies also seem to suggest that if the current study is to test behaviourally-informed policies, nudging intervention measures in the form of increasing salience and reframing the information should be more practical and less controversial. Increasing salience at the moment of mutual fund choice was the core suggestion made by Pilaj (2017) and a common form of nudging intervention. Reframing information was successful in increasing SRMF purchases in Norway (Døskeland and Pedersen, 2015). More importantly, both measures are non-coercive and qualified as transparent System 2 nudges, according to Hansen and Jespersen (2013), which are the most favoured. The current study can contribute to the literature if these intervention measures can elevate ESG consideration in mutual fund purchases. We can provide the first concrete evidence to Pilaj's (2017) proposal about the efficacy of SRI nudge practices and offer insights into another major research gap in the SRI history – that cognitive biases and limitations are barriers to SRI becoming mainstream.

But nudging intervention can be controversial. Nudging is intended to make choosers better off, as judged by choosers themselves. The first law of behaviourally-informed regulation (Sunstein, 2014) says if choosers fail to follow through on their intentions, behavioural market failure exists and nudges are usually the best solution. This is similar to the concepts of antecedent preference and self-acknowledged preference in independently definable circumstances (Sugden, 2018; Sunstein, 2018; Sugden, 2017) that have not yet been pursued. If a response in a 'cool emotional-state questionnaire' (Sugden, 2017) can identify a clear antecedent preference and the nudging intervention helps investors fulfil that inclination, then the above situation of unsettled antecedent

preference applies, and the benefit of nudging is undeniable (Sunstein, 2018). In their public debate, Cass Sunstein and Robert Sugden agreed that this is the only circumstance in which nudging intervention is most suitable and undebatable (Sugden, 2018; Sunstein, 2018; Sugden, 2017). That means we should not assume behavioural market failure unavoidably exists because of heuristics and biases, but rather proactively prove its existence, then legitimise our intervention. This parallels White's (2013) suggestion that policymakers should identify nudged agents' true interests and Cai's (2019) suggestion that we should identify investors' best interests when discussing nudging in financial markets. However, how can we prove the existence of behavioural market failure? The literature provides some hints.

Little research has been conducted on the SRI client-advisor relationship, but the literature and surveys can still identify some issues. Both Schrader (2006) and Heinemann, K. et al. (2018) found that advisors were not proactively promoting SRMF. Schrader (2006) pointed out that advisors were not knowledgeable about SRI. Heinemann, K. et al. (2018) discovered that advisors wanted the investors to request SRMF explicitly first. Advisors need to rationalise their suggestions and take notice of clients' interests. According to Schroders' (2019) global investor study, of 500 Hong Kong investors who responded, 47% said it would encourage them to allocate more of their investments to SRMFs if their financial advisor prompted them to put more money into SRI. In the same survey, 53% of Hong Kong investors said they could be encouraged to invest more in SRMFs, but their financial advisors would have to provide them with more and easier-to-understand information.

From the above, we can preliminarily summarise why some of the latent demand for SRMFs has not been realised. First, because of their limited product knowledge or scant understanding of the products' performance, advisors would not proactively suggest SRMFs, leaving some potential demand unnoticed. Second, even if clients have a potential interest in SRMFs, they must be aware of these non-salient options at the moment of purchase and voice their interest. Otherwise, their advisors would assume they have no interest and take no initiation. In both cases, advisors would not notice (and therefore not help realise) the potential interest and demand, thus underestimating clients' value of ESG factor in mutual fund selection.

That means that, before experimenting with the efficacy of nudging intervention, we can take one step backwards and test whether advisors and investors treat the ESG factor differently in selecting mutual funds. If advisors underestimate investors' interest in environmental and social responsibility performance, clients' antecedent preference cannot be realised, and behavioural market failure will be highly likely. Nudging policies, even covert intervention, may therefore be justified to fulfil clients' higher-order desires, according to Felsen, Castelo and Reiner (2013). In contrast, if investors attach much less importance to environmental and social responsibility

performance or investors and financial advisors rank them very low, traditional measures like education and media promotion should take precedence over nudging policies. In this case, the current study still contributes to the literature about behavioural market failure. To the best of our knowledge, the current study is the first to verify the presence of behavioural market failure in financial markets.

The current study was inspired by three core papers: Pilaj's (2017) suggestion that nudge interventions be applied to the SRI market; Døskeland and Pedersen's (2015) study on the effectiveness of moral and wealth-framed nudging in SRMF selling; and Sugden's (2017; 2018) reminders about the controversy of nudging intervention and existence of antecedent preference. The theoretical framework of this study is mainly based on Thaler and Sunstein's (2008) nudge theory. The current study: 1) identified the factors financial advisors and retail investors consider important when selecting a mutual fund, with ESG factors included as a concern; 2) examined whether there are any differences in the ranking of the ESG factor between advisors and retail investors; 3) determined whether a nudge would change how investors ranked ESG factors; and 4) investigated whether wording salience nudges, moral-framed nudges, and wealth-framed nudges differently would change how investors ranked ESG factors. The research methodology will be detailed in the next chapter. The study results will have implications for policymakers and contribute to the literature.

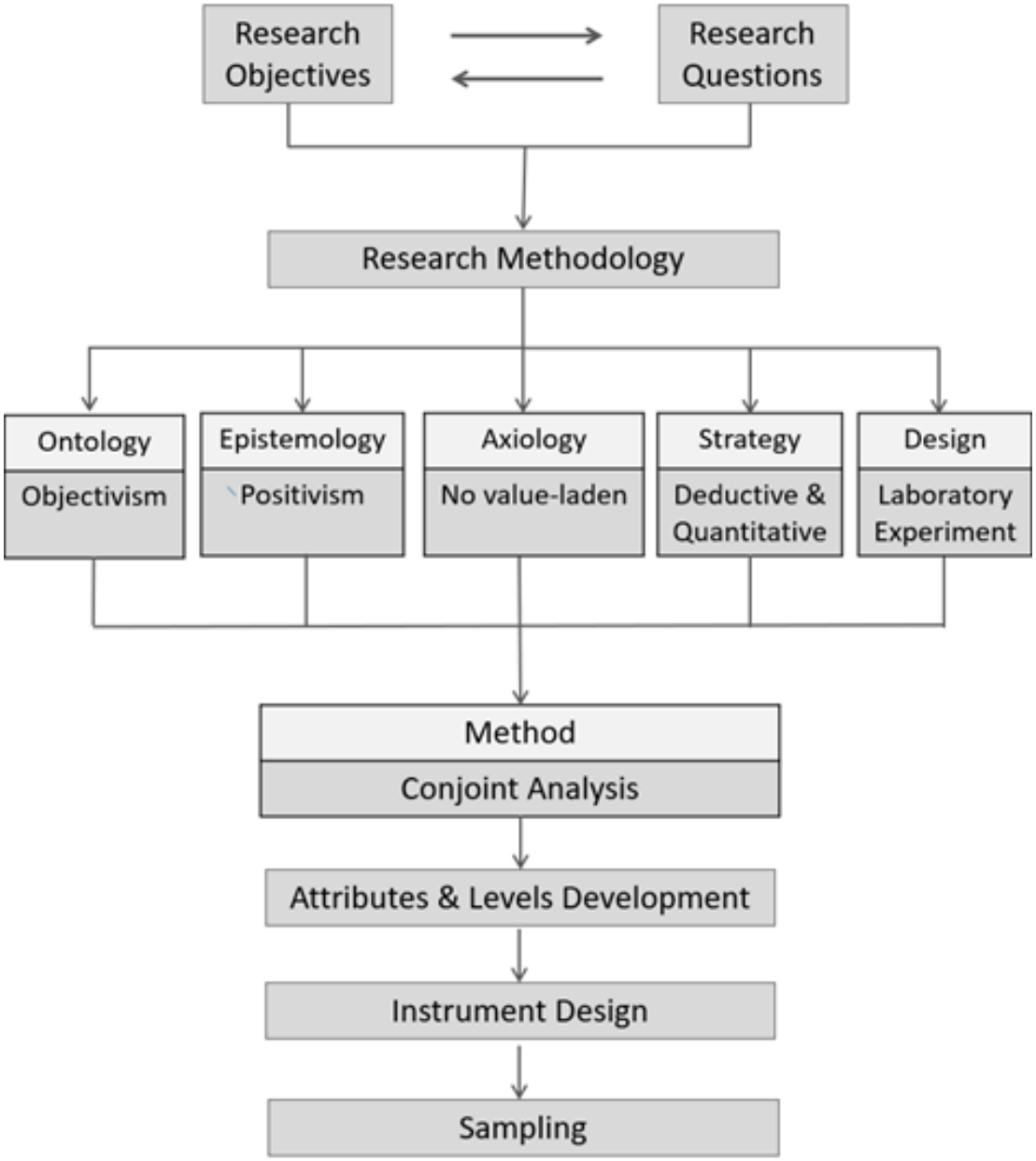
Chapter 3: Research Methodology

This chapter is organised as follows: the first section highlights the justifications for choosing a quantitative research design and conjoint analysis as the research methodology. The second section enunciates the attributes and levels of development. The third section discusses the instrument and research process design, while the last section introduces the sampling method.

3.1 Quantitative research design and Conjoint analysis

The type and nature of the research questions play a vital role in designing the research and adopting an appropriate research philosophy (Creswell, 2009). This research investigates whether a nudging approach to behavioural economics and finance can help promote SRI. To justify this approach and avoid the controversy stated in the previous chapter, we first study whether investors attach importance to the ESG factor when making mutual fund choices. We also investigate whether their value shows mismatches towards the same ESG factor when financial advisors recommend mutual funds. Then we test whether the ranking of the ESG factor will be affected by nudging wordings. A research design can be defined as a process comprising research assumptions suited to the data collection and analysis methods (Creswell, 2009). A research design includes five basic elements: ontology, axiology, epistemology, research strategy, and research method (Bryman and Bell, 2011; Creswell, 2013), as illustrated in Figure 3.1.

Figure 3.1 Research Process Design



Ontology concerns one's stance toward the nature of reality (Creswell, 2009). If the intention of this study is to discern the importance of ESG factor in mutual fund investment, we must assume objectivism as our ontological stance, in that the values of ESG consideration and other mutual fund attributes have independent existences and are stable in our study (Bryman and Bell, 2011); otherwise, there is no point in identifying them. Axiology is about the role of values in the current research (Creswell, 2009). In searching the research participants' preferences, the study cannot be value-laden; in our axiological position, we must not include our interpretations with those of

the research participants (Creswell, 2013). Research strategy is about the method used – deductive or inductive theory – in the research process (Creswell, 2013; Bryman and Bell, 2011). The study is also intended to test the nudge theory but not generate a new theory; thus, a deductive rather than inductive approach is a more appropriate research strategy. In other words, we will not work with details before generalization and continually revise our research questions based on experience in the field, as is typical in qualitative research (Creswell, 2013). Epistemology is about how the researcher knows what they know (Creswell, 2009). In testing the nudge theory, we shall also adopt the epistemological position of positivism, as a natural science approach can gain knowledge of the SRMF choice decision (Bryman and Bell, 2011). In sum, in terms of Burrell and Morgan's (1979) four paradigms model, this study falls into the functionalist paradigm—a deductive problem-solving and quantification strategy implemented to obtain a logical interpretation of the objective observation. Accordingly, this study should embrace a typical quantitative research strategy (Bryman and Bell, 2011; Creswell, 2013).

If this study should adopt a quantitative strategy, we may use commonly adopted cross-sectional survey methods and design a standard questionnaire to investigate participants' attitudes towards mutual fund choice. However, as our research objective is to understand the complex preference system in investment and investment recommendation decision-making among investors and financial advisors, a simple questionnaire survey may not be the most effective research method. A simple survey design with Likert scales that would allow respondents to rate the importance of different mutual fund attributes (return, risk, expenses, ESG consideration) could result in many respondents rating all attributes as important, including ESG consideration. It could also lead to the participants' ignorance of the bottom half of the scale (Maellaro, 2008). After all, sustainable development and social responsibility are socially desirable features. The results may also have not much reference value because a mutual fund with a perfect combination of high return, low risk, low fund expenses, and good ESG consideration are not common. The crucial point is the trade-off between different mutual fund features and whether the relative importance of the ESG factor can be altered.

As such, we will follow the practice of experimental economics (Kahneman and Smith, 2002) and conduct a laboratory experiment as our research design. The experimental approach to research design has been one of the most active fields in economics, in terms of the number of published journals and theses (Kahneman and Smith, 2002). However, it is still underused in finance, though favoured in behavioural finance (Baker and Nofsinger, 2010). In experimental laboratory research, respondents are provided with contrived settings to study the relationship between the independent and dependent variables (Bryman and Bell, 2011). The conjoint analysis is a stated choice experimental method in which an individual chooses among a set of product profiles, each of which is described by controlled attributes; several choice sets are

presented to each individual. The product attributes are fixed for each product profile, with just the attribute levels varying for different product profiles. Extraneous variables are assumed constant in the choice task. These choice data, across all the choice sets and all individuals, are then analysed using a choice model to obtain a function that relates the attribute levels to the probability of choice by utility or part-worth (Rao, 2014). The result of the analysis is a utility function that depicts to what extent each attribute contributes to the overall utility. Therefore, the dependent variable of this online conjoint experiment questionnaire survey is the respondents' choice, representing the highest utility in the utility function. The controlled independent variable is the part-worth of the attributes in the utility function. The conjoint analysis technique allows us to understand investors' mutual fund purchase preferences and behaviour in an experimental setting. We therefore favour this laboratory experiment design in which a contrived setting with a higher level of control over mutual fund features' differences, including differences in the ESG factor. In other words, the setting needs to mimic the choices in mutual fund purchase moments and discern the single importance of the ESG factor within the decision. In this case, conjoint analysis is considered an appropriate technique.

Conjoint analysis is a multivariate analysis technique that aims to understand respondents' complex value systems and preferences for products and services (Hair et al., 2010; Curry, 1996). It is also called trade-off analysis because respondents need to evaluate different product or service profiles composed of conjoined features and weigh desirable and undesirable features to form a preference (Hair et al., 2010; Orme, 2020); hence the name, 'conjoint analysis' (Orme, 2020). In our case, mutual fund investors examined different features or attributes to make trade-offs and finalise their choices. Conjoint analysis investigates such trade-offs to determine the combination of attributes representing investors' highest preference and identify the most important attributes in their investment choices (Ramasamy and Yeung, 2003). This technique is a back-door, decompositional approach for evaluating product feature preferences without respondents directly rating the features (Orme, 2020).

