NewGov
NEW MODES OF GOVERNANCE PROJECT

Project no. CIT1-CT-2004-506392

NEWGOV
New Modes of Governance

Integrated Project
Priority 7 – Citizens and Governance in the Knowledge-based Society

The Price of Ethics: Evidence from Socially Responsible Mutual Funds

reference number: 21/D17

Due date of deliverable: August 2007
Actual submission date: 23 May 2007

Start date of project: 1 September 2004 Duration: 48 months

Organisation name of lead contractor for this deliverable:
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Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Summary

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Keywords: ethics, mutual funds, socially responsible investing, investment screens, smart money, risk loadings

JEL codes: G12, A13, and Z13

The Price of Ethics: Evidence from Socially Responsible Mutual Funds

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Abstract

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We are grateful to Stijn Claessens, Piet Duffhues, Marc Goergen, Marina Martynova, Bas Werker, and the seminar participants at Tilburg University, Keele University and the University of Sheffield for their helpful comments, as well as to the participants to the EFMA 2006 (Madrid) and FMA 2006 (Salt Lake City). All remaining errors are our own. Luc Renneboog is grateful to the Netherlands Organization for Scientific Research for funding under the 'Shifts in Governance' programme and to the European Commission via the 'New Modes of Governance'- project (NEWGOV) led by the European University Institute in Florence; contract nr. CIT1-CT-2004-506392.

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Abstract

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Introduction

"The life of money-making is one undertaken under compulsion, and wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else."

-- Aristotle, written around 350 B.C.[1]

Although economics textbooks tell us that human behavior is driven by maximization of self-interest, many people deviate from exclusively selfish behavior (see, e.g., Fehr and Gachter, 2000 and 2002). For example, recent experimental evidence indicates that altruism or selflessness, is a powerful feature of human behavior and is unique to humans.[2] An individual's utility partially depends on the utility of other members of the community, and ethical and social considerations may be important determinants of economic behavior.[3] Economic theories of social norms (see Akerlof, 1980, and Romer, 1984) point out that, even when individuals maximize self-interest, social norms that are financially costly to the individual may nevertheless persist in the economy if individuals are sanctioned by loss of reputation when

[1] The Nicomachean Ethics, Book I.5; in the translation by Ross (1980).
[2] Fehr and Fischbacher (2003) argue that human societies represent an anomaly in the animal world (): they are based on a detailed division of labor and cooperation between genetically unrelated individuals in large groups.
[3] In fact, economics was for a long time seen as a branch of ethics (see Sen, 1987). For example, Adam Smith was a Professor of Moral Philosophy.

disobeying the norm.[4] Using a repeated game framework, Bovenberg (2002) formalizes various roles of social norms and values in facilitating economic cooperation, and argues that social considerations of corporate stakeholders (including consumers, employees, shareholders, etc.) may induce corporations to care for public goods, like the natural environment, even though this does not yield a direct benefit to the stakeholders themselves.

In this paper, we study the economic effects of ethics by focusing on the money-management industry. Over the past decade, ethical mutual funds, or often also called socially responsible investment (SRI) funds, have experienced an explosive growth around the world: the assets in the socially screened portfolios reached $2.3 trillion in 2005 or approximately 9.4% of the total universe of professionally managed assets in the US (Social Investment Forum, 2005). SRI funds screen their investment portfolio based on ethical, social, corporate governance or environmental criteria. This provides an ideal setting to study the economic effects of ethics for the following reasons. First, investors of SRI funds explicitly deviate from the economically rational goal of wealth-maximization. SRI investors are socially conscious and derive non-financial utility by holding assets consistent with their ethical and social values. Second, by investing in mutual funds rather than giving money to charity, SRI investors still desire to improve their financial utility as they expect positive risk-adjusted returns on their investments.

This paper contributes to the literature in the following ways. First, we study the risk and return characteristics of SRI funds using a unique dataset consisting of nearly all SRI mutual funds around the world (the United States, Europe, Asia-Pacific and Africa). To our best knowledge, this is the first study on the performance of *SRI funds around the world*. In order to pursue social objectives, SRI funds employ a set of investment screens that restrict their investment opportunities. On the one hand, the exclusion of companies based on SRI screens may *constrain the risk-return optimization* and negatively influence fund performance. For instance, SRI funds typically do not invest in 'sin' stocks, i.e. public-traded companies involved in producing alcohol or tobacco and in gambling, although these stocks have historically outperformed the market (see Hong and Kacperczyk, 2005). On the other hand, the screening process of SRI funds may *generate value-relevant non-public information* and yield superior fund performance. The SRI screens are usually also used as filters to identify managerial competence and superior corporate governance, or to avoid potential costs of corporate social crises and environmental disasters. Specifically, we examine whether or not the risk-adjusted

[4] Elster (1989) provides a review of the literature on social norms and economic theory, and argues that self-interest does not provide a full explanation for adherence to social norms. Following Akerlof (1980), social norms are defined as acts whose utility to the agent depends on the beliefs or actions of other members of the community. Social values are preferences that value particular social norms (Bovenberg, 2002).

returns of the various types of SRI funds are different from those of conventional benchmarks. We add an 'ethics factor' to the Fama-French-Carhart four-factor model and to the conditional models in which a lagged set of macro-economic variables are included. The cost of reduced diversification is captured by various measures of net selectivity of stocks. We also study how returns and risk evolves over time and whether SRI fund managers time the market.

Second, we investigate whether or not ethical investors are able to select the SRI funds that will generate superior performance in subsequent periods (*a smart money effect*). Geczy, Stambaugh and Levin (2003) show that the fund selection process of SRI investors determines the performance of the SRI fund portfolios relative to that of conventional portfolios. While this study assumes that investors make fund selection decisions in a Bayesian way based on a fund's past performance, expenses and turnover, a number of other financial and non-financial fund attributes may significantly influence SRI investors' decision process (see Renneboog, Ter Horst and Zhang, 2006). We contribute to this line of research and examine the performance of SRI investors' portfolios by tracking the actual *asset allocation decisions of investors* (i.e. the decisions to invest or withdraw money) instead of making assumptions on investors' fund selection process.

Third, we study the impact of SRI screens on fund returns and risk loadings, an issue that plays a central role in the SRI fund industry but has not yet been explored in the literature. More specifically, we analyze the question whether or not *screening intensity and screening criteria* (i.e. sin, ethical, social, corporate governance, and environmental screens) influence the risk-adjusted returns and risk exposure of SRI funds. Simultaneously, we examine the impact of other fund characteristics, such as fund size, age, the fee structure and the reputation of fund families, on fund returns and risk.

The paper yields many interesting conclusions on SRI mutual funds; we summarize the main findings: First, the risk-adjusted returns of the average SRI fund in the UK and US are not statistically different from those of non-SRI funds in these countries. In contrast, the average SRI fund in most European and Asia-Pacific countries strongly underperforms the benchmark portfolios. In particular, the risk-adjusted returns of the average SRI funds in Belgium, France, Ireland, Japan, Norway, Singapore, and Sweden are on average lower than –5% per annum. These results may reflect the impact of ethical considerations on stock prices: firms meeting high ethical standards are overpriced by the market and investors in these companies pay a price for ethics. It seems that investors are not doing that well by doing good. In addition, we demonstrate that the explanatory power of the Fama-French-Carhart risk factors has increased significantly over time for SRI fund returns. This suggests that SRI funds gradually converge to

conventional funds by holding similar assets in their portfolios. When we extend the Fama-French-Carhart four-factor model with an ethics factor, we confirm that the SRI funds have a higher exposure to this ethics factor. However, the difference between five- and four-factor alphas of SRI funds is economically small. In terms of the costs of diversification (net selectivity), SRI and conventional funds are not significantly different.

Second, we find mixed results on the 'smart money' effect in the SRI fund industry: although ethical investors are unable to identify the funds that will outperform their benchmarks in subsequent periods, there is some fund-selection ability to identify the ethical funds that will perform poorly. Meanwhile, we document that the risk-adjusted return of the total wealth invested in ethical funds in Europe (excluding the UK) and the Rest of World is about -6% per annum.

Third, the performance of SRI funds increases with the number of SRI screens employed to model their investment universe, and is better when funds have an in-house SRI research team to screen their portfolios. A two standard-deviation increase in the SRI screening intensity generates 2.6% abnormal returns per annum. The use of corporate governance and social screens increases the alpha in a four-factor model by 2.1%. These results support the hypothesis that the screening process generates value-relevant non-public information, and SRI screens help fund managers to pick stocks. It also appears that screening activities of SRI funds have a significant impact on funds' loadings on risk factors.

The remainder of the paper is organized as follows. Section I describes the data on SRI funds, investment screens and performance benchmarks. Section II presents the returns and risk characteristics of SRI funds and Section III focuses on the investors' portfolios of SRI funds, more specifically the smart money effect. While Section IV examines the determinants of returns and risk of SRI funds, Section V concludes.

I SRI Funds, Investment Screens and Performance Benchmarks

I.A Ethical and Conventional Mutual Funds

We construct a database that contains socially responsible equity mutual funds domiciled in 23 countries and offshore jurisdictions. Specifically, the SRI funds are domiciled in the following regions: (i) *Europe (excluding the UK)*: Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Sweden, and Switzerland, (ii) the *UK,* including Guernsey and the Isle of Man, (iii) the *US,* and (iv) the *Rest of the World*: Australia, Canada,

Cayman Islands, Japan, Malaysia, the Netherlands Antilles, Singapore, and South Africa. We also collect data on conventional equity mutual funds in the UK and the US, which serve as our reference groups. Our primary data source is the Standard & Poors' Fund Service (Micropal), which covers ethical funds and conventional UK funds. The US ethical and conventional fund data are obtained from the CRSP Survivor-bias Free Mutual Fund Database. We also obtain data for the Canadian SRI fund data from Bloomberg. For each fund, our database contains monthly Net Asset Value (per share value of a fund's portfolio net of annual management fees, denoted as NAV), monthly Assets Under Management (AUM), and other fund characteristics such as the management fees, load fees and the inception date. Our sample period starts in January 1991 (prior to this year the number of SRI mutual funds is tiny) and ends in December 2003.

To determine the universe of SRI funds, we create a list of mutual funds which are labelled as 'ethical', 'socially responsible', 'ecology', 'christian values' or 'islamic' in the databases above mentioned. S&P classifies mutual funds as ethical or socially responsible investment funds if the fund managers specify in the fund prospectuses that they have social, environmental, corporate governance, or ethical investment goals. We subsequently verify the SRI screening policies of these funds. For each fund in our initial sample, we hand-collect the information on SRI screens using the fund prospectuses and websites, and also gather more information by direct contact with fund managers (by phone, by email or via on-site interviews). Furthermore, we also collect information on whether a fund engages in shareholder activism and whether the fund bases its screening activities on an in-house SRI research team. Hence, in order to be included in our sample, the SRI funds employ at least one ethical, corporate governance, social, or environmental screen as part of their investment policies.

When a mutual fund is sold in two or more countries, the S&P list of socially responsible funds reports it as two or more funds. We exclude such double counting and also restrict our sample to equity mutual funds, excluding fixed-income, balanced, and money-market mutual funds. We also do not include funds that are not available to individual investors directly, but are only available through institutions such as pension funds, insurance companies, or charities and foundations. The above filtering process reduces our sample size to 455 equity SRI funds, including 45 funds for which we do not have data on their assets under management. In addition, we learnt from discussions with several industry experts and fund managers that over our sample period eight socially responsible equity mutual funds ceased to exist, which implies a very low attrition rate (on average 0.25% on an annual basis). To avoid a possible survivorship bias (see Brown, Goetzmann, Ibbotson and Ross, 1992), we collect data for these funds from a number of sources including CRSP Survivor-Bias Free Mutual Fund Database and the Datastream 'dead'

mutual funds research files, and include the funds in our sample. All returns are inclusive of any distributions, net of annual management fees and denoted in local currency. Our final sample of SRI funds comprises *463 live and dead equity mutual funds* domiciled in 23 countries or offshore jurisdictions around the world.

Our benchmark sample of UK conventional funds consists of *716 non-SRI equity mutual funds, including 649 'live' equity funds and 67 'dead' equity funds* (the attrition rate is about 3% on an annual basis). Data for dead mutual funds were collected from Datastream. The reference group of US conventional mutual funds consists of *12,624 equity funds over our sample period* (*including 8,813 funds alive* in December 2003) and these data are collected from the CRSP Survivor-Bias Free Mutual Fund Database. Consistent with Bollen (2006), we classify a US fund as an equity fund if its year-end equity allocation reaches 75 percent or more during the fund's life.

[Insert Table 1 about here]

The cross-sectional characteristics of the SRI and non-SRI mutual funds are described by country[5] in Table 1: the number of funds, the number of fund families (i.e. the financial institution that manages the mutual funds), the fund age, the assets under management, and the fees (including management fees and load fees[7]) per fund in December 2003. The largest number of SRI funds in our sample comes from Continental Europe (with a total of 206 funds which are part of 110 different fund families), followed by the US (98 funds), the UK (67 funds), and Australia (36 funds). The SRI fund industry of the UK and the US is the most mature as reflected by the median age of about 7 years, whereas the industry in Europe

[5] We identify a mutual fund's nationality by its legal domicile. It should be noted that the domicile may be different from the countries where the funds are sold. For funds in the four offshore jurisdictions, the investors' nationalities are unobservable. Another extreme case is Luxembourg, whose funds are sold across Europe. Fund managers choose Luxembourg and offshore jurisdictions as funds' domiciles mainly because of favorable tax laws. Based on the countries of origin of the fund management companies, we assign 41 out of the 56 funds domiciled in Luxembourg to: Switzerland (11 funds), Germany (10), UK (6), France (4), Netherlands (4), Belgium (3), Sweden (2), and Austria (1). The remaining 15 funds domiciled in Luxembourg are evaluated using European-wide benchmarks.

