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Are Investors Willing to Sacrifice Cash for Morality?

R. H. Berry · F. Yeung

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Abstract The paper uses questionnaire responses provided by a sample of ethical investors to investigate willingness to sacrifice ethical considerations for financial reward. The paper examines the amount of financial reward necessary to cause an ethical investor to accept a switch from good ethical performance to poor ethical performance. Conjoint analysis is used to allow quantification of the utilities derived from different combinations of ethical and financial performance. Ethical investors are shown to vary in their willingness to sacrifice ethical for financial performance, and hence to display more heterogeneity than the all-encompassing 'ethical' label implies. Because of the existence of sub-groups of ethical investors with different attitudes towards financial reward, an attempt has been made to associate observable investors' characteristics with their level of willingness to trade-off morality for cash. One sub-group of investors in particular appears highly resistant to the idea of accepting higher financial return as compensation for poor ethical performance. This unwillingness casts doubt on Jensen and Meckling's widely reported claim that trade-off behaviour is ubiquitous in all areas of life.

Keywords Ethical investment · Willingness to sacrifice ethical performance · Conjoint analysis · Utility analysis · REMM

R. H. Berry (✉)
Nottingham University Business School, Nottingham, UK
e-mail: robert.berry@nottingham.ac.uk

F. Yeung
Hull University Business School, North Humberside, UK
e-mail: f.yeung@hull.ac.uk

Abbreviations

SRI	Socially responsible investment
REMM	Resourceful, evaluative, maximising model
LFG_j	A dummy variable indicating presence (1) or absence (0) of the characteristic 'large financial gain' in investment opportunity j
MFG_j	A dummy variable indicating presence (1) or absence (0) of the characteristic 'moderate financial gain' in investment opportunity j
SFG_j	A dummy variable indicating presence (1) or absence (0) of the characteristic 'small financial gain' in investment opportunity j
SFL_j	A dummy variable indicating presence (1) or absence (0) of the characteristic 'small financial loss' in investment opportunity j
GE_j	A dummy variable indicating presence (1) or absence (0) of the characteristic 'good ethical performance' in investment opportunity j
b_{iK}	The addition to the utility of individual i caused by the presence of a particular investment characteristic (e.g. LFG)
b_{i0}	The utility which individual i derives from the base case, investment of large financial loss (LFL) and poor ethical performance (PE)
DIFF	The difference between the GE and LFG coefficients for each individual investor
OLD	Age 55 or above
PORT	100 income over £75,000 per annum
OVER75K	Portfolio of £100,000 or more

Introduction

Decisions about which financial securities to hold and how much to invest are traditionally seen as driven by a

trade-off between the expected level of anticipated financial return and the riskiness of that anticipated financial return as measured by standard deviation. This approach not only defines the concept of riskiness narrowly by excluding other potentially relevant parameters of the distribution of anticipated returns but also excludes non-financial elements of investment performance. The limitations of this traditional model of investment decision making are currently the subject of widespread discussion. The evidence of non-normal historic return distributions has raised questions about the two parameter, mean and standard deviation model, and the activities of 'ethical investors' have raised questions about the exclusion of non-financial measures of performance from the standard financial model. This paper contributes to the 'ethical investors' dimension of the debate.

The literature adopts a variety of terms for what are labelled ethical investors and investments here. For example, 'green' and 'socially responsible' are two frequently occurring descriptors (Hudson 2005; Schueth 2003). In what follows, unless a direct quote is involved or the context requires it, the term ethical will be substituted for other descriptors. This substitution is not regarded as significant. While some authors do apply different meanings to these descriptors, these differences are not important for the current investigation.

Current attempts to introduce an ethical dimension to the practice of investment decision making typically operate through the use of screening or filtering mechanisms. 'Screening is the practice of excluding or including companies from investment portfolios based on a range of social and environmental criteria' (Michelson et al. 2004). The criteria used will of course vary with the social, environmental and ethical concerns of the individual investor or fund manager. Renneboog et al. (2007) identify four broad categories of screens used by SRI funds around the world (Sin, Ethical, Corporate Governance, Environmental). The mechanics of implementing screens can also vary. Three common approaches are negative screening, positive screening and best in class screening. Negative screening excludes bad performers, a 'never include if bad' approach, while positive screening includes good performers, an 'only if good' approach. Best in class screening can be thought of as a way of counteracting any downward pressure on portfolio financial performance caused by lack of diversification; it countenances a 'best of a bad lot' approach in ethical terms. The frequency of occurrence of these different screening approaches among SRI funds is discussed in Renneboog et al. (2007).

One aim of any screening system is to deal with the considerable information requirements of optimal investment decision making; the collection of more difficult to find data is required only for those investment opportunities that survive the screening process (Strong 2006). However, ethical screening has a much more significant role than simply reducing the scale of the data collection task, since for an ethical investor it is at the ethical screening stage that the potentially most significant investment performance measure is integrated into the portfolio building process. Companies' securities are allocated to two classes, ethically acceptable or unacceptable, with nothing in-between. Of course, the widespread adoption of screening for ethical purposes does not imply that the technique is universally seen as sound. De Colle and York (2009) discuss concerns about the failure of ethical screens, and hence the funds which use them, to adequately reflect the values and beliefs they claim to represent.

Screening, on ethical or on other grounds, is only part of the portfolio building process. Unless the screens result in only one investment opportunity passing all tests, there remains the task of allocating investible funds across investment opportunities. A simple approach is to construct an equally weighted portfolio of ethically acceptable securities to achieve some degree of financial risk diversification. Alternatively, the Markowitz (1952) approach to diversification could be applied to the restricted universe of ethically acceptable investments to better balance financial risk and expected return. The literature on ethical screening tends to concentrate on the nature of the screens, rather than on the portfolio construction process that follows, but the promotional literature of various ethical fund management organisations offers indications of how ethical portfolios are subsequently constructed. For example, Kames Capital (www.kamescapital.com) describe their screening processes, and identify their subsequent activity as involving more fundamental analysis than the two risk diversification strategies described above.

An alternative view of the process of building an ethical investment portfolio is hinted at in a rare reference to socially responsible investment (SRI) in a standard financial text (Bodie et al. 2011). Here, the ethical dimension is described as a constraint in an optimisation framework. However, this is simply another way of introducing an all or nothing ethical hurdle to be overcome. It is screening in another guise.

It is of course possible that some screens based on financial performance are applied prior to any ethical screens, or are interspersed among ethical screens. Screens based on accounting ratios are widely used for the purposes of reducing the population of investment opportunities to be considered for inclusion in an investment portfolio and it would be no surprise if some ethical investors made use of them for this purpose. There are many online screening systems available (Schadler and Cotton 2008). However, this use of financial screens does not involve a balancing of

financial and ethical concerns; it leaves open the issue of what the consequences of a financial screen for ethical performance are. Nor does this use of financial screens deal with the issue of portfolio construction, where the anticipated financial performance of an investment opportunity can finally be seen.

Ethical portfolio construction can then be seen as having two elements, with screening typically providing a set of ethically acceptable securities, and the financial consequences of an investment in these securities being determined separately. As so described, the ethical investment decision considers both ethical and financial performance measures, but does not involve consideration of the possibility that a reduced target level of ethical satisfaction might allow a better level of financial performance to be achieved. The target level of ethical performance is being treated as necessary and non-negotiable, as a 'need' in the sense of Jensen and Meckling (1994). Those securities which pass the ethical test provide possible combinations of expected levels of financial return and risk. An ethical investor may well continue the portfolio building process by searching for the best combination of expected financial return and risk still available, typically compromising on expected financial return to achieve a preferred level of financial risk. An investor who behaves in this way is treating levels of financial return and financial risk as 'wants' in the sense of Jensen and Meckling (1994), that is to say negotiable and subject to being traded off one against the other.