In the 1960s, marketing academics Paul Green and Vithala Rao recognised that the technique proposed by mathematical psychologists and statisticians Duncan Luce and John Tukey (Luce and Tukey,1964) and discrete choice analysis from econometrics could be used to manifest how consumers made complex purchase decisions and envisage consumer behaviour (Orme, 2020). Green and Rao published a seminal study, *Conjoint measurement for quantifying judgmental data,* in the Journal of Marketing Research (Green and Rao, 1971). Since then, conjoint analysis has become the most prevalent marketing research technique for evaluating trade-offs (Green, Krieger and Wind, 2001) and the most popular survey-based method for gauging respondent preference (Orme, 2020). The popularity of conjoint analysis in commercial use in Europe and the United States was confirmed by Wittink, Vriens and Burhenne (1994) and Wittink and Cattin

(1989), respectively. Through conjoint analysis, researchers can study the relative importance respondents attach to different attributes of products and services, and the utilities, or part-worth, respondents can derive from different levels of each attribute (Hair et al., 2010; Malhotra, 2010). For our study, that means that when retail investors make a mutual fund purchase decision, the relative importance of the mutual funds' sustainability and social responsibility attributes and the part-worth derived from those attributes can be identified by conjoint analysis.

An added advantage of CBC analysis for our study is that mutual fund choice is a type of complex decision-making, and respondents may not have sufficient self-understanding to report precisely. Their willingness to consider sustainable development and social responsibility can be vigorously differentiated based on their choice between different attributes (Bassen et al., 2019). If one's eventual goal is to predict choice, it is most reasonable to analyse choice data (Orme, 2020). Furthermore, environmental and social considerations are socially desirable behaviours. Respondents may report valuing this attribute, believing most people should; it is widely reported that survey respondents may report inflated intentions to purchase related goods and services (Follows and Jobbers, 2000; Nilsson 2008; Pilaj, 2017); this is called social desirability bias (Arnold and Feldman, 1981; Zaller and Feldman, 1992; Horiuchi, Markovich and Yamamoto, 2020).

In the current study, this means investors may overstate their preference for ESG consideration in SRMFs in a general survey. This is vital to our study because a number of surveys have demonstrated that Hong Kong investors showed a preference for ESG behaviour in the investment realm (HKIFA, 2019; IFEC, 2019b; Schroders, 2019; The Asset, 2019; Asia Asset Management, 2017); however, the SRMF participation rate has remained low in the meantime (HKIFA, 2019; IFEC, 2019b; Asia Asset Management, 2017). We do not know whether the investors' preference has not been realized (i.e., whether a behavioural market failure has occurred) or the investors' penchant for ESG consideration has been exaggerated by social desirability bias. Conjoint analysis is a method of avoiding social desirability bias (Horiuchi, Markovich and Yamamoto, 2020; Hainmueller, Hangartner and Yamamoto, 2015). When respondents choose concrete products in conjoint analysis and have a trade-off between the ESG attribute and other fund attributes, their relative valuing of the ESG attribute can be better discriminated (Orme, 2020; Bassen et al., 2019). In their study, *Does conjoint analysis mitigate social desirability bias?* Horiuchi, Markovich and Yamamoto (2020) explained that conjoint analysis avoids the bias in two aspects. First, when a sensitive attribute vulnerable to norm-violating is randomly mixed with other non-sensitive attributes, respondents are less likely to recognise the infringement of social norms by selecting a certain product profile. Second, respondents can more easily justify their possible violation of social norms when trading off the discrepancy of many non-sensitive attributes between product profiles. Horiuchi, Markovich and

Yamamoto (2020) did provide empirical evidence that a randomized conjoint design decreased social desirability bias in an eco-friendly athletic shoes' consumption experiment.

Furthermore, conjoint analysis can provide a novel means to verify the occurrence of behavioural market failure. If behavioural market failure, in our study, is a mismatch between investors' SRI investment intention and SRMF investment action due to cognitive limitation (Collins, 2012; Sunstein, 2013; Madrin, 2014), it is not easy to prove. However, if conjoint analysis is a well-accepted method for revealing respondents' honest preferences (Horiuchi, Markovich and Yamamoto, 2020; Orme, 2020), including avoiding social desirability bias, we can identify the importance of SRI strategy attributes, both when investors select mutual funds and when financial advisors recommend mutual funds for their clients, respectively, then investigate whether there is a difference in the attributes' importance to financial advisors and their clients. Surveys show that 87% of Hong Kong investors purchase mutual funds through intermediaries (IFEC, 2019b). Over 90% of investors reported relying on financial advisors and intermediaries to explain fund features; only 8% claimed they do not need assistance from financial advisors when making fund selections (IFEC, 2019b). Thus, if financial advisors do not perceive the ESG interests of investors and, at the same time, are under no policy constraints to encourage recommending SRMFs, the hidden demand can hardly be realized in the market. This corresponds to second-stage 'awareness' of the 5A model of Pilaj (2017): investors must be sufficiently aware of such non-salient investment alternatives in the financial products supermarket when they choose their mutual funds. If financial advisors misjudge their clients' latent interest, they will not offer them SRMFs; consequently, their latent demand for SRMFs cannot be translated into actions, and there is behavioural market failure. If investors simply are not aware of this option, they will not reach the latter stages of the 5A model, in terms of appropriate SRI attitudes and taking prompt investment actions (Pilaj, 2017). In this case, intervention measures, like nudge policies, are more appropriate and justified. In summary, this study will employ conjoint analysis to test the existence of behavioural market failure in the awareness stage of SRMF investment.

Conjoint analysis has been widely utilised in all marketing domains related to product development, segmentation, pricing, and advertising, as well as consumer goods, industrial goods, and financial and other services (Hair et al., 2010; Malhotra, 2010). Although the technique has been most favoured in marketing, it has also been adopted in many other realms of study, including medical treatment (Ettinger, Carter and Rajagopalan, 2018; Heringa et al., 2018), energy-saving (Hille, Weber and Brosch, 2019; Kinoshita, 2017), and mutual fund purchases (Bassen et al., 2019; Biong and Silkoset, 2017; Gözbaşı and Çıtak, 2010). Ramasamy and Yeung (2003) pioneered the utilisation of conjoint analysis in mutual fund choice when financial advisors in Malaysia recommended retail mutual funds to clients. Gözbaşı and Çıtak, (2010)

applied a similar conjoint analysis methodology and attributes to explore the preferences of financial advisors and portfolio managers in Turkey for mutual fund features. Biong and Silkoset (2017) introduced incorporating the ESG factor in their conjoint study of mutual fund choice and tested whether employers of Norwegian small and medium enterprises (SME) considered social responsibility when making their employee pension fund choices. Moreover, Heringa et al. (2018) investigated using conjoint analysis to identify differences in pharmacists' and patients' drug-drug interaction management option preferences. This is similar to one of our research objectives: to determine if there are any differences in how financial advisors and retail investors rank the ESG factor when choosing mutual funds. Finally, Bassen et al. (2019) used conjoint analysis to find whether different climate label designs could serve as effective nudges and increase the relative importance of climate-friendliness considerations in retail SRMF choices and promote sustainable investing. Once again, this is precisely the motive of one of our research objectives: to determine whether nudge wordings at the moment of mutual fund choice could increase the ESG factor' relative importance in the decision. All in all, conjoint analysis is considered an appropriate technique for this study.

Conjoint analysis includes various approaches; this study utilises choice-based conjoint (CBC) analysis. CBC analysis is currently the most commonly adopted conjoint analysis approach (Orme, 2020) and the one most favoured for academic research (Maellaro, 2008). In a CBC, respondents are asked to choose between different product profiles with varying levels of predefined attributes, either by trading a lower level of one attribute for a higher level of another attribute between profiles or choosing the 'none' option when no single product profile is favoured (Hille, Weber and Brosch, 2019; Orme, 2020). Usually, respondents need to answer eight to fifteen rounds of product profile sets (choice sets) to enable researchers to determine the attributes' respective part-worths (Orme, 2020). As a form of multivariate analysis, conjoint analysis can incorporate metric and nonmetric dependent variables and relatively general assumptions about the functional form of the relationship between dependent and independent variables (Hair et al., 2010). Its orthogonal array fractional factorial design can also reduce the number of choice sets respondents must answer (Green, Krieger, and Wind, 2001; Malhotra, 2010).

CBC analysis has several additional advantages, compared to other conjoint approaches. First, CBC analysis is more valid and reliable than rating- or ranking-based conjoint approaches and many other *post hoc* survey methods because it is a natural daily experience of choosing amongst many marketplace alternatives (Biong and Silkoset, 2017; Orme, 2020; Bassen et al., 2019; Wijland, Hansen and Gardezi, 2016; Maellaro, 2008). Conjoint analysis's external validity was verified in a recent study (Hainmueller, Hangartner and Yamamoto, 2015), and the results of CBC analysis were shown to uncover attribute effect in actual benchmarks successfully. This realism

is important to our study because it is not easy to conduct a field experiment. First, under the Personal Data (Privacy) Ordinance of Hong Kong, it is an offence for financial institutions to disclose customer information. In addition, SRMF is still not sufficiently common among the Hong Kong investing public to provide a centralised academic study place. Last, modifying respondents' investment decisions through regulated financial advisors is a sensitive matter and may lead to conflicts of interest; thus, a laboratory experiment is more appropriate. As such, we need a technique with enhanced internal validity to mimic respondents' considerations when choosing SRMFs (Bassen et al., 2019).
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;
Conjoint analysis assumes that consumers evaluate the overall preferability of any set of stimuli, whether they are goods or services, in terms of a bundle of individual values provided by separate yet conjoined attributes (Malhotra, 2010; Hair et al., 2010; Orme, 2020; Gözbaşı and Çıtak, 2010). The individual's subjective judgment of preference, derived from the attributes, informs utility that can be combined into a utility or part-worth function to represent the individual's overall desirability quantitively. An additive model is usually assumed and works well in practice (Orme, 2020; Hair et al., 2010). That means the overall utility of a particular product is the linear summation of the part-worth attached to different levels of attributes that the product possesses.

3.2 Attributes and levels developments

The laboratory experiment took the form of a structured online questionnaire administered to financial advisors and retail investors. After conceptualising the research, the standard conjoint analysis steps were taken, beginning with the formulation of the survey and the development of attributes and levels (Hair et al., 2010; Malhotra, 2010). The attributes and levels were selected after reviewing the relevant literature and interviewing market experts. The references of attribute types and levels from the literature are summarised in Table 3.1. Attributes were first extracted from previous studies; then, we interviewed six financial advisor practitioners – three from commercial banks, two from independent financial advisor companies, and one from an insurance company – to obtain a balanced view of the retail investment market. Different levels of attributes are also formulated after consultation with them. We identified a total of six attributes and seventeen levels to be used in our CBC analysis. The attributes and levels were based on three principles (Malhotra, 2010). The first principle was that attributes and levels must be salient and significantly influence the survey respondents' choices. The second principle was that attributes must be actionable so concrete attribute levels could be found in the market and varied. Finally, the attribute levels had to be practical but slightly exceed the prevalent market

range to improve parameter prediction accuracy.

Table 3.1 Attributes and attribute level major reference

Attribute type and attribute level research reference	Other research/ survey reference
➢ Ramasamy and Yeung (2003) ➢ Gözbaşı and Çıtak, (2010) ➢ Bassen et al. (2019)	➢ IFEC (2019b, 2017) ➢ Fung (2000) ➢ Jamaludin, Smith and Gerrans (2012) ➢ Biong and Silkoset (2017) ➢ Shukla and van Inwegen (1995) ➢ Indro et al. (1999)

The first conjoint attribute was previous fund performance. Investment is the commitment of current resources to increase future return (Bodie, Kane and Marcus, 2005) and, naturally, return on investment should be the investors' focus. Previous fund performance is the most readily available information for investors to predict future returns, with several studies having shown that past fund performance can predict future results (Grinblatt and Titman, 1992; Elton, Gruber and Blake, 1996; Goetzmann and Ibbotson, 1994). Accordingly, it is understandable that past fund performance is the most referenced mutual fund selection attribute (Gözbaşı and Çıtak, 2010).

Despite that, the efficient market hypothesis implies that past performance is not a sufficient indicator of future performance; SFC regulations require those selling mutual funds in Hong Kong to warn clients that past performance is not indicative of future performance (SFC, 2019b). Carhart (1997) explained that fund performance predictability could be largely explained by stock market anomalies and fund expenses, whilst Philpot et al. (1998) demonstrated that bond funds' previous performance could not predict their future performance. In the first conjoint analysis of mutual fund selection, Ramasamy and Yeung (2003) found that Malaysian financial advisors considered a fund's previous performance its most critical attribute. Gözbaşı and Çıtak, (2010), using a similar conjoint analysis methodology and attributes, observed similar results among portfolio managers and investment advisors in Turkey. In contrast, the conjoint analysis conducted by Bassen et al. (2019) demonstrated that, in most cases, retail investors from six European countries considered financial performance over the past three years only the third most critical of five attributes. In Hong Kong, a survey by IFEC revealed that local retail investors considered projected investment return and past investment performance were the first and seventh most vital considerations when making mutual fund decisions (IFEC, 2019b). In an earlier study, Fung (2000) investigated the behaviour of mutual fund investors in Hong Kong and found that performance track record was the second most crucial factor for fund purchase. Three

levels of this attribute were adopted from Ramasamy and Yeung (2003) and Gözbaşı and Çıtak, (2010), varying from consistent growth over the last five years to an impressive record in the most recent year.

The second conjoint attribute was transaction cost. In a competitive investment market, earning a positive risk-adjusted return is not easy, and higher expense ratios reduce the net return to investors. Most studies demonstrate that charges and fees are negatively related to fund performance (Smith, 2009b; Carhart, 1997; Elton, Gruber and Blake, 1996; Ippolito, 1989). Transaction cost is considered the most crucial fund selection conjoint attribute in Gözbaşı and Çıtak, (2010), the second most important in Ramasamy and Yeung (2003), and the third most important in Bassen et al. (2019). The IFEC (2019b) found it the third most predominant mutual fund selection criterion in Hong Kong in 2019, but the most vital in 2017 (IFEC, 2017).

The third conjoint attribute was the fund's risk rating. An investment is meant to increase future returns; however, those returns most often involve a degree of uncertainty, making the risk-return trade-off a major concern (Bodie, Kane and Marcus, 2005). Major risks are considered the second most important factor considered by retail mutual fund investors in Hong Kong (IFEC, 2019b). However, quantitative risk measures are not easy for retail investors to understand, and mutual fund providers are required to provide fund risk ratings that specify the overall investment risk (SFC, 2012). Bassen et al. (2019) found fund risk rating the second most crucial conjoint attribute for European mutual fund investors.