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[7] Load fees include front-end fees (share subscription fees) and back-end fees (share redemption fees). While load fees are mainly used to pay for trading costs and marketing expenses (e.g. distribution payments to brokers or for advertising), management fees are used to cover operating expenses including managerial compensation as well as part of the marketing expenses (called the 12B1 fee in the US).

(excluding the UK) and the Rest of the World is young with a median age of about 3 years since the fund's inception. Furthermore, US and UK SRI funds are much larger than those in Europe and the Rest of the World. For instance, while the average size of SRI funds in the US is € 142 million, the one in Europe (excluding the UK) amounts to € 32 million. The total fees (the sum of the annual management fees and one seventh of the load fees[8]) range from 1.3% per annum in Belgium and the Netherlands to 2.4% per annum in Malaysia. There are important differences in the components of fund fees across the regions: European and UK funds have the lowest management fees (1.3%), whereas the load fees, i.e. the sum of front-end loads (share subscription fees) and back-end loads (share redemption fees), are the lowest in the US (1.8%). Finally, Panel B of Table 1 shows that the conventional funds are typically much larger, with an average fund size of € 270 million and € 289 million for the UK or the US, respectively. While an SRI fund family consists on average of two SRI equity funds, the average number of non-SRI equity funds per family is five funds in the UK and 18 in the US.

I.B Social and Ethical Objectives

The SRI funds usually employ a combination of negative or positive SRI screens in the process of constructing portfolios. A typical *negative* screen is applied to an initial asset pool, such as the S&P 500 stocks from which specific sectors (e.g. alcohol, tobacco and defense industries), are excluded. *Positive* screens are employed to select companies meeting superior standards on issues such as corporate governance or environmental protection. The use of positive screens is often combined with a '*best in class*' approach: firms are ranked within *each* industry based on social criteria; subsequently, only those firms passing a minimum threshold in each industry are selected as potential candidates for inclusion into a portfolio. For instance, the chemical firms polluting least are selected as candidates for SRI portfolios. Moreover, in order to achieve social objectives, SRI funds sometimes engage in shareholder activism, where fund managers attempt to influence the company's actions through direct dialogue with the management or by voting at annual general meetings.[9]

[8] We amortize load fees over a seven-year holding period, which is the average holding period for equity mutual funds. Like Sirri and Tufano (1998), Total Fees is the sum of the management fees and the load fees charged to investors. Note that the true costs of investing in mutual funds may be higher than the total fees due to taxes on investment returns.

[9] For a clinical study of shareholder activism, see Becht, Franks, Mayer and Rossi (2006).

We develop a list of SRI screens used by SRI funds around the world. Combining the information from a variety of data sources[10], we identify 21 screening criteria, which are further classified into four major categories. As reported in Panel A of Table 2, the first category, denoted as 'Sin', contains funds that avoid investing in firms from the so-called 'sin-industries', which produce e.g. tobacco, alcohol, or weapons. The funds in the 'Ethical' category exclude e.g. firms that test their products on animals, produce equipment facilitating abortion, develop genetically-modified products, or violate islamic or christian religious principals. Funds that employ screens checking for superior corporate governance, good labor relations or a good human rights track record (e.g. no child labor) are denoted as 'Corporate Governance and Social' funds. Finally, funds that invest in environmentally friendly firms are referred to as 'Environmental' funds. Note that an SRI fund usually employs a combination of screens from several categories. For instance, the TIAA-CREF Social Choice Equity Fund excludes companies that derive revenues from alcohol, tobacco, gambling or weapons, and invests in companies meeting high standards in labor relations, corporate governance, and environmental performance.

[Insert Table 2 about here]

Panel B of Table 2 highlights the differences in screening activities across the four regions. The UK SRI funds employ on average 9.5 investment screens simultaneously, 6 of which are so-called negative screens which exclude firms or industries with undesirable ethical characteristics. In contrast, SRI funds in the Rest of the World apply on average 5.5 screens. 93% of US SRI funds use at least one of the sin screens, whereas corporate governance, social and environmental screens are more popular in the UK and the rest of Europe (used by 87% and 92% of the funds, respectively). Islamic funds account for 36% of SRI funds in the Rest of the World, including Asia-Pacific and Africa. Interestingly, 47% of the US SRI funds report that they make active use of their shareholder voting rights, while in Europe (excluding the UK) only 18% of the funds are involved in shareholder activism. Furthermore, 55% of the US SRI funds base their SRI screening activities on in-house research, compared to only 11% of SRI funds in the Rest of the World. Finally, European SRI funds are the most internationally diversified ones: 33% of the funds invest across Europe, 61% invest around the world and only 6% invest in the domestic country. In contrast, only 16% of the SRI funds in the US invest overseas.

[10] Our information sources are Social Investment Forum (2003), Natural Capital Institute (www.responsibleinvesting.org), SiRi SRI Fund Service (www.avanzi-sri.org), and Sustainable Investment Platform (www.sustainable-investment.org).

I.C Benchmarks

We construct monthly returns of benchmark portfolios for each country and region in our sample. The benchmark factors are the Fama and French's (1993) three factors, including the market, size, and book-to-market, and the Carhart's (1997) momentum factor. We collect the four factors for the US from the CRSP database. As risk-free interest rates, we use the 1-month treasury-bill rate or the inter-bank interest rate, gathered from CRSP and Datastream. Given that the factor returns for countries other than the US are not publicly available, we construct the factors for all other countries and regions in our sample using the Worldscope database[11]. For the excess market return factor (MKT) we use the return of a value-weighted portfolio of all stocks (including live and dead companies) in the Worldscope database in each country or region minus the risk-free rate.[13] The size factor SMB (Small minus Big) is the return difference between portfolios of small and large stocks. In line with Fama and French (1993), we rank all stocks in a country or region based on the market value and assign the stocks with a total market capitalization below the median to the small stock portfolio and the ones with a market cap above the median to the large stock portfolio. To construct the book-to-market factor HML (High minus Low), we rank all stocks in the Worldscope database based on their book-to-market ratios, and assign the top 30% to the high book-to-market portfolio and the bottom 30% to the low book-to-market portfolio. The HML factor return is the return difference between the high and low book-to-market portfolios. To form the momentum factor UMD (Up minus Down), we rank all stocks according to their returns over the prior 12 months, and assign the top 30% stocks to the high prior return portfolio and the bottom 30% to the low prior return portfolio. The return difference between the high and low prior return portfolios is the UMD factor return. All of the three factors SMB, HML and UMD are value-weighted and constructed using 1-month lagged information. Following Fama and French (1993) and Carhart (1997), the SMB and HML factors are rebalanced at the end of June of each year, and the UMD factor is rebalanced at the end of each month.

To check the accuracy of our factor returns, we compare our UK factors with those in Dimson, Nagel and Quigley (2003) who construct the UK factors for the period of 1995-2001

[11] For the construction of the factor portfolios, we used the on-line research tool provided by Style Research Ltd., London.

[12] We also used the MSCI country indices as a proxy for the market portfolio, and our results remain unchanged. The Worldscope database aims at covering about 98% of market capitalization in each country, while the MSCI indices target 85% of free-floated market capitalization.

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using the London Share Price Database (LSPD)[14]. We also construct the US factors using the Worldscope database and compare it with the Fama and French factors in the CRSP database. We find that our own factors are virtually identical to those from these other sources.

II Returns and Risk

II.A Doing Well by Doing Good?

In order to investigate whether or not investors (literally) pay a price for their ethical and social considerations, we examine the risk and return characteristics of SRI mutual funds around the world and compare this to reference groups of conventional US and UK funds. Most existing research on SRI fund performance does not find evidence for the hypothesis that the risk-adjusted returns of the average SRI mutual funds differ significantly from those of the average non-SRI mutual funds.[15] In a model that considers the stock price implications of ethical investing that excludes polluting companies, Heinkel, Krause and Zechner (2001) show that the exclusion of polluting firms (or other unethical firms) by ethical investors reduces risk-sharing opportunities among investors who hold shares of polluting firms, which may negatively influence the stock price of polluting firms and raise their expected returns.[16] In line with this prediction, Hong and Kacperczyk (2005) find that 'sin' stocks in the US have been significantly underpriced by the stock market. The authors argue that the mispricing of 'sin' stocks may result from the fact that they are neglected by an important part of investors, i.e. the SRI investors.[17] As a result, excluding this underpriced 'sin' part of the stock market (which most of the ethical funds do), may negatively influence the risk-return tradeoffs of SRI funds in comparison to conventional funds.

[14] We thank Elroy Dimson and Stefan Nagel for providing us with the UK factor data.

[15] Almost all existing studies on SRI fund performance focus on individual countries (mainly the US and the UK). For instance, Goldreyer et al. (1999), Hamilton et al. (1993) and Statman (2000), Geczy et al. (2003), Bello (2005) and Girard et al. (2005) study US SRI funds; Luther et al. (1992), Luther and Matatko (1994), Mallin et al. (1995) and Gregory et al. (1997) examine UK SRI funds; Bauer, Derwall and Otten (2006) study Canadian SRI funds; and Bauer, Otten and Tourani Rad (2006) analyze Australian SRI funds. Multi-country studies are undertaken by Schroder (2003) for the US, Germany and Swiss SRI funds; Bauer et al. (2005) for the US, UK and German funds, and Kreander et al. (2005) for European funds. As most of these studies are based on different sample periods, benchmarks and methodologies, international comparisons are difficult to make.

[16] Implicit in this model is that there is limited arbitrage in the stock market, e.g. there is not enough arbitrage capital exploiting the mispricing between polluting firms and non-polluting firms. This model is in line with Merton's (1987) prediction that stocks with a smaller investor base (labeled as 'neglected' stocks) have a larger expected return due to limited risk-sharing.

[17] The alternative explanation for the outperformance of 'sin' stocks is that sin companies are more liable to lawsuits (e.g. tobacco companies) and have higher expected return because of litigation risk.

We study the performance of ethical funds by using the time-series returns of an equally weighted portfolio of ethical funds. [18,19] We first estimate the CAPM model:

$$r_t - r_{f,t} = \alpha_1 + \beta_{MKT}(r_t^m - r_{f,t}) + \varepsilon_t \quad (1)$$

where r_t is the return of an equally weighted portfolio of funds in month *t*, $r_{f,t}$ is the return on a local risk-free deposit (i.e. the 1-month treasury bill rate or the inter-bank interest rate), r_t^m is the return of a local equity market index, α_1 is Jensen's alpha introduced by Jensen (1968), β_{MKT} is the factor loading on the market portfolio, and ε_t stands for the idiosyncratic return. We also estimate a four-factor model including the market, size, book-to-market, and momentum factors (see, Fama and French, 1993, and Carhart, 1997):

$$r_t - r_{f,t} = \alpha_4 + \beta_{MKT}(r_t^m - r_{f,t}) + \beta_{SMB} r_t^{smb} + \beta_{HML} r_t^{hml} + \beta_{UMD} r_t^{umd} + \varepsilon_t \quad (2)$$

where r_t^{smb}, r_t^{hml}, and r_t^{umd} are the SMB, HML and UMD factors, α_4 is the four-factor-adjusted return of ethical fund portfolios, β_{MKT}, β_{SMB}, β_{HML}, and β_{UMD} are the factor loadings on the four factors, and ε_t stands for the idiosyncratic return.

In order to control for the impact of fund fees on fund performance, we compute the alphas of fund portfolios both after and before deducting management fees (denoted as α_4, and gross α_4 respectively). The gross alpha is calculated by adding back one twelfth of annual management fees to the monthly fund returns before estimating the four-factor model.

[Insert Table 3 about here]

[18] We evaluate the performance of the fund portfolios on a country and regional basis from a local investor perspective: the country portfolios of mutual funds are in local currency, evaluated against local benchmark factors while using local risk-free interest rates. In addition, the portfolios 'Europe excluding UK' and 'Rest of World' are in Euro and US dollar and are evaluated against European and Asia-Pacific benchmark factors and the German and Australian risk-free rates, respectively. The 'World' portfolios are appraised from the perspective of an international investor based in the US: these portfolios are in US dollars and they are evaluated using the World benchmark factors and the US risk-free rate. As a robustness check, we also assess fund performance from the perspective of an international investor by using international indices as benchmarks; our main results remain unchanged (tables are available upon request).

[19] As a robustness check, we also estimate the models using a fund regression approach: we compute the cross-sectional mean of individual fund estimates. These results are similar to the results from the portfolio regression approach presented in our paper. For example, using the fund regression approach, we find that the estimated four-factor alphas of conventional UK and US funds are –0.9% and –2.4% per annum, respectively.