Whether ethical screens precede a financial return-based portfolio construction process, or are built into a portfolio optimisation procedure as constraints, or follow an initial financial screening the effect is the same. A screen sets an unavoidable barrier which a share must pass in order to feature in the investor's portfolio.

There is of course the possibility that screens or constraints are re-evaluated and refined when their consequences become evident. In this view of the ethical portfolio building process, an unacceptable level of financial performance could lead to an ethical screen or constraint being weakened to allow a portfolio's financial performance to be improved. This would be a step along the road to a portfolio building approach in which investors evaluate the consequences of incremental changes in ethical and financial targets, treating both as 'wants' in the Jensen and Meckling sense already described. Jensen and Meckling argue that such trade-off behaviour is ubiquitous and identify their trade-off-based resourceful, evaluative, maximising model (REMM) as the appropriate model for analysing decision making behaviour in general, and hence as relevant to the ethical investment decision under consideration here.

There are then many ways in which the financial and ethical performance of an investment opportunity can be taken into account by ethical investors. Unfortunately, the literature on ethical investment processes is not particularly informative about mechanisms utilised. Examination of the web sites of ethical investment funds does, however, suggest a predisposition to deal with ethical issues first and financial issues second, and web sites, and academic and practitioner literature as referenced above, do indicate widespread use of ethical screens for this purpose.

There is no clear answer to the question of whether ethical investors do, or wish to, put a financial price on their ethical concerns. Jensen and Meckling argue that trade-off behaviour is ubiquitous, but in the ethical investment area the use of ethical screens or constraints suggests that unwillingness to compromise on ethical requirements is seen as a useful representation of the way that investors wish to behave.

The possibility that ethical investors might wish to sacrifice morality for cash is then a suitable topic for further research. It is also a topic of considerable significance to the community of investment advisors and fund managers as well as to researchers in ethical finance. As far as fund managers and investment advisors are concerned, the process of portfolio construction would become more complex; simple ethical screens would no longer serve their purpose. Investors would have to be presented with a set of available combinations of ethical and financial performance to allow them to express their preferences. As far as researchers are concerned, evidence of a willingness to sacrifice ethical for financial performance could change the way ethical investors are characterised. It would not be sensible to regard them as a separate group of investors. Rather it would be better to view all investors as having concern for both ethical and financial performance, with ethical investors tending to pay relatively more attention to the ethical dimension of performance. The sets 'ethical investors' and 'traditional investors' would then be fuzzy sets rather than crisp sets.

The aim of this paper is then to investigate the way in which ethical investors behave if faced with a choice in which the ethical and financial dimensions of an investment opportunity are in conflict. The key questions are whether ethical criteria will be compromised to avoid financial penalties or to reap financial rewards, and if so, how much financial return is necessary to compensate for an ethical shortfall.

Literature Review

The literature does contain some material relevant to these questions. This takes the form of both general claims and

empirical evidence. At the time of writing Jensen and Meckling's (1994) paper, referred to earlier, is the 15th most frequently downloaded paper on the Social Science Research Network. Their REMM has a broader concept of the sources of utility than is common in the traditional economics literature. Utility can be derived from many sources other than consumption of goods including for example ethical behaviour. The REMM therefore offers a possible framework in which the ethical and financial dimensions of an investment can be simultaneously investigated. However, the model assumes that trade-offs between the ethical and financial dimensions of investment occur, which is inconsistent with the attitudes implied by the practice of ethical screening.

There is also empirical evidence in the ethical investment literature which touches on the willingness or unwillingness of ethical investors to sacrifice morality for finance or finance for morality, but findings are contradictory. Mackenzie and Lewis (1999) report that their pilot study indicated that (p. 443) 'at least some ethical investors are prepared to trade-off financial returns for ethics in a fairly dramatic way'. Trade-off here indicates willingness to sacrifice. However, after analysis of a larger sample, they go on to say that ethical investors (p. 450) 'while they have ethical concerns they are not prepared to sacrifice their essential financial requirements to meet these concerns'. This suggests that a minimum level of financial performance must be achieved before ethical considerations come into play.

Lewis and Mackenzie (2000) identify investors who do not respond to small shortfalls in the financial performance of ethical investments, but wish to increase investment if the financial performance of an ethical fund is slightly superior to that provided by traditional investments. Bollen (2005) found similar rapid increase but slow reduction investment behaviour in his study of socially responsible mutual funds, while Webley et al. (2001) also offer support for the idea that relatively poor financial performance of ethical funds does not lead to a reduction in investment in those funds by an ethical investor. However, Webley et al. place greater emphasis than other studies on ethical investors' unwillingness to trade-off ethical for financial performance. The authors state that (p. 39) 'for these ethical investors at least, ethical investment is based on ideology and identity' and that ethical investors (p. 40) 'having invested ethically, they stick with it' (Webley et al. 2001). As in Mackenzie and Lewis (1999), these findings suggest that trade-offs between financial and ethical performance may be possible, but these later studies indicate that ethical investors exhibit an unwillingness to compromise ethical requirements rather than a desire to set minimum financial requirements.

Mackenzie and Lewis (1999) express concern that their initial sample of ethical investors, which is drawn from investors in one social investment fund (p. 443), 'might not be representative of ethical investors as a whole'. The implication of this comment is that a broader sample from the ethical investor population might display heterogeneous behaviour. Nilsson (2009) attempts to investigate this possible heterogeneity. He explicitly attempts to segment a group of ethical investors based on their perception of the relative importance of financial return and the ethical aspect of investment performance. Three sub-groups of ethical investors are identified: a group 'primarily concerned about profit', a group driven by concerns for both social responsibility and profit, and a group primarily concerned about social responsibility. However, Nilsson (2009) emphasises that this last group (p. 26) 'should not be regarded as investors that have no interest in financial return at all'.

Overall, the picture offered by the literature is unclear. There is not only a suggestion that ethical investors may regard the financial performance and ethical performance of an investment as substitutes for each other but also the suggestion that there are limits beyond which substitution cannot go. There is a further suggestion that different groups of ethical investors studied may exhibit very different behaviours in this respect. This could be because such investors are heterogeneous or because the groups previously classified as ethical investors were poorly selected.

Methodology

The aim of this paper is to investigate the willingness of ethical investors to sacrifice the ethical performance of an investment in return for an improvement in its financial performance. Given the mixed findings in the existing literature, a key question is whether there are some ethical investors who are unwilling to compromise ethical standards for financial rewards. For such investors, screening is an inevitable part of investment analysis. If this group does not exist, then the screening processes widely used by practitioners appear inappropriate and must either be abandoned or used in an iterative fashion with screens being flexed so that their financial consequences can be identified. Furthermore, Jensen and Meckling's claim that REMM type behaviour is ubiquitous will not be contradicted, even in a context where contradictory findings might be expected to appear.

The approach taken here is to analyse the behaviour of a group of ethical investors as a whole and then investigate whether distinct sub-groups of ethical investors exist.

Sample Selection

There are three possible approaches to the problem of identifying ethical investors:

- Use investors who by virtue of their investment decisions have identified themselves as ethical investors.
- Use investors whose motives are evident for some reason other than the composition of their investment portfolio.
- Coach experimental subjects to behave in an ethical fashion.