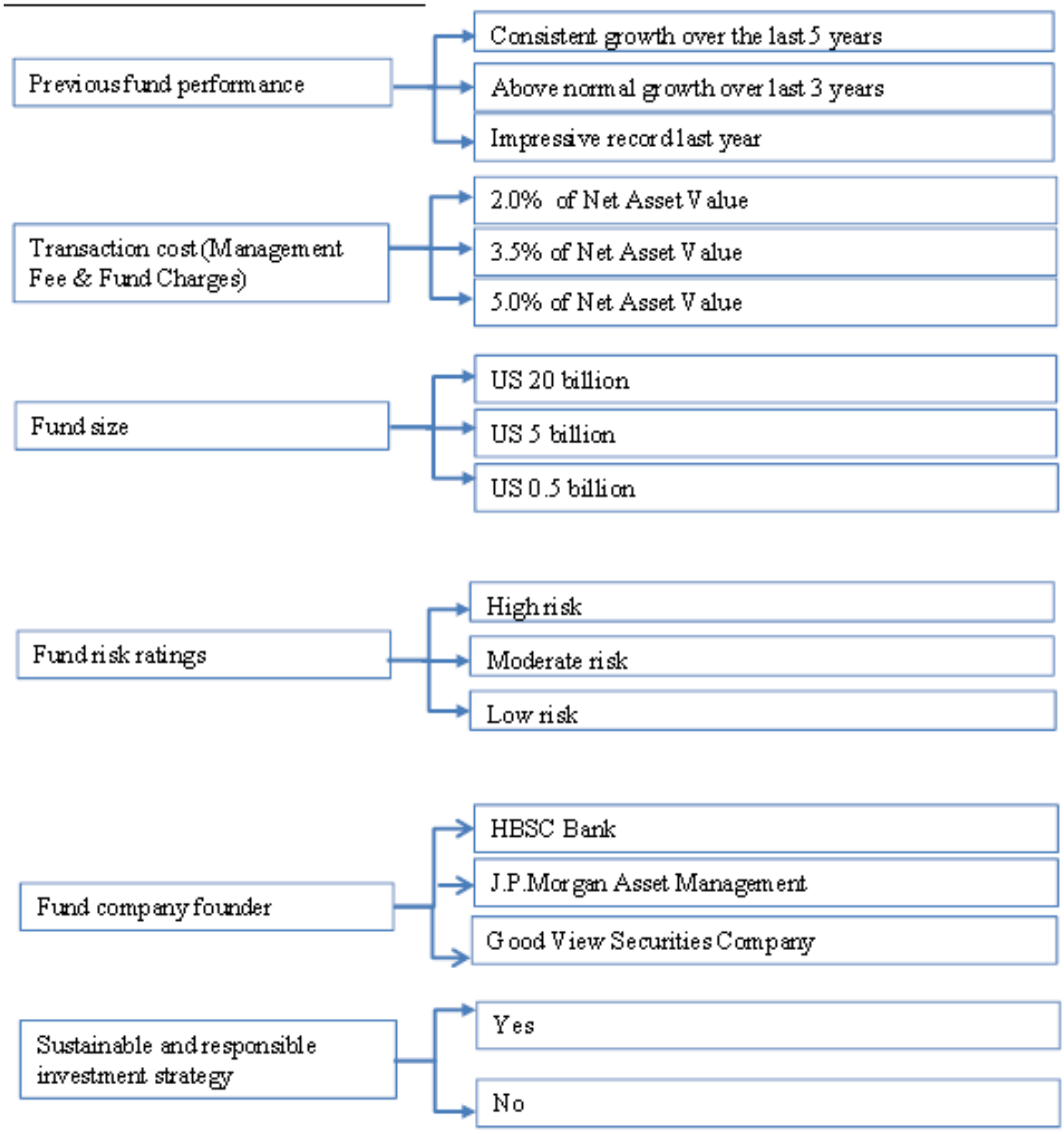
The fourth conjoint attribute was the fund company founder, specifically their creditability and brand name effect. In an early Hong Kong retail fund investor study by Fung (2000), the fund company brand name was found to be the first priority among all selection factors. Malaysian retail investors deemed fund reputation the second most important factor when selecting retirement saving mutual funds (Jamaludin, Smith and Gerrans, 2012), while the fund company's corporate brand credibility was the second most important factor for Norwegian SME employers when choosing a fund company for their employee pension schemes (Biong and Silkoset, 2017). In previous conjoint analysis studies, the fund company founder was identified as the fourth most crucial attribute for portfolio managers and financial advisors in Turkey (Gözbaşı and Çıtak, 2010) and the fifth for retail investors in six European countries (Bassen et al., 2019).

The fifth conjoint attribute was fund size. A mutual fund's size is a substantial factor in attracting investors, but its impact is uncertain. Shukla and van Inwegen (1995) showed that larger mutual funds performed better, probably due to their having more security analysis resources and greater economies of scale for transaction costs and expenses than smaller funds. Indro et al. (1999) also identified a threshold fund size to justify the cost of information gathering and trading. On the

other front, Grinblatt and Titman (1989) found that smaller mutual funds registered higher gross returns before expenses, probably because their securities trading did not move security prices easily. Smith (2009a) further summarised the literature regarding the diseconomy of scale larger mutual funds suffer for large volume trades. Fund size is also of importance in previous conjoint analyses, being the third most crucial factor in Ramasamy and Yeung (2003) and the fifth in Gözbaşı and Çıtak, (2010). The above five conjoint attributes were confirmed – by practitioner opinions in interviews – to be the predominant factors in their mutual fund selection for retail investors. Each attribute carries three different levels, based on market practitioners' evaluations (in interviews) of the market environment in Hong Kong.

The last conjoint attribute was whether the mutual fund implemented a sustainable and responsible investment strategy to identify how investors valued ESG considerations when purchasing funds, per our research objectives. There were only two levels for this attribute: whether the strategy existed or not. Initially, we intended to divide this attribute into active inclusion ESG strategy and negative screening ESG strategy; as discussed in the SRI history, these two strategies have implications for SRI returns, and we wanted to know whether retail investors differentiated them. However, interviews with the market partitioners indicated the Hong Kong investment market had not reached the stage where most investors distinguished between these two delicate considerations in their fund purchases. In addition, combining the two attributes reduced the cognitive burden on respondents in the repeated choice exercises and increased the survey's internal validity. Six attributes and 17 levels were thus finalised, as shown in Figure 3.2.

Figure 3.2 Attributes and levels of mutual funds in the study



3.3 Experiment Instrument, Pilot Test and Process Design

After finalising the attributes and levels, we conducted a pilot test to verify the viability of the CBC survey process and respondents' understanding of the survey instruments. The online pilot test was administered to 53 respondents – mostly investment advisory and financial planning partitioners. They generally found the attributes and levels realistic and could complete the

questionnaire within 10 minutes. A preliminary analysis of their utilities was also conducted, and their preference trends for different attribute levels showed no irregularity. Meanwhile, the questionnaire formatting and wordings were adapted and simplified, based on their comments, to make the content fit different electronic devices' screens and reduce the need to read lengthy ESG factor descriptions. The finalised survey instrument and survey process follows.

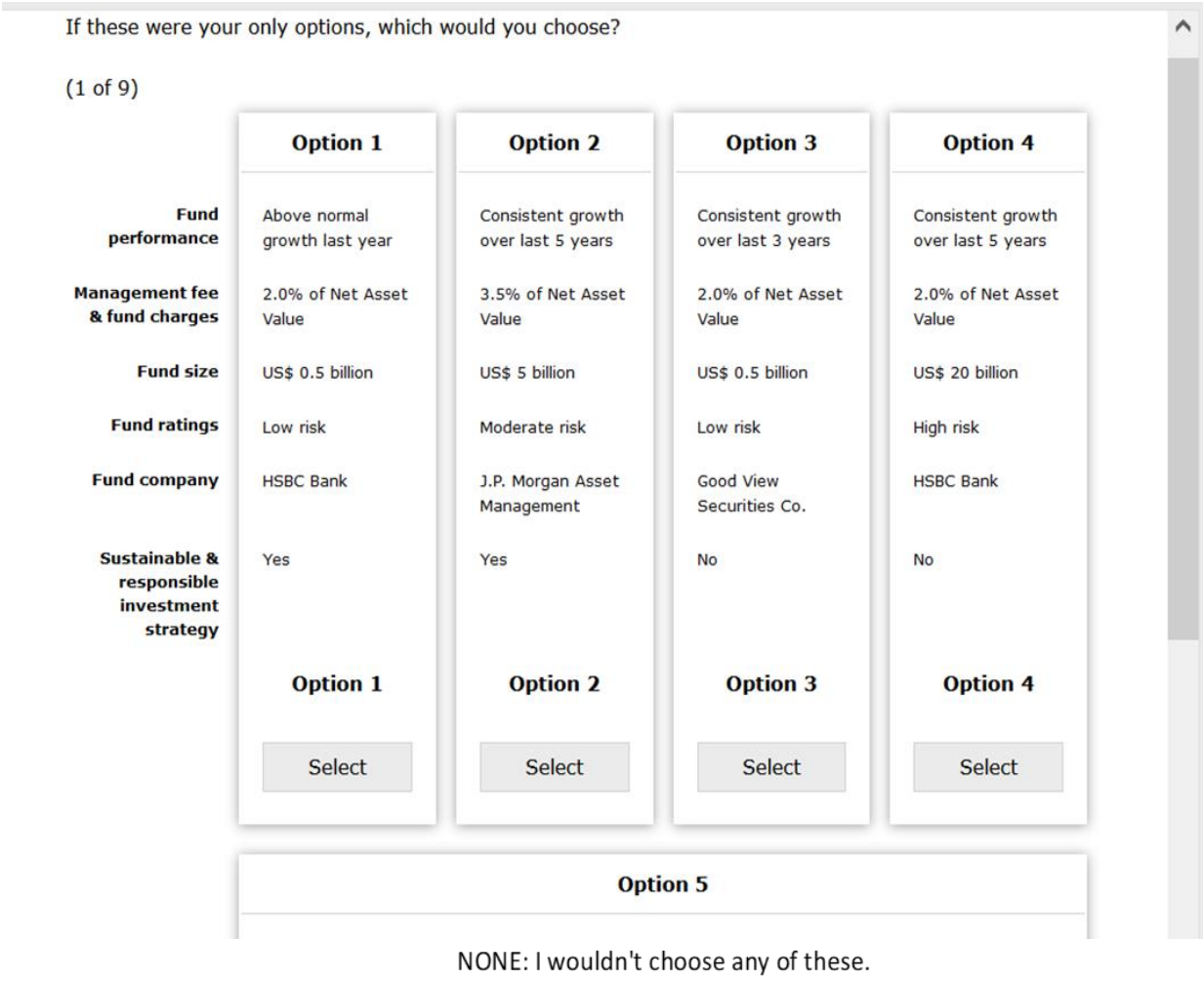
The first part of the survey was the introduction. Respondents were informed about anonymity, data confidentiality, voluntary participation, and their right to terminate the survey process at any time, without consequence. They were also notified that they could leave their email address if they wanted to receive a summary of the research results, that the survey was required to conform to the Research Ethics and Integrity Code of Practice of the University of Wales Trinity Saint David, and that the University Ethics Committee had approved it. A password was appended to the introduction page to avoid unauthorised access and accidental trespass.

The second part of the survey required respondents to provide demographic information, such as their age, education, income, and investment portfolio size. There was also a series of questions relating to the respondents' personal preferences for mutual fund selection. The respondents also needed to identify themselves as either financial advisors or retail investors. In the third part, the respondents were told they would soon need to make a series of trade-offs to choose their most desirable mutual funds. As one of the attributes concerned a sustainable and responsible investment strategy, a brief introduction of the sustainable and responsible investment strategy, which may include exclusion of poor ESG performance companies and inclusion of better ESG performance companies in investment portfolio selection, is furnished at the end of this survey part.

The core part was a CBC task based on choosing a mutual fund in which to invest. Retail investors were told to choose for themselves, while financial advisors were instructed to recommend a purchase for a general retail investor client. In the finalised survey, participating investors and financial advisors faced nine choice sets, each with four complete mutual fund profiles from which to choose. The number of choice sets respondents needed to respond to balanced the effectiveness of the survey and the burden on the respondents to complete all evaluation tasks. The number of choice sets was optimised using a Bayesian model orthogonal design. The randomly generated levels of different attributes also reduced the common method research bias. The hierarchical Bayesian model, developed in the nineties, improves the predictive accuracy of CBC analysis and is one of the reasons why choice-based surveys are more favourable to the rating-based method (Karniouchina v. et al., 2009). If they favoured none of the four mutual fund features, respondents could choose the 'none' option, which is consistent with reality. After the survey, a thank you screen appeared to signal the end of the survey process.

The survey instrument and process were created and programmed using Sawtooth Software module Lighthouse Studio 9.7, academic version. Chinese translation was provided for respondents. The survey process took around ten minutes to complete. Figure 3.3 shows a sample choice set.

Figure 3.3 Sample conjoint analysis choice set



The CBC jobs were the same for the financial advisors and retail investors, allowing the relative importance of different mutual fund attributes to be directly compared. However, financial advisors invited retail investors to complete different versions of the questionnaire, with different forms of nudging wordings.

In version 2 of the questionnaire, right before the investors underwent the CBC survey, there was a message in red, bold-faced characters highlighting that many mutual funds had adopted

sustainable and responsible investment strategies globally and that some SRMFs were available in Hong Kong. This was the salient nudge, in consideration of the salience effect discussed in Section 2.4.3. Researchers have indicated that familiarity and availability are important heuristics that influence decision-making (Nofsinger, 2018). The wording directly references Pilaj's (2017) proposal that the slack demand for SRMF could be at least partly attributable to limited investor attention. Highlighting the availability of local SRMFs at the moment of choice was meant to overcome the possible lack of salience of SRMF availability.

In version 3 of the questionnaire, the message was also marked in red, bold-faced characters but highlighted that one could contribute to a more sustainable, environmental-friendly, and just economy by investing in SRMFs. This was the moral-framed nudging, which considered the framing effect discussed in Section 2.4.4. The nudge wordings referenced Døskeland and Pedersen's (2015) field experiment, which found that retail investors in an online banking environment bought 18% more green funds than the control group when they received moral-framed promotional materials.

In the fourth and final version of the questionnaire, the message was highlighted in the same way, but emphasised that several studies had found SRMFs performed equally as well as comparable indices and conventional mutual funds. This was the wealth-framed nudging, which was related to the framing effect in Section 2.4.4 and the consensus in the literature that SRMFs do not underperform conventional mutual funds, as discussed in Section 2.2.3. Døskeland and Pedersen (2015) found that retail investors bought 31% more green funds when they received wealth-framed promotion materials, compared to the control group. In our experiment, version 1 (with no reminder message before the CBC survey) respondents acted as a control group to compare the nudging effect. Figure 3.4 shows the different reminder messages.