Panel A of Table 3 presents the excess returns (i.e. fund returns in excess of the risk-free rate) and the CAPM results for equally weighted portfolios of ethical and conventional funds. The average excess return of SRI funds around the world is 2.6% per annum (in USD), ranging from –0.7% per annum in the Rest of World to 5.2% per annum in the US. After controlling for the exposure to the market risk, the average SRI funds in the UK, the US and Continental Europe underperform local equity indices by 2.7%, 2.8%, and 4.3% per annum, respectively. However, the alphas for the UK and US SRI funds are not statistically different from those of their conventional peers, a result consistent with previous studies on SRI performance (see, e.g., Bauer, Koedijk and Otten, 2005).

The estimation results for the four-factor model are presented in Panels B (regional level) and C (country level) of Table 3. The annual alphas of SRI funds in the UK and US are –2.2% and –3.4% respectively (both significant at the 1% level), whereas those of conventional funds are –1.1% and –2.5% respectively. [20] The differences in alphas, about 1% per annum, are not statistically significant. It is also important to note that 97% of the return variations of the UK and US SRI funds can be replicated by portfolios mimicking the four risk factors, which suggests that the holdings of SRI funds in these two countries might be very similar to those of conventional funds tracking style indices. European SRI funds underperform the four-factor benchmarks by 3.5% per annum (significant at the 10% level), which is less negative than the CAPM-adjusted alpha due to the negative loading on the 'HML' factor. Furthermore, the US SRI funds have a significantly smaller exposure to the size ('SMB') factor than the conventional funds. This implies that these SRI funds invest relatively more in large-capitalization stocks. In contrast, the SRI funds in other countries feature a 'small-cap growth stocks' investment style.[21]

Panel C of Table 3 reports the performance of SRI funds at the country level from a domestic investor's perspective. The results are shown for countries with at least 5 years of return data. The four-factor alphas of most country portfolios are strongly negative, which indicates the strong underperformance of European and Asia-Pacific SRI funds relative to the four-factor benchmarks. For example, the alphas of the average SRI funds in Belgium, France, Ireland, Japan, Norway, Singapore, and Sweden are lower than –5% per annum.

As the underperformance of actively managed conventional funds may be due to management fees (see Gruber, 1996, and Wermers, 2000), we examine the impact of management fees on SRI fund performance. Panel C of Table 3 shows that, even before

[20] Bollen (2006), who adopts a similar definition of equity funds, reports that the four-factor alpha for the average conventional US funds is -25 basis points per month, i.e. –3% per annum, which is similar to our estimates.
[21] A similar pattern of differences in investment styles between the US and European SRI funds are reported in Bauer, Koedijk and Otten (2005).

deducting management fees from fund returns, about half of the country portfolios underperform the benchmarks by more than 3% per annum. This implies that the management fees cannot fully explain the strong underperformance of European and Asia-Pacific SRI funds relative to domestic benchmark portfolios.

To the extent that SRI funds invest in companies that are considered 'ethical', our results suggest that the companies meeting high ethical standards might be overpriced in stock markets, especially in Europe (excluding the UK) and Asia-Pacific.[22] There are two potential explanations for the 'overpricing of ethics' anomaly. The first is that ethical companies may be less risky than conventional ones and hence should earn a lower return. For instance, ethical companies may face fewer lawsuits relating to corporate governance scandals, corporate social crises and environmental disasters. In case the conventional four-factor pricing model does not capture SRI (or 'ethical') risks, the estimated alpha may reflect the expected returns associated with the missing risk factor. An alternative explanation for the overpricing of ethics may result from 'aversion to unethical/asocial corporate behavior': investors strongly dislike companies' unethical behavior due to social norms even if the behavior is not associated with higher risks. When deriving non-financial utility from investing in companies that meet high ethical standards, SRI investors may be content with a lower rate of return from ethical/socially responsible firms. The rising demand from shares of SRI firms may cause these firms to be priced above their fundamental value such that ethical funds underperform the market.[23] This explanation is a behavioral one, which assumes that there are limits to arbitrage in stock markets, i.e. there are not enough arbitrageurs short-selling ethical firms if they are overpriced.

II.B Does Ethical Risk Matter?

We investigate the relative importance of 'ethical risk' and 'aversion to unethical behavior' to explain the underperformance of ethical funds. If underperformance is driven by the missing ethical risk factor, adding this factor to the four-factor model could improve the alphas of ethical funds.

[22] Alternative explanations for the underperformance of SRI funds may be transaction costs and non-stock holdings of funds. Wermers (2000) shows that, for conventional mutual funds in the US, transaction costs and the underperformance of non-stock holdings lead to a reduction in fund performance by 0.8% and 0.7% per annum respectively. Given that the gross alphas on SRI funds are far lower than –1.5%, these two factors are unlikely to explain the strong underperformance of SRI funds.

[23] This view is related to taste-based theories of discrimination in labor markets, which originates from Becker (1957). In this theory, employers with discriminatory tastes are willing to pay a financial price to avoid interacting with a particular class of people. Consequently the wage of a particular class of people (e.g. white people) may be higher than the wage of others. The 'aversion to unethical behavior' explanation is also in line with the fact that in product markets, consumers are willing to pay a premium for environmentally friendly products.

We measure the 'ethics' factor returns by employing ethical equity indices, i.e. the FTSE 4 Good (FTSE4G) Indices in excess of the risk-free interest rate.[24] In order to be included in the FTSE4G indices, companies must pass the negative screens (such as e.g. tobacco, weapons and nuclear) and satisfy the positive selection screens (such as environmental sustainability, corporate governance, stakeholder relationships or universal human rights). We use the excess returns of the UK, US, Europe and Global indices from the FTSE4G, which represent the returns of zero-investment passive portfolios of ethical firms. Panel A of Table 4 reports the four-factor-adjusted returns of the passive ethical portfolios of the four regions. We find that portfolios of ethical firms in the UK and Europe underperform their local benchmarks by about 4.5% per annum, consistent with the results for ethical mutual funds. As ethical indices are in fact passive portfolios without any transaction costs and do not comprise non-stock holdings, the result supports the view that the underperformance of ethical funds is driven by neither management fees, transaction costs nor non-stock holdings. Meanwhile, the risk-adjusted returns of the US and the World ethical indices are not statistically different from zero.

We add the 'ethics' factor to the conventional four-factor model:[25]

$$r_t - r_{f,t} = \alpha_5 + \beta_{MKT}(r_t^m - r_{f,t}) + \beta_{SMB} r_t^{smb} + \beta_{HML} r_t^{hml} + \beta_{UMD} r_t^{umd} + \beta_{ETHIC} r_t^{ethic} + \varepsilon_t \qquad (3)$$

where α_5 is the five-factor-adjusted return of mutual fund portfolios, r_t^{ethic} captures the excess return of the regional ethical indices,[26] β_{ETHIC} is the loading on the ethical risk factor, and ε_t stands for the idiosyncratic return. We can also interpret r_t^{ethic} as a zero-investment spread that has a long position in ethical firms and a short position in a risk-free deposit.

Panel B of Table 4 presents the estimation results for Eq. (3). First, as expected, ethical funds in Europe (ex. the UK), the Rest of World, and the World have significantly positive loadings on the 'ethics' factor. The UK and US ethical funds have a significantly higher exposure to the 'ethics' factor than conventional funds. Second, the five-factor-adjusted alphas of the UK and US ethical funds are 1.1% and 0.5% higher per annum than those of conventional

[24] The FTSE4Good Indices were launched in July 2001 with a history dating back to 1996. They are value-weighted and include companies from the FTSE All-World Developed Index. As a robustness check, we also use the Dow Jones Sustainability Indices (DJSI) as an alternative to the FTSE4Good indices and obtain very similar results (tables are available upon request). The DJSI indices capture the leading 10% companies by industry in terms of sustainability and are drawn from the largest 2500 companies in the Dow Jones Global Index. Unlike the FTSE4Good indices, the DJSI does not provide indices specific to the UK and US.

[25] Our model is in line with Pastor and Stambaugh's (2002) framework of mutual fund performance evaluation, where fund performance benchmarks include seemingly unrelated assets that are not captured by the benchmarks.

[26] As the FTSE4G does not provide ethical indices for the Asia-Pacific region, we use excess returns of the FTSE4G Global Index as a proxy for the 'ethics' factor in the Rest of World.

funds, although the differences are not statistically significant. Third and most importantly, the difference between the five- and four-factor alphas of SRI funds is economically small, which is less than 0.5% per annum for ethical funds in the UK, US, Europe and the World. Given that ethical funds underperform the four-factor portfolios by more than 5% per annum in many countries, it implies that adding the 'ethics' risk factor to the four-factor model has only limited influence on the risk-adjusted returns of ethical funds. Consequently the underperformance of ethical funds seems not to be driven by ethical risk. These results support the hypothesis that investors pay a price for ethics due to 'aversion to unethical behavior', as ethical fund returns are much lower than what is required to compensate for risk.

II.C How Do Returns and Risk Evolve Over Time?

The SRI fund industry is a relatively young industry, as the average age of SRI funds in our sample is only 6 years (see Table 1). The industry may have experienced a learning phase during the early period of its development. Bauer et al. (2005) document that in early 1990's US and German SRI funds significantly underperform their conventional peers but this difference is gradually transformed into a slight out-performance during the late 1990's. In this subsection, we examine the evolution of SRI funds' returns and risk over time.

[Insert Table 5 about here]

We divide our sample period into three sub-samples: the pre-bubble period of 1991-1995, the internet bubble period of 1996-1999, and the post-bubble period of 2000-2003. We estimate the four-factor model (Eq. (2)) for the three sub-samples, and report the estimated alphas and the adjusted R-squared of the model in Panels A of Table 5. Consistent with Bauer et al. (2005), the US ethical funds underperform their conventional peers in the pre-bubble period by 2.9% per annum (statistically significant at the 1% level) and catch up with conventional funds during the post-bubble period. However, in contrast to the US SRI funds, ethical funds in the UK, Europe and the Rest of World do not exhibit such a (learning) effect. Meanwhile, the World average portfolio of ethical funds shows some improvement in performance, as its annual alpha increases from –2.9% before the bubble period to –1% after the bubble. Furthermore, the explanatory power of the four risk factors in Europe and the Rest of World has increased significantly. The R-squared of European SRI funds has risen from 63% in early 1990's to 87% in early 2000's. For the World average ethical portfolio, the R-squared increased from 80% to 97% during the past decade.

The fact that a higher fraction of the return variation of ethical funds can be replicated by the well-known risk factors over the past decade, may indicate that SRI funds gradually converge to conventional funds by holding similar assets in their portfolios (or that conventional funds become more ethical). To investigate this hypothesis further, we directly compare the risk-return characteristics of an equally weighted portfolio of SRI funds and an equally weighted portfolio of conventional funds (representing ethical and conventional investment styles, respectively). If SRI funds converge to conventional funds, we should observe that conventional investment styles have increasing explanatory power for the return variations of ethical investment styles. We estimate the following equation for the three time periods using an OLS regression:

$$r_t^{SRI} - r_{f,t} = \alpha + \beta(r_t^{CONV} - r_{f,t}) + \varepsilon_t \qquad (4)$$

where r_t^{SRI} (r_t^{CONV}) is the return of an equally weighted portfolio of ethical (conventional) funds in the UK or the US, α is the average tracking error of ethical fund returns relative to conventional fund returns, and ε_t is the idiosyncratic return of ethical funds relative to conventional funds.

Panel B of Table 5 reports the estimated alphas and the adjusted R-squared of Eq. (4) for the three time periods. First, the estimated alphas for the UK and US SRI funds are negative, indicating that the ethical portfolios have lower expected returns and higher risk than β units of the conventional portfolios. In other words, ethical portfolios have a lower Sharpe ratio and are less mean-variance efficient than conventional portfolios. During both the pre- and post-bubble periods, US ethical portfolios experience significantly worse risk-return tradeoffs than their US conventional counterparts. Second, over the past decade, a higher fraction of the ethical portfolio returns can be explained by the conventional style than before. From the early 1990's to the early 2000's, the adjusted R-squared rises from 80% to 90% for the UK and from 92% to 97% for the US.[27] These results support the hypothesis that the holdings of ethical funds become increasingly similar to those of conventional funds.

II.D Time-Varying Risk Loadings and Market Timing

So far, we have assumed that the risk loadings of SRI funds do not change systematically over time, i.e. the portfolio betas are not time-varying. However, fund managers may decide to

[27] The volatility of the idiosyncratic returns of SRI funds remains stable over this period (tables are available upon request). This suggests that the rise in the R-squared is not driven by a decline in idiosyncratic risk.

vary the risk exposure of their portfolios under different macroeconomic conditions. Furthermore, if fund managers have some 'market timing' abilities and hence some predictive power regarding the stock market evolution, they may increase funds' exposure to the stock market prior to a market increase and reduce the exposure prior to a market decline. We therefore investigate the impact of time-varying risk loadings on the risk-adjusted returns of SRI funds, and thus examine market timing.