The first approach is the most widely used. Mackenzie and Lewis (1999) and Lewis and Mackenzie (2000) are examples. The second approach does not appear to have been widely used, perhaps because of the difficulty of discovering motives except by observing actions. Glac (2009) provides an example of the third approach. She attempted to induce either an 'expressive' (ethical), 'neutral', or 'financial' decision mind set in a pool of undergraduate students. While this approach may be capable of generating 'pure' ethical investors whose decision rules can then be examined, it does not lend itself to an investigation of the population of investors currently labelled ethical by themselves or others. With this aim in mind, the most suitable approach to identifying a group of ethical investors appears to be allowing possession of an ethical portfolio to be the key identification criterion. Therefore, for the purposes of this study, data were requested from all the 192 clients of a firm of financial advisors specialising in SRI.

There is a possibility that ethical investors selected in this way exhibit heterogeneous behaviour. If consumers respond favourably to the products and services of corporations that behave ethically then high investment returns can come to be associated with the shares of these corporations. In such circumstances, apparently ethical investments may be purchased by some investors significantly motivated by the financial returns stemming from companies' ethical behaviour rather than by their own ethical beliefs. To discover whether this, or another mechanism, implies that ethical investors will exhibit different attitudes to the idea of sacrificing ethical performance for financial reward, the analysis in this paper searches for sub-groups within the sample defined on this dimension.

Data Collection Method

The literature indicates that once a target group of investors has been identified then data collection can proceed in different ways, for example, telephone interviews (Mackenzie and Lewis 1999), simulated consultations with a financial advisor (Webley et al. 2001), and postal questionnaires (Lewis and Mackenzie 2000). Sample sizes have inevitably varied with the data collection method chosen. For the current research, a postal questionnaire was used, the intention being to support a statistical investigation of investors' behaviour. Questionnaire recipients were asked to complete a questionnaire within 1 month or receiving it. To encourage participation, the offer was made to donate £2 to the chosen charity of each recipient who completed the questionnaire, a similar approach to encouraging response to that adopted by Lewis and Mackenzie (2000). A reminder was sent to non-respondents immediately after the 1-month deadline was reached.

Analytical Approach

While earlier literature has commented on the possibility of the ethical dimension of investment performance being sacrificed for additional financial return, there has so far been no convincing attempt to measure the magnitude of the financial reward necessary to persuade ethical investors to sacrifice ethical investment performance. To remedy this situation, this study makes use of conjoint analysis, a statistical technique designed to identify the utility of a consumer derives from the presence of a particular characteristic of a good or service. The basic technique is described in Hair et al. (1998), while Green et al. (2001) provides a survey of applications in the marketing area, the major application area for the technique. While the technique is not widely used outside the marketing field, finance applications do exist including Kantor and Pike (1987), Zinkhan and Zinkhan (1994), Shepherd (1999) and Ramasamy and Cheung (2003). Business ethics applications are reported in Roozen et al. (2001) and Tsalikis et al. (2001, 2008).

For the purposes of this study, investors receiving questionnaires were asked to choose an amount to invest in each of a set of stylized investment opportunities (shares in companies). The investment opportunities were presented as combinations of a level of financial performance and a level of ethical performance in keeping with the traditional conjoint analysis design. Combinations from five levels of financial performance and two levels of ethical performance were offered. The five levels of financial performance were: Large gain, moderate gain, small gain, small loss and large loss. The two levels of ethical performance were: good, poor. The use of two levels of ethical performance was seen as consistent with the 'all or nothing' approach implied in the traditional process of ethical screening. (Two additional investment opportunities, duplicating combinations of ethical and financial performance already on offer, were added to the basic list of 10 combinations included in the questionnaire as a check on consistency of response.)

Investors were asked to specify an investment amount they would assign to each combination of ethical and financial performance. The alternative investment amounts available were defined as percentages of a portfolio worth £100,000. This figure was suggested by the firm of financial advisors which provided the investor list as being consequential and realistic for the investors being surveyed. Respondents were asked to select a percentage from a list of five possibilities (0, 2, 5, 10 and 15).

The investment amount selected for a specific investment possibility can be interpreted as a measure of satisfaction gained from the combination of ethical and financial performance which characterises the investment possibility. Comparison of the levels of investment selected by an individual respondent for selected pairs of investments opportunities allows measurement of the shift in satisfaction from different levels of ethical or financial performance, e.g. the combination poor ethical performance and large financial gain when compared with the combination of poor ethical performance and moderate financial gain allows measurement of the change in satisfaction brought about by that specific amount of improved financial performance.

Ethical funds often attract investors with a mixture of ethical concerns. To give content to the idea of ethical performance, investors were asked to interpret this phrase in light of their own, most significant, ethical concern. Thus, one investor might respond to the information about level of ethical performance with the idea of use of child labour in mind, while another might be thinking in terms of environmental pollution. The investors were essentially being asked whether they would see some amount of financial return as sufficient to cause them to compromise on their most deeply felt ethical concern.

In traditional conjoint analysis, each respondent is dealt with on an individual basis, and this is the approach which has been adopted here. In this study, for each respondent, 10 observations linking level of satisfaction and investment opportunity characteristics are available, with each observation consisting of an investment level, a level of financial performance and a level of ethical performance. The aim is to explore how the investment level shifts as the characteristics of the investment opportunity change and then to interpret the shift to give information about the utility change the individual experiences as a result of the changes in the characteristics of the investment opportunity.

For each individual investor, the following model was estimated using the 10 available observations:

$$I_j = b_0 + b_1 LFG_j + b_2 MFG_j + b_3 SFG_j + b_4 SFL_j + b_5 GE_j + e_j \quad (1)$$

where j identifies the particular investment opportunity, I_j is the 'utility' derived by the individual from investment opportunity j (as indicated by investment level), LFG_j is a dummy variable indicating presence (1) or absence (0) of the characteristic 'large financial gain' in investment opportunity j, MFG_j is a dummy variable indicating presence (1) or absence (0) of the characteristic 'moderate financial gain' in investment opportunity j, SFG_j is a dummy variable indicating presence (1) or absence (0) of the characteristic 'small financial gain' in investment opportunity j, SFL_j is a dummy variable indicating presence (1) or absence (0) of the characteristic 'small financial loss' in investment opportunity j, GE_j is a dummy variable indicating presence (1) or absence (0) of the characteristic 'good ethical performance' in investment opportunity j, b_K is the coefficient indicating the addition to the utility of the individual caused by the presence of a particular investment characteristic (e.g. LFG), b_0 is the coefficient indicating the utility which the individual derives from the base case, an investment with a large financial loss and poor ethical performance

Estimation of the model could have proceeded in a variety of ways. Several specialist software packages are identified in Hair et al. (1998), but the simplest approach to estimation is ordinary least squares and that is the approach which has been adopted here.

For each individual respondent, the regression coefficient on GE can be interpreted as the increase in utility, for that individual, from the shift from poor ethical performance to good ethical performance. The coefficients on SFL, SFG, MFG and LFG can be interpreted in a similar, increase in utility, fashion. For example, the coefficient on MFG shows the increase in utility from a shift from large financial loss to medium financial gain. It is possible to compare the utility gain from a shift from poor to good ethical performance with the utility gain from a shift from poor financial performance to each of four different levels of improvement in financial performance. This makes the magnitude of the impact of changes in levels of ethical and financial performance explicit.