To summarise, the nudge wordings mainly referenced two studies about the salience effect and framing effect for SRIs (Pilaj, 2017; Døskeland & Pedersen, 2015) and were concluded after consultation with the interviewed six financial advisor practitioners.

It should be noted that we did not conduct a manipulation check for this experiment. Manipulation checks are often used in experimental research design, especially psychology experiments, to 'ensure participants perceive, comprehend, or react as expected to the portion of the manipulation of interest contained within the independent variable' (Hoewe, 2017). This is to confirm the participants correctly received the stimulus and draw a more accurate conclusion between dependent and independent variables; in our case, the different nudges affected the importance of the ESG factor. We mainly relied on the evidence from the field experiment conducted by Døskeland and Pedersen (2015), which our moral nudge and wealth nudge

wordings largely referenced, that subtly changed fund introduction information can significantly change information search and investment behaviour out of their 142,000-investor sample. In their study, the effects of moral-framed and wealth-framed nudging were significant compared to participants receiving no manipulation. That is, the two framing wordings significantly affected participants' behaviour. For the salient nudge, the initial reference is from Pilaj (2017). Indirect support for manipulation effect comes from the surveys that Hong Kong investment in SRMFs can be increased if easy-to-understand information can be provided by investment advisors (Schroders, 2019) and if product choice is not limited (IFEC, 2019b).

Figure 3.4 Different nudge wording reminder messages

Salience nudge

1. A SURVEY SHOWS THAT IN 2016, 26% OF THE GLOBAL PROFESSIONALLY MANAGED ASSETS WERE MANAGED USING DIFFERENT SUSTAINABLE AND RESPONSIBLE STRATEGIES.

2. ESG FUNDS WITH THE ABOVE TWO STRATEGIES ARE AVAILABLE IN HONG KONG

Moral nudge

BY INVESTING IN SUSTAINABLE AND RESPONSIBLE MUTUAL FUNDS, YOU CAN CONTRIBUTE TO A MORE SUSTAINABLE, ENVIRONMENTAL-FRIENDLY AND JUST SOCIETY.

Performance nudge

1. MOST SUSTAINABLE AND RESPONSIBLE FUNDS ADOPT BOTH ACTIVE INCLUSION AND NEGATIVE SCREENING INVESTMENT STRATEGIES

2. A NUMBER OF STUDIES HAVE SHOWN THAT ESG FUNDS PERFORMED EQUALLY WELL WITH COMPARABLE ORDINARY FUNDS AND INDEXES

3.4 Sampling method

As our research objective was to compare the relative importance of the ESG factor on fund purchases, as perceived by financial advisors and retail investors, we had to access distinct samples of practising financial advisors and current retail investors. We could have invited a financial institution to be a sponsor and interview their financial advisors and clients, but that would require guaranteeing a highly-regulated Hong Kong financial institution that client data would not be released. Moreover, we would probably need to invite more than one financial institution because of the large number of financial advisors we required (we finally had more

than 200), and because it would be better not to focus on advisors from only one institution. Alternatively, we could ask interviewers to approach people on the street and filter financial advisors and people with investment experience. But it would be difficult to find enough financial advisors and retail investors to fulfil different nudge scenarios. Above all, it would be challenging to approach large numbers of investors, financial advisors, or even institutions during the COVID-19 pandemic. The current study finally adopted a unique dataset. We employed purposive sampling to select the financial advisors and managed to find two supporting institutions: Hong Kong University School of Professional and Continuing Education and Hong Kong Polytechnic University Institute of Entrepreneurship. Financial advisors were recruited from adult students pursuing different semesters of the Certified Financial Planners programme at these two universities. The Certified Financial Planner certification is the world's oldest and most-recognised qualification for financial planners, according to the Institute of Financial Planners in Hong Kong (IFPHK) (IFPHK, 2020). We planned to invite at least 200 financial advisors to participate, to increase the study's validity. The advisors had to be licensed financial advisors allowed to sell mutual funds or investment-linked insurance in Hong Kong. The retail investor respondents were the direct clients of these financial advisors, who referred them by non-probabilistic snowball sampling. In this case, if the financial advisors invited and encouraged retail investors who were their clients to participate, the clients were more likely to take the survey seriously and complete the somewhat repetitive conjoint task. In addition, directly comparing how important mutual fund attributes were to financial advisors and their clients enhanced the value and internal validity of the choice experiment.

The survey was conducted during a break in their lessons and after the researcher introduced and explained it. The financial advisors completed the original version of the online survey (without nudge wordings); they also participated in the survey without compensation. After around ten minutes, when the survey was completed, advisors were invited to refer at least two clients each to take the online survey as a retail investor. The financial advisors could introduce and explain the survey to their clients. The financial advisors were given token cake coupons to transfer to their clients. Retail investors had to meet the following criteria: 1) they must not be licensed financial advisors in Hong Kong, 2) they must have bought either stocks or mutual funds in the past two years, and 3) they had to be Hong Kong residents. Our financial advisor sampling method was similar to that used by Ramasamy and Yeung (2003); our retail investor sampling ensured they had the investment knowledge and experience to handle the fund choice exercises in the conjoint analysis. The financial advisor and retail investors samples could avoid the external validity issues raised by using young student samples (Glac, 2009).

There were four versions of the survey questionnaire, as discussed above – the original base case survey, salient nudge, moral-framed nudge, and wealth-framed nudge – and we took turns

inviting referred clients from each class to complete the various versions. Some non-financial advisor students in the class were also invited to participate in the retail investor version of the survey assigned to that class. We intend to obtain over one hundred respondents for each version to provide valid results. The sampling period lasts from September 2019 to the end of 2020.

No significant risk to the respondents was observed in the sampling and survey processes. No sensitive, embarrassing, or upsetting topics were brought up in the survey process. No personal information was collected – i.e., respondents' name, phone number, address, personal identity document number, or other identifiable data. The author will maintain data confidentiality and ensure the respondents' anonymity. The survey data is stored online in a centrally protected Sawtooth Software server. The Sawtooth Software can extract data directly from the server and conduct analyses without downloading; however, survey results were downloaded confidentially to the author's personal home computer as data backup. Even in the backup files, respondents were only represented by a respondent number; any information that could identify individual respondents was eliminated. The author was the only person who could access the data. The backup data files will be erased at the end of 2021, as will the data stored in the Sawtooth Software server. The author adheres to UWTSD's Research Integrity and Ethics Code and Hong Kong's Personal Data (Privacy) Ordinance (Cap. 486)

Chapter 4: Data Analysis, Interpretation and Discussion

The purpose of this study is to investigate whether investors' value the ESG factor in selecting mutual funds is underestimated and whether the importance of the ESG factor can be altered by nudging. In Chapter 1, we discussed the general lack of research on investor behaviour regarding SRI, particularly in Hong Kong, and the proposition that the behavioural finance theoretical framework and nudging might help to promote SRMF. In Chapter 2, we introduced SRI market development and the current market situation in Hong Kong. More importantly, the framework for the underlying theories was reviewed, and the literature informing this study's proposition was illustrated. Finally, in Chapter 3, we articulated a quantitative research architecture based on conjoint analysis procedures to study mutual fund investment decisions. We purposively sampled financial advisors and retail investors in Hong Kong to ascertain their preferences for various factors and any ESG concerns they might consider when selecting mutual funds. This chapter continues the study into factors leading to mutual fund investment decisions by collecting, analysing, and interpreting relevant data. Using conjoint analysis, the author analysed their responses to an online choice-based conjoint (CBC) survey to answer the following research questions and test the seven hypotheses:

1. Are ESG concerns a significant decision variable in the selection of mutual funds?
2. What other factors do financial advisors and retail investors consider important when selecting a mutual fund?
3. Are there any differences in the ranking of the ESG factor between advisors and investors?
4. Could a nudge change investors' ranking of the ESG factor?
5. Could different types of wording effectively change investors' ranking of the ESG factor?

Hypothesis 1: the ESG strategy will be a significant attribute in determining an investor's preference when deciding a mutual fund investment choice, whereby the existence of ESG strategy will be associated with a higher probability of a mutual being selected, all else being equal.

Hypothesis 2: other attributes we choose in our conjoint analysis experiment will be all significant attributes in determining an investor's preference when deciding a mutual fund investment choice.

Hypothesis 3: the overall conjoint analysis utility model can significantly explain investors'

mutual fund selection

Hypothesis 4: there are significant differences in the ranking of the ESG strategy between financial advisors and investors' base case selection

Hypothesis 5: the salient nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Hypothesis 6: the moral nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Hypothesis 7: the performance nudge can change the importance of the ESG factor significantly compared to the base case investor choice, whereby the importance of the ESG strategy will be increased.

Finally, based on the results of the above questions, we will address the overarching research questions: Is nudging practice justified, based on our experiment, and what type of nudging wording can effectively promote SRIs?

This chapter reports my findings from this study. It begins by presenting information about the respondents and explaining the estimation techniques employed to analyse respondents' choices. The data analysis results are then introduced and interpreted.

4.1 Respondent background characteristics

As introduced in Section 3.4, we invited financial advisors and approached retail investors for our study through their referral. The CBC surveys were administered to 803 individuals, 110 of whom did not complete the survey. In total, we had 693 respondents, including 218 financial advisors and 475 retail investors. The respondents' characteristics are shown in Table 4.1. Hong Kong has over 27,000 sales and marketing staff in the asset and wealth management business (SFC, 2020a); while our 218 financial advisor respondents accounted for less than 1% of industry partitioners, it should be noted that financial advisor may have tens or hundreds of clients, and they affect the perception and mutual fund choice of many end-customers (Ramasamy and Yeung, 2003). In addition, a survey between financial advisors and their retail investor clients represents a direct comparison of attitude differences in selecting mutual funds.

The numbers of participants for the versions of advisors, base case investors, salience nudge,

moral nudge, and performance nudge were 218, 132, 115, 99, and 129, respectively. The author of Sawtooth Software's CBC system recommended a rule of thumb for determining the minimum acceptable sample size for an aggregate level full-profile CBC survey: (n t a) /c ≥ 500, where *n* is the number of respondents, *t* the number of choice tasks, *a* the number of product concepts excluding the 'none' option per task, and *c* the largest number of levels for any one attribute in the main effects model (Orme, 2020). In our study, *t* was 9, *a* was 4, and *c* was 3. Based on the minimum threshold of 500, the minimum number of survey respondents was 42. That means obtaining nearly 100 respondents for each questionnaire version would far exceed the minimum threshold for providing preliminarily reliable test results.

Most participants were male (56%, 53%, 47%, 64%, and 49% for the five study versions, respectively), below 40 years of age (71%, 66%, 53%, 60%, and 51% for the five study versions, respectively) and university graduates (61%, 49%,40%, 45%, and 53% for the five study versions, respectively).

Table 4.1: Profile of respondents

	Advisors	Investors			
		Base Case	Salience Nudge	Moral Nudge	Performance Nudge
Sample size (number)	218	132	115	99	129
Gender:					
Male (%)	56.0%	53.0%	47.8%	64.6%	49.6%
Age (%):					
<30	28.9%	29.5%	27.8%	41.4%	21.7%
30-39	42.7%	27.3%	25.2%	19.2%	29.5%
40-49	16.1%	22.7%	28.7%	17.2%	20.9%
50-59	11.5%	12.9%	12.2%	16.2%	17.8%
≥ 60	0.90%	7.6%	6.1%	6.1%	10.1%
Education (%):					
Not university graduate	22.9%	34.8%	35.7%	41.4%	28.7%
University graduate	61.5%	49.2%	40.9%	45.5%	53.5%
Master or above	15.6%	15.9%	23.5%	13.1%	17.8%

4.1.1. Data and statistical analysis method

This study used i) counting estimation and ii) Hierarchical Bayes (HB) estimation in the Sawtooth Software for parameter estimation and data analysis. Counting estimation is a common approach for summarizing the preferences of a target market. It provides proportions from 0.0 to 1.0 for each level of conjoint attributes, representing the frequency with which that level was chosen when it appeared in the choice set screen (Sawtooth Software, 2019). In addition to counting estimation, we also used more advanced Hierarchical Bayes estimation to derive the individual utilities for each attribute level. Utility is defined as "an individual's subjective preference judgment representing the holistic value or worth of a specific object" (Hair et al., 2010, p. 347). It is similar to the regression coefficient used in our choice function and represents the relative influence of an attribute level on the respondents' final choice (Orme, 2020; Heringa, M. et al., 2018). From the utility score, we calculated relative importance – i.e., how much difference each attribute made to a product's total utility (Orme, 2020). To calculate the relative importance, we first derived the range in the attribute's utility value; the relative importance was then the ratio of the range of attribute utility value to the summed range of utility value of all attributes (Ramasamy, Rowley and Yeung, 2016; Orme, 2020).

In addition to Sawtooth Software, we also employed Microsoft Excel 2010 and SPSS version 26 for data analysis, especially for descriptive statistics of respondent characteristics. For categorical variables, we used Pearson's Chi-Squared test to verify independence. Following the practice of Ramasamy, Rowley and Yeung (2016), we used paired t-test to examine whether respondents' part-worth utility for attributes were significantly different from each other based on their ranking. We also followed Ramasamy, Yeung and Chen (2013) and adopted the X^2 test for compatibility of different counts, a kind of chi-squared test, to test the significance of relative importance differences between the ESG factor percentages of each study version. Unless otherwise specified, statistical significance was considered at the 5% or 1% levels. Our analysis focused on respondents' preferences at an aggregate level; utilities were scaled to enhance interpretability.

4.2 Results

4.2.1 Counting analysis

Counting analysis was first conducted to understand respondents' basic and summary preferences in the conjoint analysis experiment. As mentioned, counting analysis produced proportions from 0.0 to 1.0 for each level in our study, representing a proportion of "wins" for each level, based on how many times a concept included that level was chosen, divided by the number of times the concept appeared in the choice task. Given this study's randomised design and lack of fixed holdout tasks, the counts provided an intuitive measure of the impact of each attribute level of overall choice for mutual funds; the higher the proportion, the higher the preference for the level. For instance, a count of 0.27 for an attribute level 'fund with sustainable and responsible strategy' would mean that when a mutual fund concept was displayed with that particular level, respondents chose the concept 27% of the time. The counting analysis also analysed all one-way and two-way count proportions. The results of the counting analysis are shown in Table 4.2.