We employ a conditional model as introduced by Ferson and Schadt (1996) and assume that fund managers change the portfolio risk loadings as a rational response to publicly available macroeconomic information. By incorporating a lagged information set of macroeconomic variables in the four- and five-factor models (Eq. (2) and (3)), we estimate the following conditional four- and five-factor models (Eq. (5) and (6)) via OLS regressions:

$$r_t - r_{f,t} = \alpha_{4,C} + \beta_{MKT,a}(r_t^m - r_{f,t}) + \beta_{SMB,a} r_t^{smb} + \beta_{HML,a} r_t^{hml} + \beta_{UMD,a} r_t^{umd}$$
$$+ \beta_{MKT,b}(z_{t-1}(r_t^m - r_{f,t})) + \beta_{SMB,b}(z_{t-1} r_t^{smb}) + \beta_{HML,b}(z_{t-1} r_t^{hml}) + \beta_{UMD,b}(z_{t-1} r_t^{umd}) + \varepsilon_t \quad (5)$$

$$r_t - r_{f,t} = \alpha_{5,C} + \beta_{MKT,a}(r_t^m - r_{f,t}) + \beta_{SMB,a} r_t^{smb} + \beta_{HML,a} r_t^{hml} + \beta_{UMD,a} r_t^{umd} + \beta_{ETHIC,a} r_t^{ethic}$$
$$+ \beta_{MKT,b}(z_{t-1}(r_t^m - r_{f,t})) + \beta_{SMB,b}(z_{t-1} r_t^{smb}) + \beta_{HML,b}(z_{t-1} r_t^{hml}) + \beta_{UMD,b}(z_{t-1} r_t^{umd})$$
$$+ \beta_{ETHIC,b}(z_{t-1} r_t^{ethic}) + \varepsilon_t \quad (6)$$

where z_{t-1} is a vector of four predetermined information variables, and $\beta_{F,b}$ is a vector of four response coefficients where F stands for MKT, SMB, HML or UMD. The predetermined information variables which have shown to be good predictors of stock returns (according to Ferson and Schadt, 1996) include: (i) the one-month inter-bank interest rate or the treasury bill rate, (ii) the dividend yield of the value-weighted local market indices, (iii) the bond term-structure premium measured by the ten-year government bond yield minus the one-month treasury bill rate, and (iv) the bond credit-risk premium measured by the corporate bond yield minus the ten-year government bond yield (or, for the US, the Moody's BAA rated bond yield minus the Moody's AAA rated bond yield). These information variables for each country are obtained from Datastream and are lagged by one month.[28] In this model, the time-varying portfolio risk loading ($\beta_{F,t}$) is a linear combination of a time-constant beta ($\beta_{F,a}$) and time-varying betas ($\beta_{F,b} z'_{t-1}$): $\beta_{F,t} = \beta_{F,a} + \beta_{F,b} z'_{t-1}$, where both $\beta_{F,b}$ and z_{t-1} are four- or five-dimensional row vectors and consequently $\beta_{F,t}$ is a scalar. The benchmark portfolio in the

[28] To evaluate the performance of mutual fund portfolios, we use local information variables for the UK and the US portfolios, German and Australian instruments for Europe and the Rest of World portfolios, and the US instruments for the World portfolios.

conditional model can also be interpreted as a dynamic portfolio where portfolio weights are updated mechanically following the release of macroeconomic information. For instance, $z_{t-1}(r_t^m - r_{f,t})$ is the excess return of investing z_{t-1} units in the market portfolio at period t.

If a mutual fund manager increases the fund's exposure to the market prior to a market increase or reduces the market exposure prior to a market decline, the fund's returns are a convex function of the market returns. To test this market-timing ability of the managers of SRI funds, we employ the Treynor and Mazuy's (1966) measure by adding a quadratic term of the market premium to the conditional four-factor model (Eq. (5)):

$$r_t - r_{f,t} = \alpha_{TM} + \gamma_{TM}(r_t^m - r_{f,t})^2 + \beta_{MKT,a}(r_t^m - r_{f,t}) + \beta_{SMB,a} r_t^{smb} + \beta_{HML,a} r_t^{hml} + \beta_{UMD,a} r_t^{umd}$$
$$+ \beta_{MKT,b}(z_{t-1}(r_t^m - r_{f,t})) + \beta_{SMB,b}(z_{t-1} r_t^{smb}) + \beta_{HML,b}(z_{t-1} r_t^{hml}) + \beta_{UMD,b}(z_{t-1} r_t^{umd}) + \varepsilon_t \quad (7)$$

where the coefficient on the quadratic term (γ_{TM}) measures a fund manager's market-timing ability based on private information. A positive γ_{TM} implies that the fund's returns are a convex function of the market returns even after controlling for time-varying risk loadings based on publicly available macroeconomic information.

[Insert Table 6 about here]

Panel A of Table 6 reports estimation results for the conditional four- and five-factor alphas ($\alpha_{4,C}$ and $\alpha_{5,C}$) and the market-timing coefficient (γ_{TM}). First, we find that the conditional four- or five-factor alphas across all regions are very similar to the alphas of the unconditional models (of Table 3, Panel B and Table 4, Panel B). This implies that allowing for time-varying risk loadings has little impact on our results on SRI fund performance. An interesting difference with the unconditional results is that the four-factor conditional alpha of SRI funds in the US is lower than those of conventional US funds by 1.6% per annum (significant at the 10% level). Second, there is little evidence that SRI fund managers in the UK, US and Continental Europe have some market timing ability, a result that is consistent with most studies on conventional mutual funds.[29] In addition, we find that SRI fund managers in the Rest of World exhibit significantly negative 'market timing' ability, which implies that they time the market in the wrong direction.

II.E Is Inadequate Diversification of Risk Costly?

[29] Bollen and Busse (2001) show that market-timing tests on daily returns are more powerful than on monthly returns, and that US mutual funds exhibit significant timing ability (on a daily frequency).

Active portfolio management may imply that by actively selecting securities that are undervalued, portfolio managers give up part of the diversification potential of their portfolios. Investors in actively managed funds bear more idiosyncratic risk relative to investors in passive assets such as market portfolios. Compared to conventional funds, SRI funds face an additional set of constraints on their investment opportunities: the SRI screens. We therefore study whether or not the SRI screening activities bring about a cost to investors in terms of reduced diversification of idiosyncratic risk.

We measure the welfare costs of inadequate diversification by investors' opportunity costs of bearing idiosyncratic risk using the following two specifications. First, following Fama (1972), we measure systematic risk and define the costs of inadequate diversification as:

$$Div_{1,t} = (\sigma - \beta_{MKT}\sigma_m)\frac{r_t^m - r_{f,t}}{\sigma_m} \quad (8)$$

where σ is the standard deviation of the portfolio excess returns, β_{MKT} is the portfolio's market beta estimated by Eq. (1), $r_t^m - r_{f,t}$ is the market excess return, and σ_m is the standard deviation of the market excess returns. As Div_1 equals the idiosyncratic part of portfolio return volatility $(\sigma - \beta_{MKT}\sigma_m)$ multiplied by the Sharpe ratio of the market portfolio, the cost of inadequate diversification is the additional expected return that would just compensate the investor for the diversifiable asset dispersion chosen by the fund manager.

We also extend the Fama's (1972) measure by using the four-factor model as the performance benchmark:

$$Div_{4,t} = (\sigma - \sigma_b)\frac{r_t^b}{\sigma_b} \quad (9)$$

where σ is the standard deviation of portfolio excess returns, r_t^b is the return of a zero-investment portfolio consisting of the four benchmark assets with factor loadings resulting from regressing excess fund returns on factor returns $(r_t^b = \beta_{MKT}(r_t^m - r_{f,t}) + \beta_{SMB}r_t^{smb} + \beta_{HML}r_t^{hml} + \beta_{UMD}r_t^{umd})$, and σ_b is the standard deviation of return r_t^b. Similar to the first specification, the cost of inadequate diversification (Div_4) equals the idiosyncratic part of portfolio return volatility $(\sigma - \sigma_b)$ times the Sharpe ratio of the four-factor benchmark portfolio.

In case SRI fund investors bear more idiosyncratic risk than conventional fund investors (e.g. due to SRI screens), SRI investors may require an additional return to compensate the opportunity costs of bearing idiosyncratic risk. We calculate the Fama's (1972) measure of fund performance by subtracting the welfare costs of inadequate diversification from the funds' risk-adjusted returns, which is labeled as 'Net Selectivity' (NS). More specifically, Net Selectivity is defined as the funds' risk-adjusted returns (i.e. the sum of the alpha and idiosyncratic returns, denoted as $\alpha+\varepsilon_t$) in excess of the welfare costs of bearing idiosyncratic risk (*Div*). The NS has the following two specifications:

$$NS_{1,t} = (\alpha_1 + \varepsilon_t) - Div_{1,t} = (r_t - r_{f,t}) - \sigma\frac{r_t^m - r_{f,t}}{\sigma_m} \quad (10)$$

$$NS_{4,t} = (\alpha_4 + \varepsilon_t) - Div_{4,t} = (r_t - r_{f,t}) - \sigma\frac{r_t^b}{\sigma_b} \quad (11)$$

It is straightforward to see that the Net Selectivity also equals the portfolio excess return ($r_t - r_{f,t}$) minus the risk premium for σ units of portfolio risk.

Panel B of Table 6 shows the estimation results for both the original Fama's specification and the extended specification of net selectivity. The welfare costs of inadequate diversification (*Div*) relative to either the one-factor or four-factor benchmarks are economically small (i.e. between 0.1% and 0.5% per annum) for ethical funds across the regions, and they are not statistically significant (except in the US). The differences in diversification costs between ethical funds and conventional funds are also not statistically significant for the UK and US. Furthermore, after adjusting for the opportunity costs of taking avoidable risk, the performance measures of net selectivity are similar to our previous results of one-factor and four-factor alphas (see Table 3). The differences in net selectivity between ethical funds and conventional funds are not statistically significant. These results suggest that the SRI screening activities do not impose welfare costs to investors in terms of inadequate risk diversification. This is consistent with the classic view that a well-diversified portfolio does not require a large number of stocks[30], and implies that SRI constraints have little influence on the diversification of idiosyncratic risk.

III Is There A 'Smart Money' Effect?

[30] A number of studies show that 5 to 30 stocks are needed to make a well-diversified portfolio (see, e.g. Evans and Archer, 1968, Statman, 1987, and Brennan and Torous, 1999).).

The performance of the *average* SRI fund is not necessarily useful information for investors who can selectively invest in a *subset* of SRI funds. Previous studies document a 'smart money' effect in the conventional mutual fund industry as investors seem to be able to make smart decisions by selecting ex ante the mutual funds that will turn out to be outperformers (see e.g., Gruber, 1996, and Zheng, 1999). In other words, even though active portfolio management on *average* may not add value, money may be smart in selecting the funds that will perform well in the future.[31] We therefore study whether or not such a smart money effect exists in the ethical fund industry.

The fund selection process of ethical investors determines the performance of the selected SRI funds relative to a conventional fund portfolio. For instance, Geczy, Stambaugh and Levin (2003) show that, for an investor who believes that stock returns are generated by the four-factor model, the SRI mutual funds that she selects underperform the non-SRI funds by 3.6% per annum. In contrast, ethical investors who believe in managerial skill pay a large financial cost of more than 12% per annum in terms of risk-adjusted returns. That study assumes that investors make fund selection decisions in a Bayesian way, namely that they take into account the funds' past performance, expenses and turnover. Moreover, a number of financial and non-financial fund attributes significantly influence investors' decision process and, consequently, the money flows to SRI funds (Renneboog, Ter Horst and Zhang, 2006).

Rather than making assumptions on fund selection process, we construct portfolios of SRI funds by tracking the actual fund selection decisions by investors (i.e. the decisions of investing versus withdrawing money). More specifically, we employ Zheng's (1999) approach to form portfolios of ethical and conventional funds based on recent cash-flow signals of the funds, where the cash flow in month t ($Cash\ Flow_t$) is defined as the change in a fund's assets under management (AUM) beyond the fund's asset appreciation (assuming that new money is invested at the end of each month): $Cash\ Flow_t = AUM_t - AUM_{t-1}\ (1+Return_t)$. In addition, we also define Flow in month t ($Flow_t$) as the growth rate of fund assets under management (AUM) beyond the fund's asset appreciation: $Flow_t = Cash\ Flow_t / AUM_{t-1}$.The 'new money portfolios', are constructed by following the actual fund selection decisions by investors in the previous month: *(A) Inflow portfolios* are cash-flow weighted portfolios of all available funds with positive new cash flows; *(B) Outflow portfolios* are cash-flow weighted portfolios of all

[31] An alternative explanation for the smart money effect is the momentum effect of stock returns: Sapp and Tiwari (2005) show that investors chase the mutual funds that performed well in the past. Such funds may perform well in subsequent periods due to the returns momentum rather than investors' fund selection abilities. After controlling for the momentum effect in return regressions, the smart money effect disappears.

[32] In addition, we also define Flow in month t ($Flow_t$) as the growth rate of fund assets under management (AUM) beyond fund asset appreciation: $Flow_t = Cash\ Flow_t / AUM_{t-1}$.

available funds with negative new cash flows; *(C) High-flow portfolios* are equally weighted portfolios of all available funds with above-median new cash flow; and *(D) Low-flow portfolios* are equally weighted portfolios of all available funds with below-median new cash flows. In addition, we also construct the *Average portfolio*s of ethical and conventional funds, which are the value-weighted (i.e. assets under management-weighted) portfolios of all available funds.[33]

[Insert Table 7 about here]

The risk-adjusted returns of the Inflow, Outflow, High-flow, Low-flow and Average portfolios using the four-factor model (Eq. (2)) are shown in Table 7. First, we test whether or not a smart money effect exists by examining the difference in alphas between the Inflow and Outflow portfolios. The alphas of the inflow portfolios are negative for the UK, Europe and the Rest of World SRI funds, and are virtually zero for the US SRI funds. This implies that ethical investors are unable to identify the funds that will outperform the benchmark factors in the future. In contrast, we find evidence that ethical investors may be able to identify poor performing funds: the portfolios from which ethical money was withdrawn have annual alphas of –3% for the UK ethical funds, -4.7% for the US and Continental European ethical funds, and –12.3% for the Rest of World ethical funds. Furthermore, a hypothetical strategy of going long in the inflow portfolio and going short in the outflow portfolio yields economically and statistically significant alphas of 5.5% (and more specifically of 4.7% and 11.6% for ethical funds from the US and the Rest of World, respectively), where the abnormal returns are driven by the significant underperformance of outflow portfolios. We also note that, in line with Sapp and Tiwari's (2005) findings, such a significant difference in alphas between the inflow and outflow portfolios does not exist for conventional funds in the UK and US.