In what follows the coefficients from the individuals' regressions have been examined and overall sample behaviour relating to the relative attractiveness of improved ethical and financial performance has been analysed. Significant sub-groups have also been identified based on the relative sizes of regression coefficients.

A search for REMM and non-REMM behaviour was also carried out, taking into account both overall sample and sub-group results. The key comparison when looking for behaviour consistent with the REMM is a comparison between the coefficients on GE and LFG. If the coefficient on GE is greater than the coefficient on LFG, then the largest financial gain on offer is insufficient to compensate for the shift from good to poor ethical performance. This argument is expanded on later in the paper.

An attempt has also been made to link investors' characteristics to the relative importance they assign to ethical and financial concerns. To support this investigation, a new variable DIFF was defined as the difference between the GE and LFG coefficients for each individual investor. As has been said, these represent the utility gain from the shift from poor to good ethical performance and from large financial loss to large financial gain. A positive value indicates that utility from ethical improvement outweighs that from financial improvement, a zero value indicates comparability, and a negative value indicates that utility from ethical improvement is outweighed by that from financial improvement. Two investigations were undertaken based on this variable. The first treated it as continuous and attempted to explain variation by investors' characteristics using regression analysis. The second used group definitions based on this variable and attempted to classify investors into groups, again by association with characteristics of respondents. The technique used was logit analysis, a widely used classification procedure.

To support this attempt to link investors' characteristics to the willingness to sacrifice ethical for financial performance data were collected on a range of variables reflecting investors' characteristics. The majority of these variables were selected on the basis of appearances in the ethical consumer behaviour literature. Information collected related to gender (Roberts 1996), age (Diamantopoulos et al. 2003), children (Jackson 1983), employment status (Laroche et al. 2001) and annual income (Straughan and Roberts 1999). Information about value of investment portfolios was also collected. Information on age, income and value of portfolio were collected in ranges, e.g. age 25–34, 35–44, etc. As well as supporting the attempt to identify observable variables correlated with levels of willingness to sacrifice ethical for financial concerns, these data also allowed comparison of early and late respondents to the questionnaire, and allowed comparison of the present sample of ethical investors with those studied elsewhere in the literature.

Data Availability

Of the 192 questionnaires mailed, two were returned as undeliverable. Of the remainder, 106 were wholly or partially completed and returned. Of these, 82 questionnaires contained complete responses to the question dealing with level of investment in securities representing different combinations of ethical and financial performance, and therefore form the basis of the conjoint analysis reported here (42.7 % of the 192 originally distributed). Of these 82, only 65 contained complete answers to the questions asking about investors' characteristics, 33.9 %.

Preliminary Analysis of Questionnaire Responses

Background information about the respondents collected from the questionnaires is displayed in Table 1. Approximately, half the respondents are male and approximately half are in paid employment. The relatively low annual income figures are potentially explicable by the proportion of respondents either not in paid employment or retired. The investment portfolio values reported confirm that the £100,000 portfolio around which the questionnaire was based is not atypical.

When compared to samples of clients of other ethical fund managers collected for research purposes by the present authors and to samples of ethical investors used in

Table 1 Characteristics of the respondents

	N	Percent
Gender		
Male	98	43.9
Female		56.1
Age		
Under 25	101	3.0
25–34		2.0
35–44		6.9
45–54		26.7
55–64		34.7
Over 65		26.7
Children		
None	101	28.4
Below age 16		8.8
Above age 16		57.8
Above and below age 16		5.0
Employment status		
Paid employment	102	53.9
Not in paid employment		11.8
Retired		34.3
Annual income		
Under £25,000	89	39.4
£25,000–50,000		44.9
£50,001–75,000		10.1
£75,001–100,000		1.1
Over £100,000		4.5
Value of investment portfolio[a]		
Under £50,0000	86	11.6
£50,001–100,000		12.8
£100,001–150,000		24.4
£150,001–200,000		17.5
Over £200,000		33.7

[a] Market value as at the time when the survey was conducted

Table 2 Investment decisions based on financial and ethical information

Company[a]	Performance		*N*	Frequency (%)					Mean	S.D.
	Financial	Ethical		1	2	3	4	5		
A	Large gain	Good	100	0.0	0.0	1.0	6.0	93.0	4.92	0.307
C	Moderate gain	Good	100	0.0	0.0	8.0	25.0	67.0	4.59	0.637
B	Small gain	Good	98	0.0	5.1	18.4	39.8	36.7	4.08	0.870
H	Small loss	Good	96	10.4	38.5	27.1	13.5	10.5	2.75	1.142
J	Large loss	Good	91	49.5	31.9	12.1	2.2	4.3	1.80	1.035
I	Large gain	Poor	86	62.8	16.3	11.6	3.5	5.8	1.73	1.162
D	Moderate gain	Poor	83	68.7	14.5	13.3	0.0	3.5	1.55	0.978
G	Small gain	Poor	84	71.4	19.1	6.0	3.5	0.0	1.42	0.764
F	Small loss	Poor	85	91.8	5.8	2.4	0.0	0.0	1.11	0.379
E	Large loss	Poor	85	98.8	1.2	0.0	0.0	0.0	1.01	0.108

[a] Sorted by mean scores

Response options: 1 = none, 2 = 2 %, 3 = 5 %, 4 = 10 %, 5 = 15 %

other research, the current sample does not appear out of the ordinary (Yeung 2008).

The ten investment opportunities presented in the questionnaire have a common sense ranking. Good ethical performance combined with a large financial gain should be preferred to good ethical performance combined with a moderate financial gain, for example. A questionnaire response which reversed this ranking would be worrying, indicating either a failure to interpret the investment opportunity in the way the researchers intended, or that financial performance is a 'bad' rather than a 'good'. However, as can be seen in Table 2, the intuitively correct ranking is reflected in the average attractiveness (mean of ranks of investment levels) of the investment opportunities to the respondents.

An examination of the standard deviation figures, which reflect variation in the level of investment respondents were willing to make, is also interesting. There is little disagreement about the amount to invest when good ethical performance is paired with large financial gain, or indeed when poor financial performance is paired with large financial loss. However, the combination good ethical performance and small financial loss has generated significant disagreement. So too has the combination of poor ethical performance and large financial gain. The conflict between ethical and financial considerations is hinted at here. The combination of good ethical performance and large financial loss generates more agreement than the good ethical performance and small financial loss combination; the choice is more straightforward in the minds of respondents. Overall, Table 2 suggests that respondents are behaving consistently in terms of the average overall ranking, and as investors faced with a choice of different combinations of two 'goods'.

Table 2 is based on all respondents. Conjoint analysis, the statistical tool used in this paper, requires complete responses to questions. Examination indicates no significant differences between the 82 respondents who form the dataset used in the current analysis and the discarded respondents who provided only partial data. The same is true of the set of 65 respondents used later to identify the link between investors' characteristics and trade-off behaviour. Furthermore, investigation of the characteristics of late responders did not identify significant differences from early responders.

The Willingness to Sacrifice Ethical Concerns for Financial Gain

The model described earlier as Eq. (1) was estimated for each of the 82 respondents. Example outputs for individual subjects 1, 11 and 14 are presented in the Appendix. For economy of display below, the coefficients have been averaged, first of all over all 82 respondents. The average coefficients for the 82 respondents are displayed in Table 3.