Table 4.2: Counting analysis of investment fund selection attributes

		Advisors	Investors			
Attributes	Levels		Base Case	Salience Nudge	Moral Nudge	Performance Nudge
Fund performance	Growth over 5 years	0.290	0.248	0.263	0.256	0.277
	Growth over 3 years	0.237	0.233	0.248	0.219	0.221
	Growth last year	0.163	0.202	0.167	0.168	0.168
	Within attribute Chi-square	91.849	7.464	32.495	21.946	41.527
	Significance	p < .01	p < .05	p < .01	p < .01	p < .01
Fund charges	2% of NAV	0.341	0.269	0.284	0.293	0.281
	3.5% of NAV	0.214	0.234	0.233	0.220	0.220
	5% of NAV	0.134	0.181	0.161	0.129	0.164
	Within attribute Chi-square	247.145	27.475	46.661	74.682	47.404
	Significance	p < .01	p < .01	p < .01	p < .01	p < .01
Fund size	US$20 billion	0.269	0.245	0.238	0.253	0.234
	US $5billion	0.222	0.229	0.225	0.201	0.208
	US $0.5billion	0.199	0.209	0.214	0.189	0.224
	Within attribute Chi-square	29.627	4.563	1.801	12.851	2.328
	Significance	p < .01	not sig	not sig	p < .01	not sig
Risk rating	High risk	0.203	0.164	0.150	0.143	0.147
	Moderate risk	0.267	0.278	0.277	0.230	0.276
	Low risk	0.220	0.242	0.249	0.270	0.243
	Within attribute Chi-square	24.915	47.479	54.311	46.683	62.391
	Significance	p < .01	p < .01	p < .01	p < .01	p < .01
Fund Company	HSBC Bank	0.226	0.249	0.258	0.258	0.250
	J. P. Morgan	0.290	0.255	0.253	0.227	0.239
	Good View Securities	0.174	0.179	0.166	0.158	0.177
	Within attribute Chi-square	77.033	25.143	32.472	28.765	21.378
	Significance	p < .01	p < .01	p < .01	p < .01	p < .01
SRI strategy	Yes	0.269	0.270	0.271	0.250	0.301
	No	0.191	0.186	0.181	0.178	0.142
	Within attribute Chi-square	52.953	36.969	36.604	21.810	131.797
	Significance	p < .01	p < .01	p < .01	p < .01	p < .01

Hypothesis 1: The results of the counting analysis gave a supporting answer to the research question on whether the ESG factor were a decision variable for retail investors and financial advisors in our setting when selecting mutual funds. Both retail investors in the base case and financial advisors more frequently chose a mutual fund with an SRI strategy than one with no such strategy (0.27 vs 0.19; 0.27 vs 0.19, respectively). The same situation applied to retail investors who received a salience nudge, retail investors who received a moral nudge, and retail

investors who received a performance nudge, demonstrating internal validity (0.27 vs 0.18; 0.25 vs 0.18; 0.30 vs 0.14, respectively). That means a mutual fund with an SRI strategy was preferable to one without such a strategy in all circumstances of our study. The within-attribute Chi-square test indicated a significant difference between the levels of a fund with or without SRI strategy in all cases [X^2 (1)=36.97; 52.95; 36.60; 21.81; 131.80, $p<0.01$ in all cases]. We obtained initial support for our first research question regarding whether addressing ESG concerns via an SRI strategy could be a significant decision variable.

Hypothesis 2 and Hypothesis 3: The results of the counting analysis also validated our CBC utility model. Within-attribute Chi-square test results for all attribute levels were significant, either at the 5% level (for fund performance attribute of financial advisors) or 1% level (for all other attributes in all study versions). The only exception was the fund size attribute, which recorded an insignificant difference of levels in three of the five study versions (base case investors, investors received salient nudge, and investors received performance nudge). The results suggested that, in some cases, fund size did not substantially affect mutual fund choice for our respondents.

The two-way count proportion in the counting analysis further supported our CBC model. The Chi-square results of the pair-wise two-way interaction effect of all attributes in all study versions recorded no statistical significance except in three cases. The only exceptions were fund size versus fund company attributes ($p<0.05$) and fund rating versus SRI strategy ($p<0.05$) for base case investors, and fund performance versus SRI strategy ($p<0.05$) for investors who received a performance nudge. Since the interaction effect only occurred in three cases and the effect appeared for different attribute pairs in different study versions, we view this as initial support for our general additive or main effects utility model with no interaction effect as a valid conjoint analysis model for investors and advisors. We had initial support for our second research question in that SRI strategy, past performance, fund charges, fund risk rating, fund company, and, in some cases, fund size were significant attributes when selecting a mutual fund in our model.

4.2.2 Part-worth analysis

The counting analysis provided a quick depiction of the choice results, summarising the survey responses. But counting analysis is just the frequency with which a level appearing in the choice set was chosen, not a direct part-worth estimation. Part-worth is defined by Hair et al. (2010, p.346) as an ‘estimate from conjoint analysis of the overall preference or utility associated with each level of each factor used to define the product’. Hierarchical Bayes (HB) estimation was employed to estimate part-worth from choice data. HB estimation is more advanced than

counting analysis and is the most recommended approach for analysing respondents' part-worth utilities (Sawtooth Software, 2019; Orme, 2020). Choice-based conjoint (CBC) was originally only analysed at the aggregate level. HB estimation, which became popular in the late 1990s following articles by scholars such as Allenby, Arora and Ginter (1995), enables accessible and practical analyses at the aggregate and individual levels (Orme, 2020). HB provides a means of borrowing information from every respondent in the dataset to enhance the accuracy and stability of each respondents' part-worth estimation. More importantly, it can reduce the independence from irrelevant alternative assumption issues and increase the predictive capability of both individual-level models and market share simulation results. Many interaction effects from main-effects models can be ignored using HB estimation (Orme, 2020). The HB analysis part-worth score estimates for different attribute levels are shown in Table 4.3. The data are scaled to a zero-centred manner and always sum to zero for an attribute to facilitate easy comparison.

Table 4.3: Zero-centered utilities of investment fund selection attributes

		Advisors	Investors			
Attributes	**Levels**		**Base Case**	**Salience Nudge**	**Moral Nudge**	**Performance Nudge**
	Root Likelihood	0.52	0.50	0.53	0.55	0.54
Fund performance	Growth over 5 years	*36.48*	*12.49*	*20.14*	*28.36*	*25.33*
	Growth over 3 years	5.68	6.79	19.93	0.24	9.99
	Growth last year	-42.16	-19.27	-40.07	-28.60	-35.32
Fund charges	2% of NAV	*61.57*	*31.77*	*36.85*	*45.61*	*37.42*
	3.5% of NAV	6.23	5.93	12.65	15.42	2.50
	5% of NAV	-67.80	-37.70	-49.50	-61.02	-39.93
Fund size	US$20 billion	*22.46*	*12.90*	*9.26*	*15.92*	-0.15
	US $5billion	-1.35	1.92	-0.13	-4.75	-3.37
	US $0.5billion	-21.11	-14.82	-9.13	-11.17	*3.52*
Risk rating	High risk	-21.92	-58.60	-56.43	-48.33	-50.34
	Moderate risk	*25.46*	*41.58*	*40.65*	23.09	*34.44*
	Low risk	-3.54	17.02	15.78	*25.25*	15.90
Fund Company	HSBC Bank	-1.80	11.68	17.61	*27.49*	*22.09*
	J. P. Morgan	*37.27*	*21.79*	*20.52*	11.59	11.64
	Good View Securities	-35.47	-33.47	-38.14	-39.09	-33.73
SRI strategy	Yes	*23.94*	*24.82*	*26.95*	*20.64*	*45.42*
	No	-23.94	-24.82	-26.95	-20.64	-45.42

Hypothesis 3: First, the root likelihood statistics for the part-worth utilities from HB estimation, shown in Table 4.3, further support that the conjoint analysis utility model fits the data. The root likelihood is the probability expression of how successful the part-worth utilities are in predicting which items respondents choose (Sawtooth Software, 2019). The best possible value is 1.0, while the worst possible is the reciprocal of the number of options available in the choice set. For our study, which had four product alternatives in each choice set and a 'none' option, the minimum possible value of root likelihood was 0.2. Thus, the figures from 0.50 to 0.54 are more than two times the chance level and further indicate a model fit. We had additional support for our second research question regarding whether our model with the existing fund attributes fit all respondents data.

From Table 4.3, some respondents' preferences are easy to understand. For example, a longer record of consistent positive fund return was preferred to a shorter one, and lower fund charges were preferred to higher. This was true for all study versions and for both advisors and investors. For some mutual fund attributes, respondents' selections were more complex. In most study versions, both investors and advisors showed a preference for moderate-risk funds over the low-risk fund, with high-risk funds being least important. The only exception was that investors who received a moral nudge had similar preferences for moderate- and low-risk funds; their preference for moderate-risk funds will be discussed later.

The fund company attribute also showed variation. Advisors preferred large fund houses to large banks as the fund company; in some cases, investors (base case investors and those who received a salient nudge) agreed; in others they favoured the large bank. Investors found large banks more acceptable as fund company founders. The fictitious fund company was least preferred. In terms of fund size attribute, some respondents preferred larger funds, while some preferred smaller. However, based on the counting analysis, the preference difference between fund size levels was not significant.

Further support for Hypothesis 1: More importantly, part-worth utilities in Table 4.3 offered further support for one of our research questions. In all cases, mutual funds with SRI strategies were preferred over funds without such strategies. Overall, we had support for the first research question, that SRI strategy addressing ESG concerns was a valid fund selection criterion.

Nevertheless, the above strategy preferences consider only a single fund attribute in isolation, suggesting investors and advisors may prefer a fund with an SRI strategy to one without. But mutual funds are chosen not via isolated fund attributes and involve trade-offs (Ramasamy and Yeung, 2003; Gözbaşı and Çıtak, 2010; Bassen et al., 2019). Would an investor accept a lower

return from a mutual fund with an SRI strategy? Would an investor willingly bear higher fund charges because a mutual fund adopted an SRI strategy? The value of conjoint analysis is that it compels such trade-offs and visualises their quantifiable importance. That is why conjoint analysis research usually employs the comparison of relative importance (Bassen et al., 2019; Heringa et al., 2018; Ettinger, Carter and Rajagopalan, 2018; Gözbaşı and Çıtak, 2010; Lee, 2012). In our case, the meaning is that we not only need to identify whether a respondent prefers a fund with SRI strategy to a fund without one, but also whether this factor is as significant as other fund attributes. The relative importance (RI) of different attributes is shown in Table 4.4A.

4.2.3 Relative importance analysis

Table 4.4A: Relative importance (RI) of mutual fund attributes (%)

	Advisors	**Investors**			
Attributes		Base Case	Salience Nudge	Moral Nudge	Performance Nudge
Fund performance	18.10 (3)	14.15 (4)	14.59 (4)	12.69 (4)	17.46 (3)
Fund charges	25.72 (1)	17.81 (2)	19.01 (2)	21.89 (2)	16.16 (4)
Fund size	11.17 (5)	10.99 (5)	9.00 (6)	11.35 (5)	7.59 (6)
Risk rating	19.89 (2)	31.84 (1)	31.80 (1)	27.20 (1)	23.80 (1)
Fund Company	15.51 (4)	14.90 (3)	14.80 (3)	16.19 (3)	16.08 (5)
SRI strategy	9.60 (6)	10.31 (6)	10.81 (5)	10.68 (6)	18.91 (2)

Note: The numbers in parentheses show the attribute's RI ranking in that study version

Table 4.4B: t-test (p-values) to supplement Table 4.4A

	Advisors	**Investors**			
Attributes		Base Case	Salience Nudge	Moral Nudge	Performance Nudge
$1^{st} > 2^{nd}$	0.000**	0.000**	0.000**	0.011*	0.003**
$2^{nd} > 3^{rd}$	0.148	0.060	0.003**	0.000**	0.156
$3^{rd} > 4^{th}$	0.004**	0.497	0.838	0.005**	0.321
$4^{th} > 5^{th}$	0.000**	0.001**	0.001**	0.252	0.955
$5^{th} > 6^{th}$	0.020*	0.473	0.091	0.610	0.000**

Note: * 5% significance /** 1% significance

The RI results in Table 4.4A represent the extent to which attribute preferences affect mutual fund selection decisions through part-worth change caused by varying attribute levels. Thus, a larger relative change in part-worth means the fund attribute levels are more vital in constituting the preference. As mentioned, RI is calculated by considering the range between the highest and the lowest part-worth and then percentage them across different attributes. The total RI, therefore, sums to 100% for each study version. RI is calculated for each respondent individually and averaged across all respondents to produce a study version. The numbers in parentheses next to the RI show the attribute's RI ranking in that study version.

4.2.4 Advisor-client attitude analysis

Hypothesis 4: Table 4.4A can be used to answer our third research question, regarding whether there are differences in how advisors and investors rank the ESG factor. First, however, we must establish the statistical significance of the ranking (Ramasamy, Rowley and Yeung, 2016; Lee, 2012). We first extracted the RI of each attribute for each respondent as a group and then compared the mean difference between the attribute groups. Table 4.4B provides the paired t-test p-value statistics regarding whether the RI individuals assign an attribute of a certain rank differs significantly from that they assign to another attribute in the next rank. That means, for example, that if $1^{st} > 2^{nd}$ is significant at the 1% level, the highest-ranked attribute is significantly different from the second highest-ranked attribute in Table 4.4A. We first focused on the figures in the first two columns of the two tables to compare base case investors and advisors. For investors, fund risk ratings (RI 31.8%) are the most important attribute in selecting a mutual fund. Fund charges (RI 17.8%), fund company (RI 14.9%), and past performance (RI 14.1%) are also relatively important, but indistinguishable from each other in the paired t-test. Fund size (RI 10.9%) and SRI strategy adoption attributes (RI 10.3%) are, indistinguishably, of least importance. On the other hand, for financial advisors, the highest importance was attached to fund charges attribute (RI 25.7%), then to fund risk rating (RI 19.8%) and past performance (RI 18.1%) indistinguishably, and then to fund company (RI 15.5%), and fund size (RI 11.1%), with the least important attribute being SRI strategy adoption (RI 9.6%). In summary, our attribute weight comparison revealed some differences in investors' and advisors' preferences, which will be discussed in Section 4.4.