Second, we repeat the above analysis to the High-flow and Low-flow portfolios. Comparing the alphas of the two portfolios, we find that ethical investors are unable to identify the good performers as none of the High-flow portfolios of SRI funds have significantly positive alphas. There is some evidence that ethical investors have some ability to identify poorly

[33] For each country or region, the above portfolios are formed at the beginning of each month based on relevant information from the previous month (i.e. cash-flows or assets under management). We hold the portfolios for one month and rebalance them at the beginning of the next month by applying the same criteria. All mutual funds (including the dead funds) with at least one-month history of returns are included in the portfolios. All available funds are partitioned into two categories: the first one received net money inflows over the preceding month (Inflow portfolio) whereas money was withdrawn (on a net basis) from the other funds (Outflow portfolio). The returns of the Inflow portfolio are the returns of newly invested money, while those of the Outflow portfolio are the hypothetical returns of newly withdrawn money. Similarly, High-flow and Low-flow portfolios partition all funds into two groups with an equal number of funds in each group: one category received more inflows while the other received fewer inflows. Finally, the returns of the *Average portfolio*, where funds are weighted by fund assets under management, represent the returns of the total wealth invested in the ethical or conventional funds.

performing funds ex ante, especially in the UK and US. However, these results are weaker than for the cash-flow weighted portfolios.

Third, the results on the performance of the Average portfolio suggest that the performance of ethical money invested in European (excluding the UK) and the Rest of World funds is poor. The value-weighted average SRI funds in these regions significantly underperform the factor-mimicking strategies by 5.6% and 6.2% per annum respectively, implying that the total wealth invested in ethical funds is reduced by about 6% per annum on a risk-adjusted basis. Meanwhile, it is important to note that part of the underperformance is due to the fact that ethical funds charge management fees of about 1.5% per annum (see Table 1). The net transfer of wealth, from ethical investors to their fund managers, implies that investing in socially responsible funds might be not a socially optimal way of committing to ethical considerations.[34]

Taken together, we find mixed results in terms of the existence of a smart money effect in the SRI fund industry: although ethical investors are unable to identify the funds that will outperform the benchmark factors in the future, they have some fund-selection ability to identify the ethical funds that will perform poorly. In addition, the aggregate performance of money invested in ethical funds, especially in Europe (excluding the UK) and the Rest of World, is significantly lower than the benchmarks.

IV Determinants of Returns and Risk

While we have shown the return and risk characteristics of *portfolios* of SRI funds in Sections II and III, we now explore the *cross-sectional* differences between SRI funds and investigate the determinants of returns and risk of SRI funds around the world.

IV.A Determinants of Returns

In order to pursue their social objectives, SRI funds employ a set of investment screens that restrict the investment opportunities. While the exclusion of companies based on ethical, social, or environmental screens may constrain risk-return optimization, the use of screens can also be regarded as an active selection strategy aimed at generating superior fund performance. Therefore, we include the number and type of SRI screens in our model explaining SRI funds'

[34] For instance, alternative ways of committing to ethical considerations, such as donating 6% of one's wealth directly to charities or paying 6% of environmental taxation, may be more cost efficient.

risk-adjusted returns. The performance of SRI funds may also relate to other fund characteristics, such as fund size, age, the fee structure and the reputation of the fund family. For instance, Chen et al. (2004) show that fund size erodes performance due to liquidity and organizational diseconomies, and that this relation is more pronounced for funds investing in small and illiquid stocks. Hence, our model of SRI fund returns around the world looks as follows:

$$\textit{Risk-adjusted Return}_{i,t} = \gamma_0 + \gamma_1 \textit{ Screening Activity}_i + \gamma_2 \textit{ Fund Characteristics}_{i,t-1} + \gamma_3 \textit{ Fund Family}_{i,t-1} + \gamma \textit{Control Variables}_{i,t} + u_{i,t} \quad (12)$$

where the $\textit{Risk-adjusted Return}_{i,t}$ is the four-factor-adjusted return or the conditional four-factor-adjusted return of fund i in month t.[35] For SRI funds, $\textit{Screening Activity}_i$ comprises the following variables: (i) $\textit{Number of Screens}_i$ is the number of SRI screens, listed in Table 2, (ii) $\textit{D(Sin Screens}_i\textit{)}$, $\textit{D(Ethical Screens}_i\textit{)}$, $\textit{D(Governance \& Social Screens}_i\textit{)}$ and $\textit{D(Environmental Screens}_i\textit{)}$ are four indicator variables which equal one if the fund uses at least one of the SRI screens from these broad screening categories, i.e. sin, ethical, corporate governance and social or environmental screens, respectively[36], (iii) $\textit{D(islamic Fund}_i\textit{)}$ is an indicator variable capturing whether the fund is designed for islamic investors, (iv) $\textit{D(Activism Policy}_i\textit{)}$ is an indicator variable which equals one if the fund intends to influence corporate behaviour through direct engagement or proxy voting, (v) $\textit{D(In-House SRI Research}_i\textit{)}$ equals one if the screening activities of the fund are based on in-house SRI research.

The $\textit{Fund Characteristics}_{i,t-1}$ is a vector of lagged variables consisting of: (i) $\textit{Size}_{i,t-1}$, the natural logarithm of fund assets under management in Euro at month $t-1$; (ii) $\textit{Age}_{i,t-1}$, the number of years since the fund's date of inception; (iii) $\textit{Age}_{i,t-1} * \textit{D(Young}_{i,t-1}\textit{)}$, a term interacting the age with an indicator variable equalling one if the fund's age is below the median of all SRI funds (or of all conventional ones – depending on the model specification) in its domicile for month $t-1$; (iv) $\textit{Total Fees}_i$, defined as the sum of the annual management fee and one seventh of the sum of the front-end and the back-end load fees; (v) $\textit{Total Fees}_i * \textit{D(High Fees}_i\textit{)}$, a term interacting the total fees with an indicator variable equalling one if the fund's total fees are above the median total fees of all SRI funds (or conventional ones) in its domicile; (vi) $\textit{Risk}_{i,[t-1,t-12]}$, the

[35] The risk-adjusted return (in local currency) is defined as $\alpha + \varepsilon$ (of Eq. (2) and (5)) and is estimated for each individual fund using the benchmark factors and information variables in domestic countries. The four-factor-adjusted returns are estimated for each fund with a return history of at least 24 months, while the conditional-model-adjusted returns and risk loadings are estimated for each fund with at least 60 months' returns.

[36] These four indicator variables are not mutually exclusive; all may equal one in case a fund employs screens from each of the four main screening categories.

total risk of the fund measured by the standard deviation of monthly fund returns for months *t-1* to *t-12*, and (vii) *Average Return*$_{i,[t-1,t-12]}$, the average return of fund *i* over months *t-1* to *t-12*.

Subsequently, the *Fund Family*$_{i,t-1}$ variables proxy for the reputation of fund families in the SRI or conventional fund industries: (i) *D(Top Performer Family*$_{i,t-1}$*)* equals one if the raw return of at least one SRI (or conventional) fund in the fund's family belongs to the top 20% of all SRI (or conventional) funds in the fund's domicile in month *t-1*, (ii) *Number of Funds in Family*$_{i,\ t-1}$ is the number of SRI (or conventional) funds belonging to the fund's family at month *t-1*, (iii) *D (Market Leader Family*$_{i,t-1}$*)* equals one if the fund's family has the highest market share of SRI assets among all SRI (or conventional) fund families in the family's domicile at *t-1*.

Furthermore, the *Control Variables*$_{i,t-1}$ capture the impact of three sets of variables: International Diversification, Geographical Location and Time Effects. The International Diversification variables include two mutually exclusive indicators, denoted as *D(European Diversification*$_i$*)* and *D(Global Diversification*$_i$*),* which are set to one if the fund invests across Europe or globally, respectively. The reference group is the funds investing in their domestic countries. In order to capture the differences in the risk-adjusted returns across geographical locations, we include mutually exclusive indicator variables based on the domicile of the fund, denoted as *D(Europe*$_i$ *ex. UK), D(US*$_i$*)* and *D(Rest of World*$_i$*)*. The SRI funds domiciled in the UK are the reference group. Finally, we also include fixed time effects to control for the bubble and recession periods, i.e. nine year dummies and eleven month dummies, denoted as *D(Year*$_{i,t}$*)* and *D(Month*$_{i,t}$*).*

[Insert Table 8 about here]

We report the estimation results of Equation (12) for SRI funds in Panel A of Table 8, while Panel B shows those for the conventional UK funds. Panel A of Table 10 presents a summary of the economic effects of Table 8. First, we find that fund returns increase with screening intensity (proxied by the number of SRI screens applied). All else equal, funds with 8 more SRI screens (i.e. a two standard deviation difference) are associated with a 1.3% higher 4-factor-adjusted return per annum. This finding supports the hypothesis that SRI criteria help fund managers to pick stocks. However, this effect disappears when we measure fund performance via the conditional 4-factor model. Funds employing a corporate governance and social screen can expect 2.1% higher annual returns (based on the conditional 4-factor model) than funds without such a screen, whereas funds employing an environmental screen are associated with 1.6% lower returns per annum. Furthermore, employing an in-house SRI

[37] The estimation results of these time indicator variables are available upon request.

research team increases the 4-factor adjusted return by 1.2% per annum. This finding supports the hypothesis that the screening process generates value-relevant non-public information.

Second, in line with Chen et al. (2004), we find that fund size erodes the returns of both SRI and conventional funds, although the effect is economically insignificant. In addition, we find that fund age and risk reduce the risk-adjusted returns of SRI funds, whereas total fund fees do not significantly affect the risk-adjusted returns of SRI funds. Finally, after controlling for screening activities, fund characteristics and fund family reputation, the risk-adjusted returns of SRI funds in Continental Europe and the Rest of World are about 4% lower (annually) than those of UK SRI funds.

IV.B Determinants of Risk

While in the previous subsection, we document that screening activities and other fund characteristics affect risk-adjusted returns of SRI funds, we now examine what determines SRI funds' risk loadings:

$$Risk\ Loading^{F}_{i,t} = \gamma_0 + \gamma_1\ Screening\ Activity_i + \gamma_2\ Fund\ Characteristics_{i,t-1} + \gamma_3\ Fund\ Family_{i,t-1} + \gamma_4\ Economic\ Condition_{i,t-1} + \gamma Control\ Variables_{i,t} + u_{i,t} \quad (13)$$

where $Risk\ Loading^{F}_{,i,t}$ stands for the time-varying betas of fund i in month t for factor F which represents MKT, SMB, HML, or UMD. The risk loadings are estimated using Eq. (5) for each fund with at least 60 months' returns history. A $Risk\ Loading^{F}_{i,t}$ ($\beta_{F,i,t}$) is defined as the sum of a time-constant beta ($\beta_{F,i,a}$) and four time-varying betas ($\beta_{F,b} z'_{t-1}$) corresponding to the four information variables (z_1, z_2, z_3, z_4) such that $\beta_{F,i,t}$ equals $\beta_{F,i,a} + \beta_{F,i,1} z_{1,t-1} + \beta_{F,i,2} z_{2,t-1} + \beta_{F,i,3} z_{3,t-1} + \beta_{F,i,4} z_{4,t-1}$. In addition to the $Screening\ Activity_i$, $Fund\ Characteristics_{i,t-1}$, $Fund\ Family_{i,t-1}$, and $Control\ Variables_{i,t}$ (defined above, Eq. (12)), we also include $Economic\ Condition_{i,t-1}$, a set of explanatory variables consisting of the four lagged information variables: the interest rate, the dividend yield, the bond term-structure premium and the bond credit-risk premium in domestic countries.

[Insert Tables 9 and 10 about here]

The estimation results of Eq. (13) are shown in Panels A (for SRI funds) and B (for conventional UK funds) of Table 9, while Panel B of Table 10 provides a summary of the

economic effects of the results of Table 9. First, we find that the screening activities of SRI funds have a significant impact on the risk loadings. All else equal, funds employing a sin screen have about 10% less exposure to the market, size and book-to-market factors than funds without such a screen. This implies that funds with sin screens adhere to investment styles focusing on low-betas, large-caps and growth. Corporate governance and social screens generate 13% higher loadings on large-cap stocks and 24% more exposure to growth stocks, whereas funds subject to environmental criteria have 8% higher loadings on value stocks. Interestingly, SRI funds adopting a policy of shareholder activism or employing an in-house SRI research team invest 10% more in value stocks.