Table 3 Utility scores of attributes for all respondents

Level of attribute	Overall *N* = 82 100 %
Financial performance	
Large financial gain (LFG)	1.958
Moderate financial gain (MFG)	1.720
Small financial gain (SFG)	1.385
Small financial loss (SFL)	0.525
Ethical performance	
Good ethical performance (GE)	2.180

These coefficients can be interpreted as the gain in utility, over the level produced by an investment offering poor ethical performance or a large financial loss, from the presence of a particular level of financial or ethical performance. Because of the linearity of the model, the coefficients can also be interpreted as the drop in utility introduced by the reduction from a specific level of financial or ethical performance to poor ethical performance or large financial loss. The different levels of financial performance are of course mutually exclusive.

As can be seen in Table 3, as the amount of improvement in financial performance increases so does the incremental utility. The maximum increase of 1.958 is associated with the shift to large financial gain. However, the shift from poor ethical performance to good ethical performance results in an increase in utility of 2.18. A persuasive interpretation of this result is that none of the levels of financial gain described would be sufficient to compensate for the drop in utility caused by a shift from good ethical performance to poor ethical performance. It is of course possible to argue that some excluded level of financial gain, e.g. infinitely large financial gain, would have generated a larger increment in utility, but it seems unreasonable to offer implausible or impossible outcomes from investment alternatives and expect questionnaire respondents to take them seriously. Furthermore, as can be seen, the shift from moderate financial gain to large financial gain shows a smaller increase in utility than does the shift from small financial gain to moderate financial gain. This manifestation of diminishing marginal utility suggests that it is possible that, no matter how large the financial gain, it might never compensate for the absence of good ethical performance.

It appears true that financial performance is seen as valuable by ethical investors, but not valuable enough to compensate for a lapse in ethical performance. However, the evidence of disagreement about levels of investment shown in Table 2 suggests that the 82 respondents should not automatically be treated as homogeneous. The advantage of estimating Eq. (1) for each individual (as has been done here) before averaging is that coefficients for individual investors remain available for analysis. Pooling data and producing one, group-wide, version of Eq. (1) would not have retained this information.

Using individual coefficients, it is possible to identify three sub-groups within the sample. The classification process is straightforward. Each individual respondent is assigned to a group according to a comparison between the utility he/she derives from the switch from poor to good ethical performance, and the utility he/she derives from an improvement in financial performance from the base level of large financial loss. For one group, described in what follows as the 'committed' group, no amount of financial gain provides an increase in utility as great as that provided by the improvement in ethical performance. Subject 1 (see Appendix for individual regression output) is a member of this group. For a second group, described in what follows as the 'opportunistic' group, the largest possible improvement in financial performance provides an increment in utility which exactly matches that from the switch in ethical performance from poor to good. Subject 14 (see Appendix for individual regression output) is a member of this group. For a third group, described in what follows as the 'materialistic' group, some amount of improvement in financial performance offers more utility than the switch from poor to good ethical performance. Subject 11 (see Appendix for individual regression output) is a member of this group.

Average coefficients for the members of each of these three groups are shown in Table 4. To make comparison easier, the overall group average coefficients are reproduced in Table 4 also.

The results for the 'committed' group are an amplified version of those for the overall sample. This is the largest group, comprising 54 % of the sample, and the overall sample response simply reflects the relative size of this group. The 'opportunistic' group is the smallest group, comprising 11 % of the sample. This group, unlike the

Table 4 Segments of ethical investors—utility scores of attributes

Level of attribute	Overall	SR investors segments		
		Materialistic	Opportunistic	Committed
	$N = 82$	$N = 29$	$N = 9$	$N = 44$
	100 %	35 %	11 %	54 %
Financial performance				
Large financial gain (LFG)	1.958	2.483[a]	2.000[a]	1.602[a]
Moderate financial gain (MFG)	1.720	2.121	1.500	1.500
Small financial gain (SFG)	1.385	1.621	1.111	1.284
Small financial loss (SFL)	0.525	0.621	0.333	0.500
Ethical performance				
Good ethical performance (GE)	2.180	1.655[a]	2.000[a]	2.564[a]

[a] Attribute level with highest utility for this attribute

other groups and the sample as a whole, does not display diminishing marginal utility with respect to levels of financial gain. However, the group size leaves open the possibility that this result is affected by outlier behaviour. The 'materialistic' group is large, 35 % of the sample. This is somewhat surprising given that the sample is of ethical investors. For the 'materialistic' group on average, the shift from large financial loss to small financial gain is almost sufficient to generate the same utility gain as the shift from poor ethical performance to good ethical performance.

The REMM is not an appropriate model of behaviour for members of the 'committed' group. This is not to deny that they perceive a gain in utility from improved financial performance, merely that the largest possible improvement is insufficient to outweigh the utility loss from a shift from good to poor ethical performance. For the 'materialistic' group, there is an amount of financial performance which will cause them to sacrifice their desire to invest in ethical securities, and this potential to sacrifice ethical for financial considerations could be modelled in terms of REMM. The REMM also appears potentially appropriate for the 'opportunistic' group, although here the trade-off is finely balanced. Therefore, while the result is not as convincing a rejection of Jensen and Meckling's REMM as the overall group average data suggests, the disaggregated analysis has identified a group of investors who will not sacrifice ethical performance for any amount of improvement in financial performance. For this group, the two stage approach to ethical investment, screening on ethical grounds followed by a financial analysis, seems appropriate.

Identification of Different Propensities to Sacrifice Ethical Considerations

The three groups of ethical investors identified above were constructed on the basis of the relative importance of two sources of utility, good ethical performance and large financial gain. The available measures of utility are the coefficients on these two variables in the 82 individual regressions. An additional variable DIFF, the difference between the regression coefficient on good ethical performance and that on large financial gain, can easily be calculated.

The distribution of this variable, the extent to which the gain in utility from the shift from poor to good ethical performance exceeds that from the shift from large financial loss to large financial gain, is shown in Fig. 1. The Jarque–Bera statistic indicates that normality of the underlying distribution cannot be rejected.

An attempt has been made to explain the behaviour of DIFF by regressing it on the characteristics of individual investors recorded during the survey exercise. Table 1 identifies the potential explanatory variables and the types

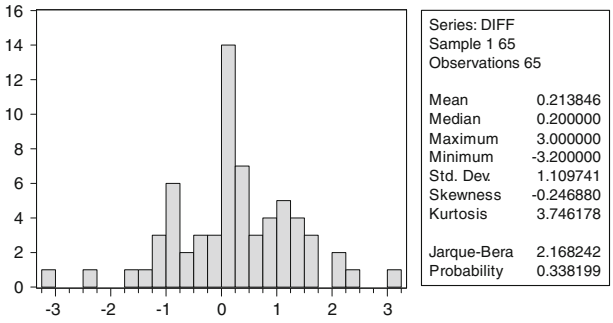

Fig. 1 Distribution of DIFF

of data available. A regression of DIFF on the full set of 19 available dummy explanatory variables showed none to be statistically significant. However, statistical tests suggested that the information in related blocks of variables was potentially significant. Six new explanatory variables were therefore created to represent each block (gender, age, children, employment, income level, portfolio size) of dummy variables. The essentially arbitrary nature of the chosen representations must be recognised. Final decisions about variable construction took into account the categories used in the data collection process, and comments from the investment advisor linked to the project. Partial responses reduced the number of observations available for this analysis to 65. Dummy (zero–one) variables based on age (OLD = 55 or above), income (OVER75K = over £75,000 per annum) and level of investment (PORT100 = portfolio of £100,000 or more) proved to have significant coefficients. Perhaps surprisingly the other dummy variables available for consideration, gender (1 = male), children (1 = with children) and employment status (1 = unemployed or retired) did not warrant inclusion among the set of statistically significant explanatory variables. Table 5 includes the results of a reduced regression of DIFF on these statistically significant explanatory variables.