Our focus now turns to the SRI strategy attribute's ranking and RI. Investors thought both fund size and SRI strategy adoption were the least important attributes; however, as stated, fund size was not statistically significant for investors. Advisors attached the least importance to the SRI strategy factor among the six attributes, ranking it even lower than fund size. Therefore, we may

say advisors ranked the SRI strategy adoption attribute slightly lower than investors. Similarly, RI was 10.31% for investors and 9.6% for advisors, indicating advisors attached less importance to SRI strategy than investors; however, the ranking was not statistically significant. Following Ramasamy, Yeung and Chen (2013), we used X^2-test for compatibility of K=2 counts, a type of Chi-square test, to verify the significance of RI difference between investors and advisors. The test statistics (1.68) does not reject the null hypothesis that the importance is significantly different at the 5% level ($X^2_{1;0.05}$=3.84) or the 10% level ($X^2_{1;0.1}$=2.71). Overall, regarding the third research question, we found that the investors valued SRI strategy slightly more than advisors, but the difference was not significant.

4.2.5 Nudge intervention analysis

Hypothesis 5: Next, we reviewed investors' responses in different surveys, as shown in the last four columns of Table 4.4A and Table 4.4B. First, we can observe that fund risk rating was consistently ranked as the highest priority factor when selecting mutual fund in all four cases (base case survey, salience nudge, moral nudge, and performance nudge). Except for the performance nudge case, fund charges came next in RI, followed by fund company and fund performance. Overall, investors' responses demonstrated strong internal consistency. Per the t-test results, as mentioned above, base case investors considered fund risk rating the most important attribute, and fund charges, fund company, and fund performance the next most important attribute group. Fund size and SRI strategy were considered the least important group.

Compared to the base case, the salience nudge increased SRI strategy's ranking from sixth to fifth, exceeding the importance of fund size. However, t-tests demonstrated that the RI between fund size and SRI strategy adoption was not significantly different. So, when investors received a salience nudge, they ranked the mutual fund attributes groups' RI as follows (from highest to lowest): risk rating (RI 31.8%), fund charges (RI 19.0%), both fund company (RI 10.8%) and fund performance (RI 14.5%), then both SRI strategy (RI 10.8%) and fund size (RI 9.0%). In summary, the salience nudge only had a minor effect on the importance of fund attributes.

Hypothesis 6: When investors received a moral nudge, their ranking of fund attributes was exactly the same as in the base case. The t-test results showed that the difference between the importance of fund performance, fund size, and SRI strategy was not significant. Per the t-test results, investors in the moral nudge survey version ranked the fund attribute groups' importance as follows (from highest to lowest): risk rating (RI 27.2%), fund charges (RI 21.8%), fund company (RI 10.8%), and an indistinguishable group comprising fund performance (RI 12.6%) and fund size (RI 11.3%) and SRI strategy (RI 10.6%). Overall, the moral nudge caused no observable change in fund attribute importance.

Hypothesis 7: In contrast, the performance nudge caused an obvious change in importance ranking, most remarkably in that the SRI strategy attribute climbed from sixth place in the base case to second, just below the risk rating attribute. The t-test further revealed that the importance of SRI strategy was not differentiable from the other three attributes (fund performance, fund charges, and fund company founder), and that fund size was of least significant importance. So, when investors received a performance nudge, they ranked the mutual fund attribute groups' RI as follows (from highest to lowest): risk rating (RI 23.8%), followed by SRI strategy (RI 18.9%) together with fund performance (RI 17.6%), fund charges (RI 16.1%), and fund company (RI 16.0%), with the last group being fund size (RI 10.8%).

The above investors' responses in different study versions help answer the last two research questions. The SRI strategy's RI in the base case and three nudge versions was 10.3%, 10.8%, 10.6%, and 18.9%, respectively, making it the sixth, fifth, sixth, and second most important fund attribute in the four cases. Only the performance nudge caused a larger increase in SRI strategy factor's RI. Again, we applied X^2-test for compatibility of K=2 counts to verify the significance of importance difference between difference nudge cases and the base case. The test statistics for the salience nudge case (1.06) and moral nudge case (1.35) cannot reject the null hypothesis that importance weight was significantly different from the base case at the 5% level ($X^2_{1;0.05}$=3.84) or 10% level ($X^2_{1;0.1}$=2.71). Only in the performance nudge case (test statistics=2.73) was it significant at the 10% level. In short, the nudge wordings can increase the SRI strategy factor's ranking at the moment of decision in the salience and performance nudge cases, but the increase was only considerable and marginally significant in the latter.

4.3 Interpretation and Discussion

4.3.1 Behavioural market failure

The first objective of this study was to employ a novel method to verify whether there was latent demand for SRMF in the retail mutual fund market because of behavioural market failure (Sunstein, 2013). If investors' preference for ESG products 'as judged by themselves'– a focal point of nudge policy controversy, as stated in Section 2.5.3 – was underestimated by financial advisors in our discrete choice conjoint analysis experiment, behavioural market failure existed. In that case, it would be hard for investors to realise their SRMF purchase preferences, making nudge intervention worthwhile. The results of our experiment, however, do not buttress such a proposition for retail investor respondents in Hong Kong. SRI strategy was the sixth ranked factor for retail investors in mutual fund selection, similar to financial advisors. Compared to financial

advisors, investors attached a slightly higher but statistically similar RI to the same SRI strategy factor. As we will discuss later, while financial advisor ranked some factors differently from investors, they demonstrated understanding of the investors' needs regarding the SRI strategy factor. In short, we cannot prove the existence of behavioural market failure in the SRMF market in Hong Kong by our experiment.

The fact that financial advisors seemed to echo investor respondents' views of the SRI strategy adoption factor has public policy implications. If financial advisors underestimate investors' preferences, the policy focus should be on financial advisors, in which case we would have stronger grounds to consider nudge policies. For example, Pilaj (2017) suggested that we may, sometime in the future, require financial advisors to provide investment options with SRMF as a default option, as this fits most investors' fully rational choice (Pilaj, 2017). Without strong justification, this policy seems drastic at the moment and may cause social controversy. Pilaj (2017) also proposed immediately obliging financial advisors to ascertain retail investors' interest in considering ESG factors at the moment of mutual fund choice. This policy raises two concerns. First, without concrete evidence of behavioural market failure, we cannot provide a strong basis for the hidden demand needed to back up the policy. Second, for the policy to work, we would have to check the efficacy of different nudges, as discussed below.

4.3.2 Nudge intervention

The second objective was to verify what type of nudge wordings would more effectively promote SRMFs when making an investment choice. Our results showed that a simple salience nudge could not significantly increase the SRI strategy factor's RI compared to the base case. The salient nudge case increased the relative ranking of the SRI strategy from sixth to fifth, but with minimal statistical significance. We should note that the official survey results indicated that 51% of retail investors in Hong Kong reported never having heard about SRI, while another 25% said they had heard of the term but did not know what it involved (IFEC, 2019b). If a significant portion of investors does not know about SRMF but has a strong latent desire for it, their preference for such a product should be more observable once its availability is known. A latent desire for SRMFs, which can be aroused by drawing their attention to the products, was not observed, and the salient effect was not significant. This partly, if indirectly, supports the non-existence of behavioural market failure. However, it should be noted that, even in the base case survey without nudging, we had to explain what SRI strategy was as background information. This, to some extent, could have enhanced the SRI strategy adoption attribute's salience in the base case and weakened, in contrast, the effect of the salience nudge, which mentioned that SRI funds are available in Hong Kong as a realistic choice. Still, this was a necessary experimental

setting and resembled the practical approach financial advisors took with their clients; that is, with or without nudging, they had to explain the SRMF product features they recommended. Overall, the preference for SRI strategy adoption was not much different in the base and salience nudge cases, as perceived by financial advisors, and the salience effect was not substantial. If investors' demands are not underestimated and the salience nudge's effectiveness is mediocre, there is little support for obliging financial advisors to question investors about their SRI strategy interest. In summary, the policy focus on having financial advisors enhance the salience of SRMFs does not receive strong support in our study, in terms of underestimating their preferences and the efficacy of verbal reminders immediately before the investment decision.

The moral nudge is not effective either. The SRI strategy attribute's relative ranking was the lowest and not much different from the base case. The results are surprising because the SRI strategy attribute's ranking was even lower than that in the salience nudge case, which simply reminded investors of the availability of SRMFs. Comparatively, the moral nudge's wording was stronger in emphasising SRMFs' contributions to a just and sustainable society. Our results contrast with Døskeland and Pedersen's (2015) finding that a moral nudge significantly affected the online sales of SRMFs among a control group in Norway. However, our findings parallel those from the official IFEC (2019b) survey, which found that 93% of those who invested in SRI in Hong Kong felt SRI carried a higher growth potential, but only 43% indicated they would support environmental protection and sustainable development. One possible reason is that the emphasis on SRMFs' moral perspectives increased their salience but raised concerns about their future financial performance. Consequently, the moral nudge lowered the SRI strategy attribute's part-worth utility, compared to the salience nudge.

Does this mean that we cannot do anything to promote SRMFs in terms of nudging? The performance nudge provided some hints. When the respondents were informed that SRMFs did not underperform comparable market indices and conventional funds in many studies, the SRI strategy adoption attribute's ranking approached that of important attributes like past performance, fund charges, and fund company founder. The SRI strategy attribute's RI in the performance nudge case was also marginally different from the base case, in line with Døskeland and Pedersen's (2015) findings that a wealth-framed nudge can induce more actual investment in green funds than both a moral-framed nudge and the control group. This is also consistent with the IFEC (2019b) survey finding that, among those interested in investing in ESG financial products in Hong Kong, 93% attributed their interest to the product's good growth potential and 70% to its perceived better investment return than other products. In the same survey, 76% of those not interested in investing in ESG financial products attributed their reluctance to unfamiliarity with ESG financial products and 42% to the products' not having a good return on investment track record. Our results are in line with results, from the same survey, that 86% of

retail investors considered projected investment return the largest determinant of mutual fund selection. This performance-centred observation fits our previous explanation of why the moral nudge (which may cause performance worry) did not work. In short, investors do not seem to have a clear idea about SRMF performance, and clarification of historical performance works well as a nudge to promote SRMFs.

To take a holistic view, we did not see a strong hidden demand for SRMF that could be provoked by making the product more salient, nor did we see the effectiveness of emphasising the social benefits of SRMF investment. The financial advisors did not seem to misjudge their clients' inclination toward SRI strategy adoption in their mutual fund purchases; however, clarifying SRMFs' performance concerns could trigger significant demand. This concrete empirical evidence fits the picture depicted by IFEC (2019b) survey results and the SRI market's development stage: the SRI market is still in its infancy in Hong Kong, and investors have not figured out the implications of SRI strategy for traditional concerns about investment returns; environmental protection and social justice are not the primary factors in investors' minds. Once the return issue is clarified, the preference for SRMFs can be raised. Education about and clarification of ESG fund information, including performance data, is therefore important.

Operationally, however, it is not practical to require financial advisors to proactively introduce SRI performance to all clients. Advances in behavioural economics and behavioural finance tell us that people commit errors when making decisions; in our case, that included not making fully-informed, rational decisions before selecting SRMFs. Consequently, based on the experiment results, to promote the market development in Hong Kong, the policy focus should be on the clients and providing them with understandable information through public sources and financial advisors. This is not only about providing education or information but also about nudging. In this case, a mild nudge that makes SRMFs' return and growth potentials salient (not just their environmental and social impacts) could be of great benefit. In their book, *Nudge*, Thaler and Sunstein pointed out that the golden rule of libertarian paternalism is to 'offer nudges that are most likely to help and least likely to inflict harm' (Thaler and Sunstein, 2008, p.72). This rule applies when decision-makers have difficulties translating the situation into language they can comprehend. In such cases, they need nudging most. Thaler and Sunstein also quoted an example of these situations, which is exactly about selecting a mutual fund (Thaler and Sunstein, 2008, p.76). Our SRMFs case adds to the problem because we have additional dimensions of ESG concerns and the added worry of performance and social contribution trade-offs (Glac, 2009). In this case, measures to enhance the comprehensibility of ESG fund information and performance is vital. In accordance with the golden rule, this type of increased performance salience policy is least likely to inflict harm and less controversial to implement.

In this regard, Thaler and Sunstein (2008) pointed out that choice architects should assist people in improving their ability to map between their choice and final welfare and hence choose from alternatives that can make them better off. Referring to the complex pricing scheme of cell phone calling plans, which make choice difficult, Thaler and Sunstein (2018) suggested a RECAP scheme: Report, Evaluate, and Compare Alternative Prices. Regulators could require phone companies to provide their clients with an exhaustive, intelligible, standardised spreadsheet-like table listing all fee schedules to allow easy comparison. Private websites would then be encouraged to compare the different service providers' detailed charging structures. Choice assistance plans in the spirit of RECAP have been successfully applied in promoting public school enrolment (Hastings, VanWeelden, and Weinstein, 2007) and US Medicare Drug Plan selection (Kling et al., 2007); Thaler and Sunstein believe the approach should also be adopted for financial plans regarding mortgages, insurance, and credit cards (Thaler and Sunstein, 2008).

We suggest the scheme could also be applied to SRMFs. The regulator could ask mutual fund companies to fill a standardised return performance table over different investment horizons, different charges, different focuses (on E, S or G aspects), and different investment themes for different industries or geographical coverages. To facilitate return comparisons between ESG funds and ESG indices/market indices, regulators could add performance data from ESG exchange-traded funds and general exchange-traded funds to the table as benchmarks. In addition to comparing fund charge costs, highlighting different investment focuses and making them understandable in table form would give investors with favourable views on, for example, new food sectors in the US or new energy sectors in China, a higher chance of making choices that best suit their preferences. In this case, the government only needs to regulate the disclosure practice. Moreover, if nudging is intended to provide intelligible information to help financial advisors promote SRIs, the regulator or its associated financial education institutions could also provide simple facts in point form indicating why SRI can be lucrative. Examples could be: the oldest ESG index in the US (the MSCI KLD 400 index) outperformed the S&P 500 from its inception in 1990 until late 2016 (Morningstar Manager Research, 2016); a summary of over 2,000 studies on SRMFs showed no underperformance compared to conventional funds (Friede, Busch and Bassen, 2015); and, according to the MSCI database, ESG leaders in the US, emerging markets, Europe, and the whole world outperformed their non-ESG peer groups during the hardest pandemic hit (the first quarter of 2020) (Somvanshi, 2020). All these small efforts could increase the salience and impact of SRI performance. As David Halpern, head of the UK nudge unit, opined, a small change in decision-relevant context can make a big difference (Halpern, 2016).