We also show that the characteristics of mutual funds and fund families also affect the risk loadings of SRI funds. For instance, SRI funds with 1% higher fees invest 4% more in high-beta stocks, 7% more in small stocks and 4% more in value stocks. In addition, a one-standard deviation increase in total risk of SRI funds is associated with about 9% higher loadings on the market factor, and 8% more exposure to small-cap growth stocks. An interesting result is that SRI funds belonging to a fund family with top performers invest 4% more in small stocks, while those belonging to a leading family in the SRI market (in terms of the market share) invest 6% more in large-cap value stocks.

Finally, we find evidence that ethical fund managers respond to macroeconomic conditions by changing their funds' risk loadings. After a 1% increase in the average dividend yield, managers of SRI funds increase funds' exposure to small-cap growth stocks from 7% to 10%. When the credit-risk premium in the bond markets increases by 1%, SRI fund managers react to this news by investing about 8% more in (safer) large-cap value stocks.

V Conclusion

This paper contributes to the literature of socially responsible investments as it studies the risk and return characteristics of nearly all SRI mutual funds around the world. Our main hypothesis is that ethical/social considerations influence the stock prices and that investors pay a price for the use of SRI screening of funds. The main reason why SRI investors are willing to pay such a price is based on an aversion to unethical/asocial corporate behavior. We investigate this hypothesis by focusing on the ethical/SRI mutual fund industry around the world. Investors of SRI funds explicitly deviate from the economically rational goal of wealth-maximization by pursuing social objectives.

Consistent with investors paying a price for ethics, SRI funds in many European and Asia-Pacific countries strongly underperform domestic benchmark portfolios. In particular, the average risk-adjusted returns of the SRI funds in Belgium, France, Ireland, Japan, Norway, Singapore, and Sweden are lower than –5% per annum. In addition, passive portfolios of European firms complying with ethical requirements, i.e. companies included in the European ethical indices, significantly underperform benchmark risk factors by about 4.5% per annum. These results support our hypothesis that ethical considerations influence the stock prices and that ethical firms are overpriced by the market. We also show that the power of the Fama and French's risk factors to explain the SRI fund returns has significantly increased over the past decade. This signifies that SRI funds gradually converge to conventional funds in terms of the holdings in their portfolios. We find no evidence that SRI funds managers are successfully timing the market nor that SRI funds suffer from a cost of reduced diversification.

We find mixed results in terms of the existence of a 'smart money' effect in the SRI fund industry: while there is some fund-selection ability in identifying poorly performing ethical funds, ethical investors are unable to identify the funds that will outperform their benchmarks in subsequent periods. The return of total wealth invested in ethical funds in Europe (excluding the UK) and the Rest of World is merely -6% per annum on a risk-adjusted basis.

Our results on the determinants of SRI funds' returns and risk loadings suggest that the screening activities of SRI funds matter: funds with a higher number of SRI screens have better returns even after controlling for well-known risk factors. In particular, a two standard-deviation increase in the SRI screening intensity generates 2.6% abnormal returns per annum. In addition, employing an in-house research team on SRI issues increases fund returns by 1.2% per annum. These results support the hypothesis that the screening process generates value-relevant non-public information and that SRI screens help fund managers to pick stocks. We also find that the use of specific screens, such as corporate governance and social screens, has a positive impact on the risk-adjusted returns (by 2.1% per annum) while other types of screens, e.g. environmental ones, reduce the alpha by 1.6%.

References:

Akerlof, G., 1980, A theory of social custom, of which unemployment may be one consequence, *Quarterly Journal of Economics* 94, 749-775.

Aristotle, D., 350 BC, The Nicomanchean Ethics; in translation by D. Ross, 1980, Oxford University Press, Oxford.

Bauer, R., J. Derwall, and R. Otten, 2006, The ethical mutual funds performance debate: new evidence for Canada, *Journal of Business Ethics*, forthcoming.

Bauer, R., K. Koedijk and R. Otten, 2005, International evidence on ethical mutual fund performance and investment style, *Journal of Banking and Finance,* 29, 1751-1767.

Bauer, R., R. Otten and A. Tourani Rad, 2006, Ethical investing in Australia: is there a financial penalty? *Pacific-Basin Finance Journal* 14(1), 33-48.

Becht, M., J. Franks, C. Mayer and S. Rossi, 2006, Returns to shareholder activism: evidence from a clinical study of Hermes UK Focus Fund, Working paper London Business School.

Becker, G., 1957, *The Economics of Discrimination*, Chicago: University of Chicago Press.

Bello, Z., 2005, Socially responsible investing and portfolio diversification, *Journal of Financial Research*, 28(1), 41-57.

Bollen, N., 2006, Mutual fund attributes and investor behavior, *Journal of Financial and Quantitative Analysis,* forthcoming

Bovenberg, L., 2002, Norms, values, and technological change, *De Economist*, 50 (5), 521-553.

Brown, S., W. Goetzmann, R. Ibbotson and S. Ross, 1992, Survivorship bias in performance studies, *Review of Financial Studies* 5(4), 553-580.

Brennan, M. and W. Torous, 1999, Individual decision making and investor welfare, *Economic Notes*, 28 (2), 119-143.

Carhart, M., 1997, On persistence in mutual fund performance, *Journal Of Finance*, 52, pp. 57-82.

Chen, J., H. Hong, M. Huang and J. Kubik, 2004, Does fund size erode performance? the role of liquidity and organization, *American Economic Review* 94(5), 1276-1302.

Dimson, E., S. Nagel and G. Quigley, 2003, Capturing the value premium in the UK, *Financial Analyst Journal,* 59(6), 35-45.

Elster, J., 1989, Social norms and economic theory, *Journal of Economic Perspectives* 3, 99-117.

Evans, J., and S. Archer, 1968, Diversification and the reduction of dispersion: an empirical analysis, *Journal of Finance*, 23(5), 761-767

Fama, E., 1972, Components of investment performance, *Journal of Finance*, 27(3), pp. 551-567

Fama, E. and K.R. French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics*, Vol. 33, pp. 3-53

Fama, E. and K.R. French 1996, Multifactor explanations of asset pricing anomalies, *Journal of Finance*, Vol. 51, pp. 55-84

Fehr E. and S. Gachter, 2000, Fairness and retaliation: the economics of reciprocity, *Journal of Economic Perspectives,* 14, 159-181.

Fehr, E. and U. Gachter, 2002, Altruistic punishment in humans, *Nature*, 415, 137-140.

Fehr, E. and U. Fischbacher, 2003, The nature of human altruism, *Nature*, 425, 785-791.

Ferson, W. and R. Schadt 1996, Measuring fund strategy and performance in changing economic conditions, *Journal of Finance*, Vol. 51, pp. 425-462 16

Geczy, C.C., R.F. Stambaugh, and D. Levin, 2003, Investing in socially responsible mutual funds, Working Paper Wharton School.

Girard, E., B. Stone and H. Rahman, 2005, Socially responsible investments: good-two-shoes or bad to the bone? Working Paper Siena College.

Goldreyer, E.F. and J.D. Diltz , 1999, The performance of socially responsible mutual funds: incorporating sociopolitical information in portfolio selection, *Managerial Finance*, 25 (1), pp. 23-36

Gregory, A., J. Matatko and R. Luther, 1997, Ethical unit trust financial performance: small company effects and fund size effects, *Journal of Business Finance and Accounting*, 24 (5), 705-24

Gruber, M., 1996, Another puzzle: the growth in actively managed mutual funds, *Journal of Finance* 51, 783-810.

Hamilton, S., H. Jo and M. Statman, 1993, Doing well while doing good? the investment performance of socially responsible mutual funds, *Financial Analysts Journal*, 49 (6), 62-66

Heinkel, R., A. Kraus, and J. Zechner, 2001, The effect of green investment on corporate behavior, *Journal of Financial and Quantitative Analysis* 35, 431-449.

Hong, H. and M. Kacperczyk, 2005, The price of sin: the effect of social norms of markets, Working Paper Princeton University.

Jegadeesh, N. and S. Titman 1993, Returns to buying winners and selling losers: implications for stock market efficiency, *Journal of Finance*, Vol. 48, pp. 65-91

Jensen M., 1968, The performance of mutual funds in the period 1945-1964, *Journal of Finance*, Vol. 23, pp. 389-416

Kreander, N., G. Gray, D.M. Power and C.D. Sinclair, 2005, Evaluating the performance of ethical and non-SRI funds: a matched pair analysis, *Journal of Business, Finance and Accounting* 32(7), 1465 -1493

Luther, R.G., J. Matatko and D. Corner, 1992, The investment performance of UK ethical unit trusts, *Accounting, Auditing and Accountability Journal*, 5 (4), 57-70

Luther, R.G. and J. Matatko, 1994, The performance of ethical unit trusts: choosing an appropriate benchmark, *British Accounting Review*, 26, 77-89

Mallin, C.A., B. Saadouni and R.J. Briston, 1995, The financial performance of ethical investment funds, *Journal of Business Finance and Accounting*, 22 (4), 483-496

Merton, R., 1987, A simple model of capital market equilibrium with incomplete information, J*ournal of Finance,* 42, 483-510.

Pastor, L. and R. Stambaugh, 2002*,* Mutual fund performance and seemingly unrelated assets, *Journal of Financial Economics,* 63, 315--349.

Renneboog, L., J. Ter Horst and C. Zhang, 2005, Is ethical money financially smart?, Working Paper Tilburg University.

Romer, D, 1984, The theory of social custom: a modification and some extensions, *Quarterly Journal of Economics* 99, 717-727.

Ross, D., 1980, The Nicomanchean Ethics (by Aristotle), Oxford University Press, Oxford.

Sapp, T. and A. Tiwari, 2004, Does stock return momentum explain the smart money effect?, *Journal of Finance* 59(6), 2605-2622.

Sen, A., 1987, On ethics and economics, Blackwell Publishers, Oxford.

Schroder, M., 2004, The performance of socially responsible investments: investment funds and indices, *Financial Markets and Portfolio Management* 18(2), 122-142.

Sirri, E. and P. Tufano, 1998, Costly search and mutual fund flows, *Journal of Finance* 53, 1589-1622.

Social Investment Forum, 2005, Report on responsible investing trends in the US, available at http://www.socialinvest.org.

Statman, M., 1987, How many stocks make a diversified portfolio?, *Journal of Financial and Quantitative Analysts* 22(3), 353-363.

Statman, M., 2000, Socially responsible mutual funds, *Financial Analysts Journal*, 56(3), 30-39

Treynor, J. and K. Mazuy, 1966, Can mutual funds outguess the market? *Harvard Business Review* 44, 131-136.

Wermers, R., 2000, Mutual fund performance: an empirical decomposition into stock-picking talent, style, transaction costs and expenses, *Journal of Finance,* 55(4), 1655-1695.

Zheng, L., 1999, Is money smart? A study of mutual fund investors' fund selection ability, *Journal of Finance* 54, 901-933.

Table 1: Characteristics of equity SRI and non-SRI funds

Panel A of Table 1 reports the number of funds, the number of funds in a family (managed by the same financial institution), the age (years since the fund's inception), the Assets Under Management (in million €), and the annual expenses (fund management fees), load fees (the sum of front-end fees and back-end fees) and total fees (the sum of management fees and one seventh of load fees) per fund for SRI funds around the world at the end of 2003. Panel B reports the cross-sectional characteristics of our benchmark sample of non-SRI funds in the UK and the US.

	No. Funds	No. Families	Mean Age	Median Age	Mean AUM	Median AUM	Mean Expenses	Mean Load Fees	Mean Total Fees
Panel A: SRI									
Overall	463	221	5.9	4.0	63.9	14.1	1.4%	2.9%	1.8%
(1) UK									
UK	58	24	9.2	7.5	100.7	49.8	1.3%	3.5%	1.8%
Isle of Man	8	1	3.8	3.8	2.4	2.4	1.0%	0.0%	1.0%
Guernsey	1	1	9.5	9.5	27.8	27.8	1.0%	0.0%	1.0%
Total	67	26	9.0	7.2	95.5	48.4	1.3%	3.5%	1.8%
(2) US									
US	98	32	8.0	6.7	142.1	17.9	1.6%	1.8%	1.9%
(3) Europe (excl. UK)									
Austria	17	7	2.0	1.6	3.4	2.7	1.5%	4.5%	2.2%
Belgium	21	7	3.6	3.0	24.4	9.1	0.9%	2.8%	1.3%
France	59	34	3.9	3.3	22.7	10.3	1.4%	3.0%	1.8%
Germany	12	7	8.0	8.0	51.5	51.5	1.3%	2.9%	1.7%
Ireland	11	6	4.3	2.8	5.5	1.5	1.3%	1.1%	1.4%
Italy	7	7	4.4	1.8	83.1	9.8	1.8%	0.0%	1.8%
Luxembourg	15	8	4.6	3.4	41.3	11.0	1.3%	2.2%	1.6%
Netherlands	19	12	4.0	3.4	61.3	20.5	1.2%	1.2%	1.3%
Norway	3	2	8.2	6.5	N/A	N/A	1.9%	0.7%	2.0%
Sweden	26	13	7.6	8.9	33.5	7.6	1.3%	3.9%	1.9%
Switzerland	16	7	3.6	3.4	45.1	29.2	1.3%	3.8%	1.8%
Total	206	110	4.1	3.1	32.0	8.8	1.3%	2.8%	1.7%
(4) Rest of the World									
Australia	36	11	5.2	2.8	7.9	1.7	1.6%	2.5%	1.9%
Canada	7	5	4.7	3.1	N/A	N/A	N/A	N/A	N/A
Cayman Islands	1	1	3.8	3.8	2.4	2.4	1.5%	2.0%	1.8%
Japan	13	10	5.0	4.2	42.8	24.8	1.6%	2.4%	1.9%
Malaysia	26	19	6.2	2.4	42.6	22.9	1.5%	6.7%	2.4%
NL Antilles	1	1	6.0	6.0	119.0	119.0	2.0%	5.5%	2.8%
Singapore	4	3	3.9	3.9	0.7	0.7	1.0%	5.0%	1.7%
South Africa	4	3	5.0	3.1	28.2	14.4	1.4%	4.8%	2.1%
Total	92	53	5.4	2.8	26.3	6.9	1.5%	4.0%	2.1%
Panel B: Non-SRI									
Non-SRI (UK)	716	133	12.5	10.0	270.0	71.4	1.3%	3.9%	1.8%
Non-SRI (US)	12624	688	7.9	6.2	289.2	26.5	1.6%	2.4%	2.0%

Table 2: Summary of screening activities of SRI funds

Panel A of Table 2 reports the 21 investment screens used by SRI funds around the world which are classified into 4 broad categories. SRI funds often use a combination of the screens. Positive screens (funds select firms based on relative criteria) are in *italics* and the remaining screens are negative screens (funds exclude specific industries or firms). Panel B shows the number of screens per fund, the number of negative or positive screens, the number of sin, ethical, corporate governance and social, and environmental screens used. Furthermore, it reports the fraction of the funds that use negative, positive, sin, ethical, corporate governance and social, environmental or islamic screens, and of those that engage in shareholder activism or base their screening activity on in-house research, and the fraction of the funds that invest across Europe, the world or within their domestic countries.