OLD is significant at the 1 % level, but both PORT100 and OVER75K only at the 10 % level. The explanatory power of the model is poor with an adjusted R^2 of only 16 %.

The signs of the coefficients deserve comment. The positive coefficient on OLD indicates that the over 55 group assign more utility to the shift from poor to good ethical performance than they do to the shift from large financial loss to large financial gain. However, ownership of a high-value portfolio and possession of a high income have the reverse effect. This is an unexpected result since the income variable, at least, might be thought to be associated with a diminished concern with further financial gain. The negative coefficient on the size of portfolio variable is perhaps more explicable if size of portfolio is interpreted as indicating the importance of the portfolio as a source of household income. However, given the general

Table 5 Explaining utility differences

Variable	Coefficient	Std. error	*t*-Statistic	*p*
C	0.211775	0.292805	0.723263	0.4723
OLD	0.838481	0.276652	3.030814	0.0036
PORT100	−0.587389	0.321685	−1.825977	0.0727
OVER75K	−0.857257	0.478448	−1.791745	0.0781
R^2	0.200307			
Adjusted R^2	0.160977			
S.E. of regression	1.016502			
Sum squared resid	63.02986			
Log likelihood	−91.23070			
Durbin–Watson stat	2.080783			
Mean-dependent var	0.213846			
S.D.-dependent var	1.109741			
Akaike info criterion	2.930175			
Schwarz criterion	3.063984			
F-statistic	5.093080			
Prob(*F*-statistic)	0.003275			

Dependent variable: DIFF

Method: least squares

Sample: 1 65

Included observations: 65

Table 6 Classification of weakly ethical and materialistic investors

Variable	Coefficient	Std. error	*z*-Statistic	*p*
C	1.078090	0.737277	1.462260	0.1437
OLD	2.034614	0.677568	3.002819	0.0027
PORT100	−1.656422	0.880952	−1.880263	0.0601
OVER75K	−2.209655	1.216921	−1.815775	0.0694
Mean-dependent var	0.676923			
S.E. of regression	0.413200			
Sum squared resid	10.41476			
Log likelihood	−32.63814			
Restr. log likelihood	−40.89586			
LR statistic (3 df)	16.51544			
Probability(LR stat)	0.000889			
S.D.-dependent var	0.471291			
Akaike info criterion	1.127327			
Schwarz criterion	1.261136			
Hannan–Quinn criter.	1.180123			
Avg. log likelihood	−0.502125			
McFadden R^2	0.201921			

Dependent variable: DIFF01

Method: ML - Binary Logit (Quadratic hill climbing)

Date: 07/21/10 Time: 11:32

Sample: 1 65

Included observations: 65

Convergence achieved after four iterations

Covariance matrix computed using second derivatives

view that utility of wealth exhibits diminishing marginal utility, these two negative coefficients are surprising.

The low-explanatory power of the model is disappointing. The data do not support the construction of a model which identifies in a useful fashion the relative importance of ethical and financial performance for a specific individual. However, because of the potential value of even a limited ability to understand an investor's probable willingness to sacrifice ethical for financial concerns an attempt was made to see if the available explanatory variables could be used to identify group membership. The DIFF variable can be used to define membership of the group 'utility from good ethical performance $\geq$ utility from large financial gain', a combination of the 'committed' and 'opportunistic' sub-groups identified earlier, as compared to the 'materialistic' investor group also identified earlier. Of the reduced sample of 65, 44 individuals fall into the combined 'committed + opportunistic' group. Logit analysis confirmed that variables, OLD, PORT100 and OVER75K, were once again statistically significant while gender, children, and employment status were not. A reduced version of the logit model, based only on statistically significant explanatory variables, is shown in Table 6. Coefficient signs are as before. A straightforward measure of goodness of fit of a classification model is the percentage of observations correctly classified. 80 % are correctly classified here. The chance of misclassifying a member of the 'committed + opportunistic' group as 'materialistic' is 11.36 %, and the chance of classifying a 'materialistic' investor as a member of the 'committed + opportunistic' group is 38.1 %. However, it must be emphasised that these percentages may not represent out of sample classification performance.

To investigate the stability of the model parameters and the out of sample classification performance of the model, a further investigation was undertaken. An often unrecognised problem in the statistical research process is the arbitrary way in which a dataset is split for estimation and testing purposes. Observed results can sometimes be highly dependent on this split, casting doubt on the general validity of any reported model. To deal with this possibility here, random samples of different sizes were selected from the initial set of 65 and the logit analysis redone. With sample size 60, OLD remained significant at the 1 % level in all samples. With samples of size 55, the significance of OLD dropped to the 10 % level in 10 % of the samples. With sample size 50, OLD retained 1 % significance in 80 % of samples, dropped to 10 % significance in 10 % of samples and ceased to be significant in 10 % of samples. With sample size 45, OLD maintained 1 %

significance in 60 % of samples, dropped to 10 % in 30 % of samples and ceased to be significant in 10 % of samples. A reasonable interpretation of these findings is that the statistical significance of OLD is a robust result.

The variable OVER75K remained significant at the 10 % level in 90 % of the samples of 60, 70 % of the samples of 55, 40 % of the samples of 50 and 30 % of the samples of 45. In the case of a very small number of samples of 55, this variable perfectly predicted group membership. The variable PORT100 remained significant at the 10 % level in 80 % of the samples of 60, 70 % of the samples of 55, 40 % of the samples of 50 and 30 % of the samples of 45. While illustrating how sensitive results can be to the selection of estimation and testing datasets, again the general conclusion that these variables are relevant to group membership seems strengthened.

The pattern of coefficient signs did not change at any point during these investigations. The positive coefficient on OLD and the negative coefficients on PORT100 and OVER75K are definite features of this dataset. Coefficient values did of course vary.

The out of sample classification performance of the logit model was then tested using an estimation sample of 55 and a test dataset of 10. The size of the testing set is small, but this is a necessary compromise given the total number of observations available. The procedure adopted was as follows: (1) randomly split the dataset of 65 observations into an estimation set of 55 and a testing set of 10; (2) estimate the logit model; (3) apply the estimated model to the observations in the testing set; (4) count the number and type of correct classifications; (5) repeat the procedure. Taking the results of all iterations of the procedure together, 85 % of testing set observations were classified correctly. Had the population proportion of 68:32 been used, by allocating all observations in the test set to the more common group, then 73 % of testing set observations would have been correctly classified. Of course, this would also have resulted in all members of the 'committed + opportunistic' group being correctly classified and all 'materialistic' investors being incorrectly classified. With the model, 65 % of the 'materialistic' investors are correctly classified. In only 25 % of the individual iterations would the use of the population proportion as a classification rule have improved on the model's performance. Overall, then the variables OLD, PORT100 and OVER75K appear to offer a limited improvement on a naive classification rule.