Along this line, we can also consider the related alternative boost approach promulgated by Grüne-Yanoff and Hertwig (2016). As mentioned in Section 2.5.3, boost policies do not aim to

alter people's decisions but enhance their decision-making capability. This stems from their differing assumption, from the nudge perspective, that simple heuristics are sometimes satisficing mechanisms (Grüne-Yanoff and Hertwig, 2016). One of its main policy aims is to enhance laypersons' and professionals' statistical literacy regarding, for example, the relative frequency versus absolute frequency issue. A famous example concerns a warning about third-generation oral contraceptive pills issued by the UK Committee on Safety of Medicines in 1995 (Gigerenzer, G. et al., 2008). The public notice warned that the pills increased blood clotting risk by 100%, causing widespread anxiety and a dramatic decline in contraceptive pill use. Consequently, the event contributed to an estimated 13,000 additional abortions and 13,000 additional births (Gigerenzer, G. et al., 2008). However, the 100% relative increase in blood-clotting risk actually represented a change in frequency from 1:7,000 to 2:7,000.

Statistical illiteracy is widespread (Gigerenzer, G. et al., 2008). As such, the boost approach favours using natural rather than relative frequency, particularly when medical practitioners communicate risks in relation to treatment. For instance, a screening test should be introduced to patients by saying that it can reduce death risk from 3:1000 to 2:1000, rather than saying that it can reduce dying risk by one-third, even though the latter claim would probably increase test participation rates (Sarfati et al., 1998; Grüne-Yanoff and Hertwig, 2016). To avoid misunderstandings, proponents of the boost approach advocate statistical information be presented using natural frequency instead of probabilities, absolute risk instead of relative risk, and in graphical form instead of numerical form (Grüne-Yanoff and Hertwig, 2016). Although the notion that presentation should meet human cognitive is mainly promoted among doctors (Grüne-Yanoff and Hertwig, 2016; Gigerenzer, G. et al., 2008), it can also be applied to risk and return presentations in financial affairs like SRMFs. If our study results indicate that performance data is vital for SRMF investment decisions and the literature shows that SRI has promising return rates, we should adopt measures that make all SRMF financial data more meaningful and comprehensible to investors.

In this case, measures suggested by the boost approach can be considered. For example, we can emphasise how often relevant ESG indices have outperformed market indices in the last decade and how often investors would have incurred losses by investing in ESG indices compared to general market indices, using natural frequency instead of relative frequency. By using clearer statistical information, investors' chances of understanding complex financial figures and making informed decisions are enhanced. The aim here is to extend investors' competency to make a rational decision by clarifying risk and return characteristics; there is no need to give investment directions. Another aspect of the boost approach concerns providing a small number of essential facts to help investors make key decisions, much as providing concise knowledge about how to identify and respond to the key symptoms of a stroke helps save lives. Limited, targeted

knowledge can have a high impact (Grüne-Yanoff and Hertwig, 2016). Currently, ESG investing and relevant risk and return characteristics are not covered in many financial advisors' education programs. In this regard, we suggest that key facts related to SRI be added to the licensing examinations in Hong Kong for professional qualifications like certified financial planners.

Furthermore, as mentioned in Section 2.5.3, nudging is controversial. Some critics consider it an infringement of freedom of choice, while others believe that choice architects have no better solutions than decision-makers. However, our suggested measures from the nudge and related boost approach aim at enhancing the comparability of SRMFs' financial performance with other investments and indices and investors' competency for understanding complex financial figures. These qualify as Transparent System 2 nudges, as defined by Hansen and Jespersen (2013), overtly facilitating consistent choice and requiring investors' active involvement in decision-making. The personal autonomy of the investors is respected and much less debatable.

4.3.3 Fund features preference in Hong Kong

Though not the primary objective of our study, as the first conjoint analysis study in Hong Kong for mutual funds selection, our investigation provides some interesting findings. To the best of our knowledge, it is also the first conjoint analysis of financial advisors and their direct clients; any ranking difference may provide insights into the client-advisor relationship. In order of preference, the base case retail investors preferred mutual funds that featured (1) moderate risk ratings, (2) low fund charges, (3) a large mutual fund house as their founder, (4) consistent growth over five years, (5) larger fund size, and (6) an SRI strategy. Alternatively, the financial advisors recommended (in order of preference) mutual funds that had (1) low fund charges, (2) moderate risk ratings, (3) consistent growth over the last five years, (4) a large mutual fund house as their founder, (5) larger fund size, and (6) an SRI strategy. The first surprising results were that, while both investors and advisors considered fund risk ratings the first and second most important attribute, respectively, they did not prefer lowest-risk funds; both attached higher utilities to mid-level moderate risk funds. A logical explanation seems to be that investors understood the risk and return trade-off of investment and their general risk tolerance was not low, enabling them to accept mid-level risk-taking in hopes of a higher expected return. This is consistent with the survey results, in which 86% of Hong Kong investors considered projected investment return the most critical consideration when selecting mutual funds (IFEC, 2019b); globally, Hong Kong investors are viewed as having very high financial literacy (IFEC, 2020a). The advisors echoed their clients' needs in the experiment results and showed similar preferences.

We can then refer to overall rankings and RI. Financial advisors' top three preferences reflected

typical numerical financial market considerations – transaction cost, risk, and return. Our finding that advisors attached more importance to the fund charges attribute is in line with conjoint analysis results for financial advisors in Turkey (Gözbaşı and Çıtak, 2010). Together with the fourth most important attribute (mutual fund company founder), the first four rankings exactly match the conjoint analysis results of similar attributes chosen by retail investors in six European countries in Bassen et al. (2019). However, regarding retail investors, there are two points worth discussing. The first is that investors attached significantly greater importance to fund risk rating than fund charges, ranking it as a top priority attribute. They considered risk control more important than investors in European countries, who considered cost control more important (Bassen et al., 2019). This is contrary to the speculation that Asian investors demonstrate a culture of thriftiness regarding paying investment transaction costs (Ramasamy and Yeung, 2003), but consistent with the IFEC survey finding that major risks are the second-highest priority fund selection factor (after projected investment return), whilst fees/charges rank third (IFEC, 2019b). In the absence of other information, investors seemed to consider fund risk rating an appropriate risk proxy for their funds.

On the other hand, advisors considered fund risk rating slightly less important, ranking it as the second priority factor. This is, to some extent, understandable and may not represent an underestimation of client value. As mentioned in Section 3.2, mutual fund providers are required to provide fund risk ratings for their products and, under the regulatory requirement, the risk rating must match the results of their investor clients' risk profiling questionnaire (SFC, 2012). Therefore, it may be natural for investors to, by market practice, consider mutual funds whose ratings fit their risk appetite as the most fundamental. Then again, financial advisors' more moderate ranking of this attribute may be attributable to our experimental design. To ensure they made mutual fund recommendations based solely on their preferences and understanding of client needs, the survey instructed advisors to assume a risk profiling questionnaire had been conducted, enabling them to recommend mutual funds free from risk matching consideration. Therefore, they may rank risk rating as relatively less important than investors. Determining whether this is the main reason, however, requires further research.

Another striking point is the relative unimportance of historical fund performance, especially for investors. While the finding was not statistically significant, retail investors considered even the founder of the fund company more important than fund performance, ranking the factors third and fourth, respectively, reversing the financial advisors' order of choice. This is surprising, given that historical performance is the most readily available performance reference and that projected investment return was investors' most important fund selection factor in the latest survey (IFEC, 2019b). Ramasamy and Yeung (2003) and Gözbaşı and Çıtak, (2010) found financial advisors in Malaysia and Turkey, respectively, attached their highest priority to this attribute, to the exact

level. Retail investors in six European countries ranked one-year historical performance as the third most important factor, but still more important than fund company founder (Bassen et al., 2019), differing from our results.

One explanation may be that Hong Kong investors and financial advisors both acknowledge the risk and return trade-offs in investments (Bodie, Kane and Marcus, 2005), understand that past performance is not indicative of future return (as specified in the mandatory warning statement appended to Hong Kong mutual funds (2019a)), and group other indicators and information to forecast future returns.

However, a more compelling result may be that they adopted a comparatively short-term view. The three levels of our historical performance attribute varied from consistent growth over the last five years, to above normal growth over the last three years, to impressive record last year. However, according to the IFEC retail investor survey, the average investing horizon for fund investments is 5.6 years, with one-third falling within four years (IFEC, 2019b). Meanwhile, investors commonly prefer shorter-term stock investments over mutual fund investments (IFEC, 2019b), meaning their portfolio overall average investment horizon may be much shorter. Conversely, a survey of 5,000 individual investors in eight European countries conducted by Invesco revealed an average investment horizon of 6.9 years, with investors preferring mutual funds over stock investment (Invesco, 2019). In short, our results seem to be indirect proof that Hong Kong investors are more myopic, viewing investment funds' consistent long-term growth as relatively less important.

Chapter 5: Implications, limitations, and further research

As a leading international financial centre, Hong Kong has many opportunities to grow its SRI market in terms of SRMFs but lags behind its global peers. The initial survey evidence of latent demand for SRI warrants testing the application of behavioural finance knowledge and nudge theory, as promulgated by some scholars, to stimulate market development. The current study substantiates the framework proposed by Pilaj (2017) and casts light on empirical evidence regarding nudging SRI by financial advisors. Although the application of behavioural finance insights and nudge theory in the SRI realm has been proposed or adopted by scholars (Pilaj, 2017; Hafenstein and Bassen, 2016; Døskeland and Pedersen, 2015; Glac, 2009), to the best of our knowledge the current study is the first empirical attempt to verify of the existence of behavioural market failure in SRI market and the efficacy of nudge wordings for SRI promotion by financial advisors. In this aspect, we can provide psychological-based insights into the investment advisory process. Our study results cannot prove that advisors viewed the SRI strategy factor differently from investors; salient nudge and moral nudge at the moment of investment choice did not raise the SRI strategy factor's RI, and only performance nudge marginally increased respondents' preference for SRI consideration. These findings have both theoretical and practical implications, as detailed in this chapter. In short, theoretically, the presence of unfulfilled antecedent preference or behavioural market failure can justify many nudging interventions, but should not be presumed. For practical applications, policymakers, regulators and practitioners in Hong Kong should probably give more consideration to soft nudging intervention (in addition to traditional education and media promotion) to increase the navigability and comprehensibility of SRI information for informed decision-making, the third step ('attitude') in Pilaj's (2017) 5A model.

5.1 Theoretical implications

The original nudge theory held that behavioural market failure was probable, because of humans' cognitive biases and limitations, and developed nudge intervention to solve it. The current study challenged this presumption in the SRI market, argued that behavioural market failure is similar to an unsatisfied antecedent preference, and attempted to verify the existence thereof. Nudge intervention could be subject to argument, especially in the sensitive financial market. Unfulfilled antecedent preferences and behavioural market failure can, according to the literature, justify behaviourally informed policies and avoid most of the controversy. In this sense, the current study contributes to the literature by providing a means to legitimise our nudge intervention

policies, especially in some newly explored and sensitive markets.

The current study's survey experiment found that advisors did not view SRI strategy factors differently from investors and reported no RI increase of the factor in the salience nudge case. Suppose investors have a latent interest not explored by undereducated advisors or ignore non-salient SRMF options to voice their interests to advisors proactively. In that case, they should attach more overall importance to SRI strategy factors than financial advisors. Alternatively, the RI of the factor should increase in the salience nudge case. In the absence of this evidence, we cannot see the existence of behavioural market failure. The current study demonstrates that future researchers should not assume the pre-existence of behavioural market failure and antecedent preference.

If behavioural market failure is the biggest defence of nudge intervention, then nudge theory remains controversial without evidence of its existence. The current study reiterates that the difficulties of showing nudge policies are undebatable. We must be cautious about whether nudge intervention abridges decision makers' freedom of choice, especially in the financial markets. If no unpursued antecedent preference is observed, whether the nudged results satisfactorily constitute the nudged individuals' posterior preference (as proposed by Sunstein (2018) and mentioned in Section 2.5.3) may merit further discussion from the theoretical side.

In terms of research methodology, although conjoint analysis has been widely used in marketing and in academic research into such areas as medical treatment and sustainable consumption (Hille, Weber and Brosch, 2019; Ettinger, Carter and Rajagopalan, 2018; Heringa et al., 2018; Kinoshita, 2017), only one study has employed this approach in the realm of SRI (Bassen et al., 2019). In terms of geographic coverage, we have not seen any conjoint analysis study focused on Hong Kong. The current study is the first conjoint analysis to investigate both mutual fund features preference in Hong Kong and ESG considerations in mutual fund purchases in Hong Kong. The conjoint analysis allows our laboratory experiment to be conducted in a practical manner, because investors chose from mutual fund profiles with features similar to their real-life purchases. Through the decompositional approach, their preference for SRI strategy adoption can be evaluated. Conjoint analysis has exhibited external validity (Hainmueller, Hangartner and Yamamoto, 2015) and the ability to reduce social desirability bias in recent studies (Horiuchi, Markovich and Yamamoto, 2020); our study again demonstrated its suitability for studying investment behaviour regarding SRMF products.

5.2 Practical implications

The current study's findings also have various practical implications for financial advisors, policymakers, and fund houses, as follows. In short, without evidence of behavioural market failure, the current study cannot give policymakers a strong license to implement nudging interventions and focus only on their effectiveness. Accordingly, we suggest mild nudge measures at the attitude stage of Pilaj's (2017) 5A model, rather than the early awareness stage, to cultivate a correct understanding of SRI performance. Education and media promotion should also be enhanced.

5.2.1 Practical implications for financial advisors

Our study indicated that a performance nudge is more effective in raising the SRI strategy attribute's importance in mutual fund choice. That means financial advisors should commence from the performance side when selling SRMFs in Hong Kong, as with conventional products. This does not mean they should neglect the ESG contribution, just that they should realise that the performance side is as (or possibly more) important for reducing investor resistance. Although SRMFs have special social/environmental contribution features, the selling process should emphasise both financial and social/environmental performance benefits from the outset.

Based on our results, if emphasizing that SRMFs do not underperform conventional funds can increase purchase intention, then Hong Kong investors demonstrated a misunderstanding that they must sacrifice financial performance when buying SRMFs. For all that investors might expect or perceive a financial return and ESG benefit trade-off (Hafenstein and Bassen, 2016; Pilaj, 2017; Berry and Yeung, 2013), SRMF investment does not incur a financial penalty (Morningstar Manager Research, 2016; Friede, Busch and Bassen, 2015; Humphrey and Tan, 2014; Rathner, 2013; UNEP Finance Initiative Asset Management Working Group, 2007; Bauer, Derwall and Otten, 2007; Bauer, Otten and Rad, 2006; Statman, 2000; Hamilton, Jo and Statman, 1993). It is financial advisors' responsibility as frontline professionals to inform investors that formal academic studies have found investors need not sacrifice return to invest in SRMFs and that there is no financial and social/environmental return trade-off – not as a selling technique, but as the delivery of correct and complete knowledge. Given the heightening social concerns on environmental impact after the pandemic and more ESG-related government policies in mainland China and Hong Kong, the market potential of SRMFs should be substantial once the performance worry is mitigated.