Panel A: Definition of SRI screens

Categories	Screens
Sin	Tobacco, Alcohol, Gambling, Weapons, Pornography
Ethical	Animal Testing, Abortion, Genetic Engineering, Non-Marital, Islamic, *Healthcare*
Corporate Governance and Social	*Corporate Governance, Business Practice, Community, Labor Diversity, Labor Relations, Human Rights, Foreign Operations*
Environmental	Nuclear, *Environment, Renewable Energy*

Panel B: Summary statistics

	UK	USA	Europe ex. UK	Rest of World	Overall
By fund: Average number of					
Screens	9.52	8.14	6.62	5.59	7.12
Negative screens	5.85	4.55	3.00	3.51	3.81
Positive screens	3.67	3.59	3.62	2.08	3.31
Sin screens	3.60	3.31	1.73	2.69	2.52
Ethical screens	1.40	0.67	0.56	0.53	0.68
Governance & Social screens	2.62	2.71	2.70	1.49	2.45
Environmental screens	1.90	1.45	1.63	0.88	1.47
Percentage of funds with					
Negative screens	85%	97%	56%	72%	72%
Positive screens	87%	69%	92%	58%	79%
Sin screens	85%	92%	54%	67%	69%
Ethical screens	85%	57%	38%	52%	51%
Governance & Social screens	85%	68%	78%	47%	70%
Environmental screens	94%	72%	88%	60%	80%
Islamic screens	2%	3%	3%	36%	9%
Activism policy	31%	47%	18%	6%	24%
In-house SRI research	27%	55%	22%	11%	28%
European Diversification	4%	0%	33%	0%	15%
Global Diversification	40%	16%	61%	17%	39%
Domestic Investment	56%	84%	7%	83%	46%

Table 3: Performance of SRI funds

Panel A of Table 3 presents the average excess return (i.e. fund return in excess of the risk-free interest rate) and the CAPM model estimates (Equation (1)) for equally weighted SRI funds around the world and for non-SRI funds in the UK and the US, and reports the differences in the estimates between SRI and non-SRI funds. Panel B presents the Fama-French-Carhart four-factor model estimates (Equation (2)) for equally weighted SRI funds around the world and non-SRI funds in the UK and the US. The gross alphas are estimated by adding back one twelfth of annual management fees to the monthly fund returns before running the regressions. Panel C reports the four-factor model estimates (Equation (2)) and the gross alphas for equally weighted SRI funds in each country with at least five years of returns data. The returns of the country portfolios are in local currency and evaluated from a local investor's perspective, i.e. with local benchmark factors and local risk-free rates. The estimates of excess returns and alphas (α_1 and α_4) are annualized. The t-statistics are in *italics*, calculated with Newey-West standard errors and lags of order three to account for autocorrelation and heterogeneity. Bold coefficients indicate a significance level of at least 10%.

Panel A: Excess returns and the CAPM results

	Excess Return *(t-stat.)*	α_1 *(t-stat.)*	MKT *(t-stat)*	R^2_{adj} *(Nobs.)*
SRI:				
United Kingdom (£)	1.63	-2.68	**0.87**	0.83
	0.42	*-1.55*	*23.37*	*155*
United States ($)	5.17	**-2.84**	**0.94**	0.97
	1.30	*-3.32*	*69.63*	*156*
Europe ex. UK (€)	0.22	**-4.31**	**0.78**	0.82
	0.05	*-2.24*	*23.69*	*155*
Rest of World ($)	-0.68	0.74	**0.49**	0.45
	-0.17	*0.26*	*7.54*	*155*
World ($)	2.64	-1.38	**0.84**	0.88
	0.74	*-0.95*	*29.42*	*155*
Non-SRI:				
United Kingdom (£)	3.43	-1.23	**0.94**	0.83
	0.82	*-0.67*	*24.12*	*155*
United States ($)	6.08	-1.52	**0.89**	0.95
	1.59	*-1.52*	*56.94*	*156*
SRI vs. Non-SRI:				
United Kingdom (£)	-1.80	-1.45	-0.07	0.00
	-0.32	*-0.58*	*-1.29*	
United States ($)	-0.90	-1.32	**0.05**	0.02
	-0.16	*-1.00*	*2.35*	

(Table 3 - Continued)

Panel B: The Fama-French-Carhart four-factor model results (by region)

	α_4 *(t-stat.)*	MKT *(t-stat.)*	SMB *(t-stat.)*	HML *(t-stat.)*	UMD *(t-stat.)*	R^2_{adj} *(Nobs.)*	Gross α_4 *(t-stat.)*
SRI:							
United Kingdom (£)	**-2.22**	**0.89**	**0.40**	**-0.06**	-0.02	0.96	-0.97
	-2.63	*53.01*	*20.38*	*-2.86*	*-1.30*	*155*	*-1.15*
United States ($)	**-3.37**	**0.94**	**0.10**	**0.05**	-0.01	0.97	**-1.76**
	-4.48	*67.68*	*3.62*	*2.73*	*-1.07*	*156*	*-2.33*
Europe ex. UK (€)	-3.48	**0.79**	0.06	**-0.07**	-0.05	0.82	-2.18
	-1.85	*21.64*	*1.03*	*-2.11*	*-1.49*	*155*	*-1.16*
Rest of World ($)	0.14	**0.57**	**0.44**	-0.03	**0.15**	0.57	1.66
	0.06	*10.71*	*3.98*	*-0.40*	*3.39*	*155*	*0.71*
World ($)	-2.04	**0.86**	**0.19**	0.00	0.02	0.89	-0.63
	-1.53	*28.32*	*3.98*	*0.08*	*0.98*	*155*	*-0.47*
Non-SRI:							
United Kingdom (£)	-1.14	**0.95**	**0.18**	0.00	0.00	0.85	0.12
	-0.66	*26.73*	*4.60*	*-0.09*	*-0.15*	*155*	*0.07*
United States ($)	**-2.48**	**0.89**	**0.18**	**0.07**	0.00	0.97	-0.85
	-2.93	*58.52*	*9.67*	*2.99*	*-0.23*	*156*	*-1.00*
SRI vs. Non-SRI:							
United Kingdom (£)	-1.08	-0.06	**0.22**	-0.05	-0.02	0.11	-1.09
	-0.56	*-1.53*	*4.93*	*-1.31*	*-0.56*		*-0.57*
United States ($)	-0.89	**0.05**	**-0.08**	-0.01	-0.01	0.00	-0.91
	-0.78	*2.53*	*-2.27*	*-0.40*	*-0.48*		*-0.80*

Panel C: The Fama-French-Carhart four-factor model results (by country)

	α_4 *(t-stat.)*	MKT *(t-stat.)*	SMB *(t-stat.)*	HML *(t-stat.)*	UMD *(t-stat.)*	R^2_{adj} *(Nobs.)*	Gross α_4 *(t-stat.)*
Australia	**-2.59**	**0.65**	**0.10**	0.04	0.04	0.78	-1.01
	-2.12	*18.33*	*2.53*	*1.05*	*1.68*	*155*	*-0.83*
Belgium	-5.26	**0.72**	**0.26**	0.07	-0.01	0.53	-4.36
	-1.61	*11.32*	*3.27*	*0.92*	*-0.23*	*140*	*-1.33*
France	**-5.96**	**0.77**	**0.26**	0.01	**-0.05**	0.77	**-4.56**
	-3.32	*17.60*	*5.73*	*0.32*	*-2.08*	*155*	*-2.54*
Germany	-0.62	**0.70**	**0.35**	0.01	**-0.10**	0.56	0.66
	-0.17	*12.12*	*3.86*	*0.08*	*-2.54*	*155*	*0.18*
Ireland	**-6.14**	**0.65**	**0.21**	-0.05	-0.02	0.69	**-4.88**
	-2.75	*16.86*	*4.02*	*-1.17*	*-0.73*	*155*	*-2.19*
Italy	-2.82	**0.32**	0.07	**-0.10**	-0.04	0.38	-0.98
	-0.89	*6.06*	*1.37*	*-1.98*	*-0.79*	*118*	*-0.31*
Japan	**-5.03**	**0.73**	0.05	0.06	0.01	0.87	**-3.43**
	-3.15	*23.35*	*0.94*	*1.41*	*0.36*	*155*	*-2.15*
Luxembourg	-3.34	**0.72**	-0.15	**-0.15**	-0.03	0.75	-2.03
	-1.18	*11.59*	*-1.24*	*-2.26*	*-0.70*	*90*	*-0.72*
Malaysia	-2.99	**0.58**	**0.18**	**-0.13**	**0.06**	0.92	-1.53
	-1.69	*20.53*	*4.73*	*-2.82*	*2.84*	*155*	*-0.86*
Netherlands	**-4.10**	**0.81**	**0.29**	0.06	0.01	0.73	-2.93
	-1.98	*20.31*	*4.86*	*1.50*	*0.41*	*155*	*-1.42*
Norway	-5.20	**0.88**	**0.32**	0.07	-0.06	0.75	-3.27
	-1.36	*16.88*	*3.03*	*1.26*	*-0.92*	*89*	*-0.85*
Singapore	-5.71	**0.57**	0.13	**-0.18**	**0.12**	0.52	-4.71
	-1.07	*6.46*	*1.65*	*-3.00*	*2.81*	*75*	*-0.88*
Sweden	**-6.46**	**0.56**	0.12	**-0.13**	-0.05	0.71	-5.12
	-2.36	*7.97*	*1.70*	*-2.79*	*-1.95*	*142*	*-1.87*
Switzerland	-3.01	**0.83**	**0.41**	-0.06	-0.05	0.62	-1.75
	-1.10	*13.30*	*4.47*	*-1.10*	*-1.06*	*155*	*-0.64*

Table 4: The 'ethics' risk factor

Panel A of Table 4 presents the Fama-French-Carhart four-factor model estimates (Equation (2)) for returns of the FTSE 4 Good UK, US, Europe and World Indices. Panel B presents the estimates of a five-factor model (Equation (3)) for equally weighted SRI funds around the world and non-SRI funds in the UK and the US, and reports the differences in the estimates between SRI and non-SRI funds. The five-factor model includes an 'ethics' factor which consists of the excess returns of the FTSE 4 Good indices. The estimates of alphas (α_4 and α_5) are annualized. The t-statistics are in *italics*, calculated with Newey-West standard errors and lags of order three to account for autocorrelation and heterogeneity. Bold coefficients indicate a significance level of at least 10%.