Conclusions

This paper has investigated the willingness of a group of ethical investors, identified as such by their investment in an ethical fund, to sacrifice ethical considerations for an improvement in financial performance. Conjoint analysis was used to measure each investor's gain in utility from a shift from poor to good ethical performance and from a shift from large financial loss to each of four levels of financial improvement. Investors were asked to interpret the ethical dimension of an investment's performance in terms of their own most deeply felt ethical concern. Perhaps unsurprisingly, the sample's average utility gain from ethical improvement exceeded the sample's average utility gain from any of the levels of financial improvement considered; after all, this was a sample of ethical investors. However, closer examination showed that the sample average concealed significant differences in willingness to sacrifice ethical performance in return for financial gain. Three sub-groups were identified within the sample: a 'committed' group who gained more utility from the ethical improvement on offer than from even the largest improvement in financial performance on offer, an 'opportunistic' group for whom the utility increments from the offered ethical gain and from the largest financial gain on offer were equal, and a 'materialistic' group for whom the utility increment from the ethical improvement on offer was less than that from at least one of the amounts of financial improvement on offer.

It might be thought that, at least with respect to willingness to sacrifice ethical performance for financial reward, ethical investors would behave in a similar fashion but this has not proved to be the case. Given that investors were asked to interpret ethical performance in terms of the ethical issue of greatest concern to them, the variability of response cannot be explained by investors having different levels of concern for some specific ethical issue. One response to this finding might be to claim that the group of investors investigated has not been appropriately selected. In other words, identifying ethical investors as those investors who hold an ethical portfolio is an inadequate approach. For whatever reason, perhaps because ethical consumption patterns have generated a link between high financial reward financial instruments and companies operating ethical policies, ethical portfolios may now be held by some individuals willing to sacrifice ethical performance for financial gain. Researchers in future need to consider carefully the process of identifying a sample of ethical investors. Identification by action, i.e. holding an ethical portfolio, may not produce well a sample of investors motivated by ethical concerns. The heterogeneity of ethical investors has major implications for future investigations of ethical investment behaviour; the process of identifying ethical investors needs very careful consideration.

There is a more fundamental point here also; traditional finance theorising has largely operated on the assumption that investors form a largely homogeneous group. For example, the proofs of standard models, such as the capital

asset pricing model allow investors to differ only in terms of their willingness to trade-off expected anticipated return and the variance of anticipated return (Mossin 1966). More recent studies of market instability have hypothesised the existence of groups of investors who differ in terms of investment horizons (Peters 1996) or information processing capabilities (Barberis and Thaler 2003), but the heterogeneity of the ethical investment community suggests a need to go further. It appears likely that the assumption of differences between investors rather than similarity of investors is a better basis for future theorising about capital markets. This suggests that traditional mathematical analyses may well need to give way to, for example, agent-based simulation models (Tesfatsion and Judd 2006).

Given the heterogeneity of the population of ethical investors, an ability to identify an individual investor's membership of a particular sub-group of investors on the basis of easily observable characteristics would be beneficial to both researchers and investment advisors. The classification exercise attempted here grouped 'committed' and 'opportunistic' investors together and attempted to identify differences between that combined group and the 'materialistic' group. This exercise was only moderately successful although the derived classification rule does have some predictive power. There is of course the possibility that the rule is only useful to the managers of the fund who provided investors' contact details for this research. Although the investors appear similar to ethical investors examined in other studies they have self-selected to invest in this particular fund and may be atypical of the population of ethical investors in some undetected way. Further research attempting to link observable characteristics of investors to patterns of ethical investment behaviour is clearly required. A successful classification model would be of value to researchers seeking to ensure that they are investigating ethical investors rather than simply investors who hold an ethical portfolio. It would also be of considerable value to fund managers and investment advisors seeking to work with the ethical investment community.

As has been said, screening is a widely used element in the process of building an ethical portfolio. For some ethical investors, such as the 'committed' sub-group identified here, an early application of an ethical screen, is entirely appropriate. Only companies which meet the ethical criterion need be subjected to any other analysis. For other ethical investors an early application of a financial screen may not be sensible. The sequence of screening is not the issue; the final group of candidate investments will be unchanged. However, the amount of data collection and hence the cost of data collection can be changed substantially. Past financial performance is relatively easily observable, and hence such a financial filter is easy and cheap to apply. Ethical performance is less likely to be available in easily accessible form and hence may be costly to collect. It may be sensible to dismiss financially unacceptable companies before beginning an ethical analysis of their performance. However, the substitution of a 'financial future will be like the past' approach to financial forecasting is not without risks!

For some ethical investors, the 'materialistic' group for example, the screening approach to portfolio building seems inappropriate; there is no ethical concern which may not be compromised by a sufficient improvement in financial performance. A better approach to evaluating combinations of ethical and financial performance might involve scoring as a crude version of a utility function. Here ethical and financial performance measures are weighted and summed. This approach allows an investor to decide whether there is sufficient financial performance to compensate for a drop in ethical performance. Scoring systems require a more detailed understanding of an investor's preferences than does screening and hence is a more time consuming and costly approach. The model presented in Hallerbach et al. (2004) demonstrates this.

Even for the 'committed' group of ethical investors a scoring system may be an appropriate, but costly, approach for taking into account some types of ethical performance. However the findings reported here indicate that, for this group, there is at least one dimension of ethical performance for which screening is appropriate.

This paper has made use of a relatively rarely used technique in the finance literature, conjoint analysis. The technique offers a way of investigating the utility gain from characteristics of financial products. Traditional finance has largely proceeded on the basis of investigation of one measure of performance, financial return, and two dimensions of that measure of performance, mean anticipated return and variance of anticipated return. The existence of the ethical investment community offers a challenge to this traditional way of viewing the performance of a financial instrument. Conjoint analysis is one of a set of tools capable of dealing with multiple measures of the performance of a financial investment and deserves further consideration by ethical finance researchers.

This paper also offers a test of Jensen & Meckling's hypothesis that the REMM provides a universally useful guide to investors' (as a type of decision maker) behaviour. This model allows for multiple sources of utility, for example ethical as well as financial gain, and argues that, at the margin, individuals will always be willing to trade-off one source of utility gain for another. This paper has identified a 'committed' subset of ethical investors for whom no level of financial reward appears sufficient to compensate for a lack of good ethical performance. For this group the common practice of portfolio construction using ethical exclusion filters or screens seems very appropriate and the REMM is an inappropriate model for analysing their behaviour. However, the REMM

appears to have wider applicability than its critics might have thought. The current research has identified, even among the population of 'ethical' investors 'materialistic' and 'opportunistic sub-group willing to sacrifice ethical for financial performance. For these investors portfolio construction through the use of ethical exclusion filters seems inappropriate and a scoring approach more sensible.

In conclusion, inevitably the nature of the ethical investor group, the best ways of modelling ethical investors' preferences, and the best ways of embedding these preferences in portfolio construction methods, deserve further research. However the ethical investor community appears far from homogeneous and future research designs must take this into account.