If financial advisors stress the financial side of SRMF investment and provide historical information about SRMFs' pecuniary performance, investors will naturally verify advisors' claims by comparing the mutual funds' return performance. Investors need clear information to finalise an informed attitude and avoid procrastination in their investment action (the third and fourth stages of Pilaj's (2017) 5A model). However, information overload occurs in fund investment, including SRMF investment (Hafenstein and Bassen, 2016; Pilaj, 2017). Behavioural finance insights suggest facilitating convenient performance comparison by adopting the tabulated RECAP approach and easy interpretation boost approach. Advisors should bear in mind their clients' cognitive limitations and make use of the subtle technique.

5.2.2 Practical implications for policymakers

Many governments are escalating their efforts to tackle pressing ESG issues, such as climate change. Our study results indicate that an effective means of promoting sustainable development through SRMFs would be to promote and disseminate formal academic evidence that SRMFs' overall financial performance is comparable to conventional fund investment. Securities market regulators could promote this through investor education platforms. For instance, IFEC is designated to enhance financial literacy in Hong Kong. Its website currently features an article that briefly mentions that ESG funds do not underperform peer investments (IFEC, 2020b). Given the consensus surrounding SRI performance, more academic studies results and explanations could be quoted as supporting evidence, such as Friede, Busch, and Bassen's (2015) meta-analysis of over 2,000 SRI performance studies. If this is still not impartial enough, relevant policymakers could conduct performance surveys of ESG funds available in Hong Kong. SFC currently hosts a website introducing the roughly 30 ESG funds and ETFs in Hong Kong. Policymakers could summarise these funds' financial performance, including during the pandemic period, to substantiate any general introduction of SRMF performance.

To execute the previous point and our discussion in Section 4.4.2, policymakers could ask fund companies to report their financial performance and other information on a standardised RECAP-style table to facilitate all aspects of performance comparison. A simplified and clear presentation could also help avoid information overload. Comparison to broad market indices is encouraged, and reporting performance comparison in graphical form and by relative percentage, using the boost approach, could also help. If the regulator is to promote the market development, relevant presentation constraints should be reviewed and revised.

If emphasising SRMFs' financial performance is necessary, then educating financial advisors is also important. Policymakers should encourage relevant licensing examinations and professional

qualifications to include knowledge about SRI in their curricula, including their historical financial performance. For instance, the Certified Financial Planner examination in Hong Kong does not require future financial planners to know about SRI (IFPHK, 2020), whilst the Chartered Financial Analyst examination has included basic SRI product knowledge, starting from the Level 1 examination for analysts (CFAI, 2021). Advisors need to know about a product before they can proactively promote it and deliver correct knowledge. In modifying the professional qualification curriculum, the academic rigour of SRI evidence should not be compromised. In the future, as SRI enters the mainstream, we look forward to professional titles related to sustainable finance with practical training on presenting SRI instruments.

The European Union plans to require more ESG information disclosure in the Key Investor Information Document (KIID) for packaged retail and insurance-based investment products (Bassen et al., 2019; Pilaj, 2017). Bassen et al. (2019), through conjoint analysis, demonstrated that a star-style climate rating served as a good nudge to induce SRMF purchases and suggested including a similar sustainability label in the KIID. Hong Kong has a Key Fact Statement document similar to the KIID and may consider implementing similar enhanced mandatory disclosure and sustainability rating arrangements. If it does, the current study suggests that a rating label that balances sustainable development performance with financial performance would be a more effective nudge. Further research may verify this point.

Last, section 2.5.3 discussed the controversy of nudge policy in the literature. Libertarian paternalism, on the surface an oxymoron, is a mild form of paternalism. However, its underlying moral principle is subject to queries from some scholars. From this study, the inability to directly verify the existence of behavioural market failure cannot reassure the care necessary to be taken when promoting nudge policy. A delicate balance must be maintained. On one side, individuals need guidance to overcome cognitive hurdles. On the other side, the policymakers better make the policy aims open and the means transparent to increase public acceptance. Type 2 nudge, especially transparent type 2 nudge, raises less public concern, as shown in the literature. That means if the government would like to position Hong Kong as a green finance hub and promote SRIs, they should make the objectives of any advocating policies open, straight and understandable to the public and avoid feelings of abridging freedom of choice in the process. The transparency and neutrality principles must be upheld (Thaler and Sunstein, 2008). After all, the promotion of SRIs conforms to Hong Kong government policy, and nudging is an acceptable policy approach, as shown by the successful case of DIS investment arrangement in the MPF retirement investment in Hong Kong. There should be ample potential for it to assist the government in promoting SRIs when taken with care.

5.2.3 Practical implications for product providers

As discussed in Section 2.2.3, a strand of research on SRI investment motives (Apostolakis, G. et al., 2018; Mervelskemper, 2018; Riedl and Smeets, 2017; Hafenstein and Bassen, 2016; Wins and Zwergel, 2016; Døskeland and Pedersen, 2015; Hood, Nofsinger and Varma, 2014; Adam and Shauki, 2014; Berry and Junkus, 2013; Berry and Yeung, 2013; Pérez-Gladish, Benson and Faff, 2012; Renneboog, Ter Host and Zhang, 2011; Nilsson, 2009; Glac, 2009; Hofmann, Penz and Kirchler, 2009; Nilsson, 2008; Hofmann, Hoelzl and Kirchler, 2008; Bollen, 2007; Beal, Goyen and Phillips, 2005) found that financial reward is still a significant factor for SRMF investment, but to varying degrees. Our study reconfirms that the investment return factor is essential in Hong Kong. Meanwhile, many studies have shown that negative/exclusion screening of SRI strategy drags financial performance (Trinks and Scholtens, 2017; Hong and Kacperczyk, 2009; Fabozzi, Ma and Oliphant, 2008; Adler and Kritzman, 2008), whilst ESG active inclusion strategy outperforms the market financially (Statman and Glushkov, 2016; Verheyden and Deiner, 2016; De and Clayman, 2015; Fulton, Kahn and Sharples, 2012; Derwall, Koedijk and Ter Horst, 2011, Statman and Glushkov, 2009, Derwall et al., 2005). However, SRMFs in the market, including those in Hong Kong, usually adopt a mix of both strategies. From this empirical foundation, SRMFs with more emphasis on active inclusion approaches (e.g., best-in-class and ESG integration strategies) may be more favoured by most investors. This is precisely what Berry and Junkus (2013) found in the US. They claimed that an apparent mismatch between investor demand and product supply may hinder the SRMF market's growth (Berry and Junkus, 2013). Our study echoes this viewpoint; fund companies providing SRMFs should probably take notice of investors' perceptions in addition to their ethical stances.

Our study results imply that SRMF providers should present fund performance in a more salient and understandable manner to address investors' concerns. Presentation format using graphics, tables, and natural and absolute frequency is more digestible to investors. If the presentation format is constrainted by the regulator, they should probably supplement additional intelligible information in other format and through different channels.

As SRMFs is a still-developing sector in the Hong Kong fund market, fund companies should reach out to financial advisors and proactively provide corporate training about SRI strategies and potential prospects. Toolkits and presentation materials to verify whether their return was (at least) on par with the market should greatly benefit their sales. Fund companies could also partner with academic institutions to conduct more relevant surveys to raise public awareness of SRI performance and, in turn, provide relevant materials to financial advisors.

5.3 Limitation and future research

Notwithstanding the study's findings' implications for financial advisors, policymakers, and fund companies, several limitations must be acknowledged. First, the study's findings, like those of any stated-preference laboratory experimental study, are subject to the ecological validity argument, regarding its ability to measure investors' actual mutual fund choice preference (Bryman and Bell, 2011). Conjoint analysis is an effective method to explore the respondents' complex values and preferences (Hair et al., 2010; Curry, 1996). A recent study demonstrated that choice-based conjoint analysis results match what respondents actually do in real-world situations ((Hainmueller, Hangartner and Yamamoto, 2015), especially in studies (like this one) that use non-student actual investors and advisors as respondents (Glac, 2009; Bassen et al., 2019). Our carefully designed practical and literature-favoured attributes, together with the practitioner-involved pilot test, further mitigated this potential issue.

A more significant limitation concerns our use of purposive sampling to recruit financial advisors taking professional exams in two Hong Kong universities and their clients as respondents through snowball sampling. We adopted the most practical method during the pandemic hit. But it may be an external validity concern for the study to generalise using non-random sampling. First, the primary foci of this study are the existence of behaviour market failure and the effect of nudging, not the prevalence of their effects. In fact, laboratory experiments usually do not possess high external validity (Bryman and Bell, 2011; Baker and Nofsinger, 2010; Glac, 2009), and there is a trade-off between higher internal validity and lower external validity (Bryman and Bell, 2011; Baker and Nofsinger, 2010). (1) Recruiting actual investors who had investment experience over the last two years and actual financial advisors as respondents in the current study and designing and (2) using a valid experimental methodology reduced concerns regarding the similarity of our sample to the general fund investing public in Hong Kong. This is this study's main limitation. Given this, our study should be viewed as a foundation for future research that could extend the experiment to random representative investor samples. Similar studies could also be conducted in other geographical areas, using our results as a reference. In this regard, we should mention that the conjoint analysis results of the current study, other than the SRI strategy attribute part, are similar to responses from retail investors in Europe (Bassen et al., 2019) and advisors in Malaysia (Ramasamy and Yeung, 2003) and Turkey (Gözbaşı and Çıtak, 2010), suggesting our results might be generalisable.

Another limitation is that we did not conduct a manipulation check to verify whether participants received the nudge and how it affected their behaviour. Support for the nudge effect comes from a large-scale field experiment with comparable settings, but it was not conducted in Hong Kong

(Døskeland and Pedersen, 2015).

Furthermore, as we divided investors into a base case and different versions of nudging, further subdividing the respondents and shrinking the sample size could threaten the significance of the statistical validity tests. Meanwhile, conjoint analysis sometimes employs segmentation analysis (Hille, Weber and Brosch, 2019; Heringa et al., 2018; Bassen et al., 2019), for example, by latent class analysis. This would be worthwhile to pursue as the literature has indicated a heterogeneity among SRI investors investment motives (Mervelskemper, 2018; Hafenstein and Bassen, 2016; Hood, Nofsinger and Varma, 2014; Bénabou and Tirole, 2010; Beal, Goyen and Phillips, 2005). Future research could therefore differentiate the characteristics of pro-ESG investors. Alternatively, as prior studies found that SRI investors are predominantly female, younger, and better educated (Lapanan, 2018; Hood, Nofsinger and Varma, 2014; Beal, Goyen and Phillips, 2005; Schueth, 2003; Pérez-Gladish, Benson and Faff, 2012, Nilsson, 2008), future research could verify this through conjoint analysis studies.

This study adopted only the five most important mutual fund attributes and compared their RI with the SRI strategy factor. Further studies could include more attributes, such as external fund ratings, fund manager investment style, and fund manager experience (Gözbaşı, O. and Çıtak, L., 2010; Jamaludin, Smith and Gerrans, 2012; Hussain, Qureshi and Ahmad, 2012; Ramasamy and Yeung, 2003) to compare how investors rank the SRI strategy feature against these commonly less crucial factors and better understand investors' complex preference system. Moreover, the current study uses SRI strategy, including all ESG factors, as a joint attribute. This conforms to Hafenstein and Bassen's (2016) finding that investors saw aspects of ESG consideration as a single attribute rather than differentiating between them. Future research could segregate the three ESG categories and identify their RI to investors.

By the same token, the literature, as stated in Section 2.2.3, has provided evidence that negative/exclusion screening underperforms the market (Trinks and Scholtens, 2017; Hong and Kacperczyk, 2009; Fabozzi, Ma and Oliphant, 2008; Adler and Kritzman, 2008), whilst active inclusion strategy outperforms the market (Statman and Glushkov, 2016; Verheyden and Deiner, 2016; De and Clayman, 2015; Fulton, Kahn and Sharples, 2012; Derwall, Koedijk and Ter Horst, 2011, Statman and Glushkov, 2009, Derwall et al., 2005). Some studies have found that investors favour active inclusion strategy over negative/exclusion screening strategy (Berry and Junkus, 2013). Further research could divide the single SRI strategy attribute into these two categories and clearly identify investors' preferences. Lastly, although our main-effect utility conjoint analysis model has proven to be statistically valid, investigating possible interaction effects, especially between SRI strategy factor and risk-and-return trade-off factors, may bring further insights. However, adding attributes and interaction effects increases the risk of overburdening

respondents and choice fatigue. If a balance can be maintained, an expanded conjoint analysis model could provide additional practical clues, particularly to financial advisors and fund product providers.

Conjoint analysis, as a methodology, mitigates social desirability bias (Horiuchi, Markovich and Yamamoto, 2020; Hainmueller, Hangartner and Yamamoto, 2015). Our conjoint analysis results did not find behavioural market failure – i.e., financial advisors underestimating the importance investors attach to ESG consideration, making it hard for investors to realise their demand for SRMFs. Nor did behavioural market failure occur due to the non-salience of SRMFs, as shown by our salience nudge case. Meanwhile, a number of surveys record investors' interest in SRMFs (HKIFA, 2019; Asia Asset Management, 2017; Schroders, 2019; The Asset, 2019, IFEC, 2019b), but a low market participation rate for SRMFs is observed at the same time. Does this imply survey respondents exaggerated their SRMF purchase intentions and the existence of social desirability bias? Further studies could provide interesting results regarding this investor behaviour and psychology. On the other front, the current study also signifies the opposing forces affecting human decision-making and the difficulties of modelling human behaviour. It could be referenced by, for example, algorithm fund analysts.

Last, this study aimed to find ways to promote SRI market development through nudging. Our results showed that salience nudge policy focusing on investors' limited attention to and awareness of SRMF availability was largely ineffective in Hong Kong. While the performance nudge was more promising, policymakers cannot easily require financial advisors to proactively talk about SRI financial performance in every case. In other words, nudging in the awareness stage of the 5A model is challenging. A more handy and non-controversial approach would be to focus on nudging policies related to the attitude stage of the 5A model to facilitate informed cost and benefit analysis. Bassen et al. (2019), in a similar vein, suggested that a climate label in the form of star rating could inform investors of SRMFs' environmental performance and effectively raise the importance of SRI strategy importance. According to our study results, we suggest a modified label that balances pecuniary and ESG performance. Other nudge policies reflecting the RECAP logic and boost approach may also help. The policymaker can reference these policy suggestions. Their effectiveness, however, must be verified by future empirical evidence. We hope this study will extend the literature and help promote the market development of SRMFs, particularly in Hong Kong.

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