Appendix

Variable	Coefficient	Std. error	*t*-Statistic	*p*
C	0.400000	0.458258	0.872872	0.4320
LFG	1.000000	0.591608	1.690309	0.1662
MFG	1.000000	0.591608	1.690309	0.1662
SFG	0.500000	0.591608	0.845154	0.4456
SFL	0.500000	0.591608	0.845154	0.4456
GE	3.200000	0.374166	8.552360	0.0010
R^2	0.950704	Mean-dependent var		2.600000
Adjusted R^2	0.889085	S.D.-dependent var		1.776388
S.E. of regression	0.591608	Akaike info criterion		2.071764
Sum squared resid	1.400000	Schwarz criterion		2.253315
Log likelihood	−4.358821	*F*-statistic		15.42857
Durbin–Watson stat	1.828571	Prob(*F*-statistic)		0.010112

Dependent variable: SUB1
Method: least squares
Date: 07/26/10 Time: 11:51
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. error	*t*-Statistic	*p*
C	−0.100000	0.900000	−0.111111	0.9169
LFG	2.500000	1.161895	2.151657	0.0978
MFG	2.500000	1.161895	2.151657	0.0978
SFG	2.000000	1.161895	1.721326	0.1603
SFL	0.500000	1.161895	0.430331	0.6891
GE	2.200000	0.734847	2.993821	0.0402
R^2	0.810526	Mean-dependent var		2.500000
Adjusted R^2	0.573684	S.D.-dependent var		1.779513
S.E. of regression	1.161895	Akaike info criterion		3.421691
Sum squared resid	5.400000	Schwarz criterion		3.603242
Log likelihood	−11.10845	*F*-statistic		3.422222
Durbin–Watson stat	1.205556	Prob(*F*-statistic)		0.128390

Dependent variable: SUB11
Method: least squares
Date: 07/26/10 Time: 11:52
Sample: 1 10
Included observations: 10

Variable	Coefficient	Std. error	t-Statistic	p
C	−5.62E−16	0.866025	−6.49E−16	1.0000
LFG	2.000000	1.118034	1.788854	0.1481
MFG	1.000000	1.118034	0.894427	0.4216
SFG	1.500000	1.118034	1.341641	0.2508
SFL	0.500000	1.118034	0.447214	0.6779
GE	2.000000	0.707107	2.828427	0.0474
R^2	0.750000	Mean-dependent var		2.000000
Adjusted R^2-squared	0.437500	S.D.-dependent var		1.490712
S.E. of regression	1.118034	Akaike info criterion		3.344730
Sum squared resid	5.000000	Schwarz criterion		3.526281
Log likelihood	−10.72365	F-statistic		2.400000
Durbin–Watson stat	0.600000	Prob(F-statistic)		0.208399

Dependent variable: SUB14

Method: least squares

Date: 07/26/10 Time: 11:53

Sample: 1 10

Included observations: 10

References

Barberis, N., & Thaler, R. H. (2003). A survey of behavioural finance. In G. Constantinides, M. Harris, & R. Stultz (Eds.), *Handbook of economics of finance: Financial Markets and Asset Prices* (Vol. 1B). Amsterdam: Elsevier.

Bodie, Z., Kane, A., & Marcus, A. J. (2011). *Investments and portfolio management* (9th ed.). New York: McGraw Hill.

Bollen, N. P. B. (2005). *Investment attributes and investor behaviour: evidence from socially responsible mutual funds*. Working Paper, Owen Graduate School of Management, Vanderbilt University.

De Colle, S., & York, J. G. (2009). Why wine is not glue? The unresolved problem of negative screening in socially responsible investing. *Journal of Business Ethics, 85*(1), 83–95.

Diamantopoulos, A., Schlegelmilch, B. B., & Sinkovics, R. R. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research, 56*(6), 465–480.

Glac, K. (2009). Understanding socially responsible investing: the effect of decision frames and trade-off options. *Journal of Business Ethics, 87*(1), 41–55.

Green, P. E., Krieger, A. M., & Wind, Y. (2001). Thirty years of conjoint analysis: reflections and prospects. *Interfaces, 31*(3), 56–73.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Hallerbach, W., Ning, H., Soppe, A., & Spronk, J. (2004). A framework for managing a portfolio of socially responsible investments. *European Journal of Operational Research, 153*, 517–529.

Hudson, R. (2005). Ethical investing: ethical investing and managers. *Business Ethics Quarterly, 15*(4), 641–657.

Jackson, E. L. (1983). Measuring the demand for environmental quality with survey data. *Journal of Politics, 45*(2), 335–350.

Jensen, M. V., & Meckling, W. H. (1994). The nature of man. *Journal of Applied Corporate Finance, 7*(1), 4–19.

Kantor, J., & Pike, R. (1987). Valuing unlisted shares: A dual approach to the major information determinants. *Managerial and Decision Economics, 8*(3), 221–227.

Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing, 18*(6), 505–520.

Lewis, A., & Mackenzie, C. (2000). Morals, money, ethical investing and economic psychology. *Human Relations, 53*(2), 179–191.

Mackenzie, C., & Lewis, A. (1999). Morals and markets: the case of ethical investors. *Business Ethics Quarterly, 9*(3), 439–452.

Markowitz, H. (1952, March). Portfolio selection. *Journal of Finance, 7*, 77–91.

Michelson, G., Wailes, N., van der Laan, S., & Frost, G. (2004). Ethical investment processes and outcomes. *Journal of Business Ethics, 52*(1), 1–9.

Mossin, J. (1966). Equilibrium in a capital asset market. *Econometrica, 34*(4), 768–783.

Nilsson, J. (2009). Segmenting socially responsible mutual fund investors: the influence of financial return and social responsibility. *International Journal of Bank Marketing, 27*(1), 5–31.

Peters, E. (1996). *Chaos and order in the capital markets* (2nd ed.). New York: Wiley.

Ramasamy, B., & Cheung, M. C. H. (2003). Evaluating mutual funds in an emerging market: Factors that matter to financial advisors. *International Journal of Bank Marketing, 21*(3), 122–136.

Renneboog, L., ter Horst, J., & Zhang, C. (2007). The price of ethics: Evidence from socially responsible mutual funds. ECGI Working Paper in Finance No 168.

Roberts, J. A. (1996). Green consumers in the 1990s: Profile and implications for advertising. *Journal of Business Research, 36*(3), 217–231.

Roozen, I., De Pelsmacker, P., & Bostyn, F. (2001). The ethical dimensions of decision processes of employees. *Journal of Business Ethics, 33*(2), 87–99.

Schadler, F. P., & Cotton, B. D. (2008). Are the AAII stock screens a useful tool for investors? *Financial Services Review, 17*(3), 185–201.

Schueth, S. (2003). Socially responsible investing in the United States. *Journal of Business Ethics, 43*(3), 189–194.

Shepherd, D. A. (1999). Venture capitalists' assessment of new venture survival. *Management Science, 45*(5), 621–632.

Straughan, R. D., & Roberts, J. (1999). Environmental segmentation alternatives: A look at green consumer behaviour in the new millennium. *Journal of Consumer Marketing, 16*(6), 558–575.

Strong, R. A. (2006). *Portfolio construction, management, and protection* (4th ed.). Mason, OH: Thomson South-Western.

Tesfatsionn, L., & Judd, K. L. (Eds.). (2006). *Handbook of computational economics: Agent based computational economics*. Amsterdam: Elsevier.

Tsalikis, J., Seaton, B., & Shepherd, P. (2001). Relativism in ethical research: A proposed model and mode of enquiry. *Journal of Business Ethics, 32*(3), 231–236.

Tsalikis, J., Seaton, B., & Shepherd, P. (2008). Relative importance measurement of the moral intensity dimensions. *Journal of Business Ethics, 80*(4), 613–626.

Webley, P., Lewis, A., & Mackenzie, C. (2001). Commitment among ethical investors: An experimental approach. *Journal of Economic Psychology, 22*(1), 27–41.

Yeung, F. (2008). A study of ethical investors in the UK. Unpublished PhD thesis, University of Nottingham.

Zinkhan, F. C., & Zinkhan, G. M. (1994). An application of conjoint analysis to capital budgeting: The case of innovative land management systems. *Managerial Finance, 20*(7), 37–50.