Panel A: Performance of ethical indices

	α_4 *(t-stat.)*	MKT *(t-stat.)*	SMB *(t-stat.)*	HML *(t-stat.)*	UMD *(t-stat.)*	R^2_{adj} *(Nobs.)*
FTSE 4 Good Indices:						
United Kingdom (£)	**-4.83**	**0.94**	**-0.08**	0.02	0.00	0.94
	-3.52	*35.73*	*-2.73*	*0.79*	*-0.13*	*89*
United States ($)	-0.98	**1.04**	**-0.24**	**-0.13**	-0.01	0.95
	-0.59	*31.46*	*-7.30*	*-2.99*	*-0.60*	*89*
Europe ex. UK (€)	**-4.37**	**0.86**	**-0.31**	**0.09**	-0.05	0.91
	-1.87	*20.94*	*-4.18*	*1.82*	*-1.58*	*89*
World ($)	-0.39	**1.06**	**-0.31**	-0.03	0.01	0.96
	-0.30	*40.57*	*-8.16*	*-0.94*	*0.78*	*89*

Panel B: The five-factor model results for SRI and Non-SRI funds

	α_5 *(t-stat.)*	MKT *(t-stat.)*	SMB *(t-stat.)*	HML *(t-stat.)*	UMD *(t-stat.)*	ETHIC *(t-stat.)*	R^2_{adj} *(Nobs.)*
SRI:							
United Kingdom (£)	**-2.56**	**0.84**	**0.39**	**-0.06**	-0.02	0.06	0.96
	-2.17	*12.63*	*15.46*	*-2.70*	*-1.37*	*0.78*	*89*
United States ($)	**-2.74**	**0.97**	**0.07**	**0.06**	**-0.02**	-0.03	0.98
	-2.94	*14.14*	*2.25*	*2.39*	*-1.94*	*-0.46*	*89*
Europe ex. UK (€)	-2.99	**0.44**	**0.26**	**-0.10**	-0.03	**0.47**	0.89
	-1.19	*4.33*	*4.04*	*-2.61*	*-1.02*	*4.44*	*89*
Rest of World ($)	-1.82	**0.62**	**0.47**	-0.11	0.07	**0.30**	0.66
	-0.57	*6.85*	*3.24*	*-1.07*	*1.35*	*5.08*	*89*
World ($)	-1.79	**0.63**	**0.29**	-0.02	-0.03	**0.25**	0.94
	-1.25	*4.62*	*4.89*	*-0.40*	*-1.19*	*2.19*	*89*
Non-SRI:							
United Kingdom (£)	-3.65	**1.24**	**0.15**	0.02	0.00	**-0.27**	0.87
	-1.46	*8.63*	*3.32*	*0.50*	*0.08*	*-1.85*	*89*
United States ($)	**-3.28**	**1.23**	**0.11**	**0.05**	-0.01	**-0.31**	0.98
	-2.91	*20.36*	*4.47*	*1.75*	*-0.78*	*-5.87*	*89*
SRI vs. Non-SRI:							
United Kingdom (£)	1.08	**-0.40**	**0.24**	**-0.08**	-0.02	**0.33**	0.08
	0.39	*-2.52*	*4.65*	*-1.86*	*-0.86*	*2.01*	
United States ($)	0.54	**-0.25**	**-0.04**	0.02	-0.01	**0.28**	0.00
	0.37	*-2.75*	*-0.92*	*0.50*	*-0.74*	*3.45*	

Table 5: Development of returns and risk over time

Panel A presents the estimates of alphas and adjusted R-squared in the Fama-French-Carhart four-factor model (see Equation (2)) for the pre-bubble period of 1991-1995, the bubble period of 1996-1999 and the post-bubble period of 2000-2003 for equally weighted SRI funds around the world and non-SRI funds in the UK and the US. Panel A also reports the differences in the estimates between SRI and non-SRI funds. Panel B reports the sub-sample estimates of alphas and adjusted R-squared where the dependent variable is the return of equally weighted SRI funds and the independent variable is the return of equally weighted non-SRI funds in the UK and US respectively (Equation (4)). The estimates of alphas are annualized. The t-statistics are in *italics*, calculated with Newey-West standard errors and lags of order three to account for autocorrelation and heterogeneity. Bold coefficients indicate a significance level of at least 10%.

Panel A: The Fama-French-Carhart four-factor model results

	α_4			R_{adj}^2		
	1991-95	1996-99	2000-03	1991-95	1996-99	2000-03
SRI:						
United Kingdom (£)	**-1.68**	-1.66	**-4.18**	0.97	0.94	0.96
	-1.68	*-1.18*	*-2.40*			
United States (€)	**-4.96**	**-3.53**	-2.14	0.97	0.98	0.98
	-6.63	*-3.99*	*-1.51*			
Europe ex. UK (€)	-2.01	**-6.23**	-4.37	0.63	0.82	0.87
	-0.79	*-1.74*	*-1.43*			
Rest of World ($)	3.51	-3.05	3.47	0.61	0.62	0.77
	1.33	*-0.71*	*1.12*			
World ($)	-2.93	-2.16	-1.04	0.80	0.93	0.97
	-1.26	*-1.16*	*-0.64*			
Non-SRI:						
United Kingdom (£)	1.42	-4.06	**-4.16**	0.80	0.81	0.93
	0.44	*-1.01*	*-1.89*			
United States (€)	**-2.04**	-2.52	**-2.56**	0.95	0.97	0.98
	-2.02	*-1.48*	*-2.45*			
SRI vs. Non-SRI:						
United Kingdom (£)	-3.10	2.41	-0.02	0.17	0.13	0.03
	-0.92	*0.56*	*-0.01*			
United States (€)	**-2.92**	-1.01	0.41	0.02	0.01	0.00
	-2.32	*-0.53*	*0.23*			

Panel B: Equally weighted SRI funds vs. Equally weighted non-SRI funds

	α_4			R_{adj}^2		
	1991-95	1996-99	2000-03	1991-95	1996-99	2000-03
SRI vs. Non-SRI:						
United Kingdom (£)	-1.66	2.58	-2.26	0.80	0.77	0.90
	-0.65	*0.67*	*-1.12*			
United States (€)	**-2.14**	-0.16	**-1.51**	0.92	0.96	0.97
	-1.86	*-0.10*	*-1.64*			

Table 6: Diversification, time-varying risk and market timing

Panel A presents the conditional alphas in the conditional version of the four- and five-factor models (see Equation (5) and (6) and the 'market timing' coefficient in the conditional four-factor model (see Equation (7)) for equally weighted SRI funds around the world and non-SRI funds in the UK and the US. This panel also shows the differences in the estimates between SRI and non-SRI funds. Panel B presents the costs of inadequate diversification (Div_1 and Div_4) and net selectivity (NS_1 and NS_4), which were introduced by Fama (1972) (see Equations (8)-(11)), for equally weighted SRI funds around the world and Non-SRI funds in the UK and the US. The panel also reports the differences in the estimates between SRI and Non-SRI funds. The estimates of conditional alphas, diversification losses, and net selectivity are annualized. The t-statistics are in *italics* and are calculated with Newey-West standard errors and lags of order three to account for autocorrelation and heterogeneity. Bold coefficients indicate a significance level of at least 10%.

	Panel A: Time-varying risks			**Panel B: Costs of inadequate diversification**			
	Conditional α_4 *(t-stat.)*	Conditional α_5 *(t-stat.)*	Market Timing *(t-stat.)*	Div_1 *(t-stat.)*	Div_4 *(t-stat.)*	NS_1 *(t-stat.)*	NS_4 *(t-stat.)*
SRI:							
United Kingdom (£)	**-1.90**	**-2.17**	-0.19	0.41	0.08	**-3.09**	**-2.30**
	-2.31	-2.21	*-0.54*	*1.23*	*0.92*	*-1.91*	*-2.84*
United States ($)	**-3.75**	**-3.35**	0.19	**0.14**	**0.12**	**-2.98**	**-3.49**
	-6.41	-3.71	*1.22*	*2.07*	*2.19*	*-3.61*	*-5.09*
Europe ex. UK (€)	-2.51	-0.61	-0.10	0.48	0.38	**-4.79**	**-3.87**
	-1.31	-0.21	*-0.25*	*1.06*	*0.86*	*-2.55*	*-2.06*
Rest of World ($)	-0.11	-0.56	**-2.69**	-0.68	-0.25	1.42	0.39
	-0.06	-0.16	*-4.01*	*-0.46*	*-0.22*	*0.47*	*0.15*
World ($)	-1.84	-1.23	-0.21	0.27	0.27	-1.66	**-2.31**
	-1.39	-0.76	*-0.61*	*1.22*	*1.37*	*-1.13*	*-1.64*
Non-SRI:							
United Kingdom (£)	**-3.08**	-3.04	-0.38	0.42	0.38	-1.68	-1.52
	-1.69	-1.04	*-0.70*	*1.23*	*1.14*	*-0.90*	*-0.88*
United States ($)	**-2.11**	**-3.20**	-0.11	**0.21**	**0.12**	**-1.73**	**-2.61**
	-2.76	-2.51	-0.66	*2.07*	*2.27*	*-1.69*	*-3.47*
SRI vs. Non-SRI:							
United Kingdom (£)	1.17	0.87	0.19	-0.01	-0.30	-1.41	-0.78
	0.59	*0.28*	*0.29*	*-0.02*	*-0.86*	*-0.57*	*-0.41*
United States ($)	**-1.64**	-0.15	0.29	-0.06	0.00	-1.25	-0.89
	-1.70	*-0.10*	*1.32*	*-0.53*	*-0.04*	*-0.95*	*-0.87*

Table 7: Smart money

This table presents the alpha estimates of the Fama-French-Carhart four-factor model (α_4 in Equation (2)) for investors' portfolios of SRI funds around the world and Non-SRI funds in the UK and the US, and reports the differences in the estimates between SRI and Non-SRI funds. The investors' portfolios are the value-weighted average portfolios and four new money portfolios including the inflow (column A), outflow (column B), high-flow (column C) and low-flow (column D) portfolios which are constructed using past cash flow signals (described in Section II.C). The VW, CW and EW in brackets denote the value (assets under management)-weighted, cash-flow weighted, equally weighted portfolios, respectively. The table also reports the difference in the estimated alphas between the inflow and outflow portfolios (column A-B), and between the high-flow and low-flow portfolios ((column C-D). The estimates of alphas are annualized. The t-statistics are in *Italics*, calculated with Newey-West standard errors and lags of order three to account for autocorrelation and heterogeneity. Bold coefficients indicate a significance level of at least 10%.

	α_4 Average [VW] *(t-stat.)*	α_4 Inflow [CW] *(t-stat.)* (A)	α_4 Outflow [CW] *(t-stat.)* (B)	Inflow vs. Outflow *(t-stat.)* (A) - (B)	α_4 High Flow [EW] *(t-stat.)* (C)	α_4 Low Flow [EW] *(t-stat.)* (D)	High vs. Low Flow *(t-stat.)* (C) - (D)
SRI:							
United Kingdom (£)	-1.68	**-2.34**	-3.06	0.72	-1.14	**-3.13**	1.99
	-1.44	*-1.66*	*-1.49*	*0.29*	*-0.99*	*-2.09*	*1.05*
United States ($)	-0.99	0.07	**-4.68**	**4.74**	**-1.71**	**-4.85**	**3.14**
	-0.96	*0.04*	*-2.15*	*1.71*	*-2.07*	*-4.31*	*2.25*
Europe ex. UK (€)	**-5.63**	-1.15	-4.69	3.54	**-4.99**	-2.38	-2.60
	-2.32	*-0.41*	*-1.51*	*0.84*	*-2.06*	*-0.96*	*-0.75*
Rest of World ($)	**-6.22**	-0.78	**-12.34**	**11.57**	1.26	-1.69	2.95
	-2.00	*-0.16*	*-2.98*	*1.78*	*0.38*	*-0.93*	*0.78*
World ($)	-0.14	0.89	**-4.65**	**5.54**	-0.11	-1.57	1.46
	-0.10	*0.45*	*-2.55*	*2.05*	*-0.07*	*-1.05*	*0.67*
Non-SRI:							
United Kingdom (£)	**-2.16**	-1.30	-0.87	-0.43	-1.60	-1.51	-0.09
	-2.25	*-0.94*	*-0.53*	*-0.20*	*-1.07*	*-0.81*	*-0.04*
United States ($)	**-1.97**	-1.16	**-3.03**	1.87	**-1.93**	**-3.16**	1.23
	-3.45	*-1.26*	*-3.01*	*1.38*	*-2.39*	*-3.20*	*0.96*
SRI vs. Non-SRI:							
United Kingdom (£)	0.48	-1.04	-2.19	1.15	0.46	-1.62	2.08
	0.32	*-0.52*	*-0.83*	*0.35*	*0.24*	*-0.68*	*0.68*
United States ($)	0.99	1.22	-1.65	2.88	0.22	-1.69	1.92
	0.83	*0.63*	*-0.69*	*0.93*	*0.19*	*-1.13*	*1.01*

Table 8: Determinants of risk-adjusted returns in SRI funds

This table presents the OLS estimates of determinants of risk-adjusted returns (see Equation (12)) for SRI funds (Panel A) and non-SRI funds in the UK (Panel B). The dependent variable is the four-factor- and conditional four-factor-adjusted returns of fund *i* in month *t* (i.e. $\alpha_i + \varepsilon_{i,t}$ in Equation (2) and (5)) respectively. Individual fund returns are in local currency and evaluated from a local investor's perspective (i.e. using local benchmark factors and local risk-free rate). The independent variables include the following variables. *Number of Screens*$_i$ is the number of SRI screens employed, and *D(Sin Screens*$_i$*),D(Ethical Screens*$_i$*),D(Governance & Social Screens*$_i$*)* and *D(Environmental Screens*$_i$*)* are four dummies which equal 1 if the fund uses at least one of the main SRI screens. *D(Islamic Fund*$_i$*)* captures whether the fund is designed for islamic investors, *D(Activism Policy*$_i$*)* equals 1 if the fund aims at actively influencing corporate behaviour, and *D(In-House SRI Research*$_i$*)* equals 1 if the fund has in-house SRI research. Size is measured as the natural logarithm of AUM in € (*Size*$_{i,t-1}$). Age is the number of years (*Age*$_{i,t-1}$). We also include an interaction term of age and a dummy equalling 1 if the age is below the median of all SRI (or conventional) funds in its domicile (*Age*$_{i,t-1}$* *D(Young*$_{i,t-1}$ *)). Total Fees*$_i$ is the sum of the annual management fee and 1/7th of the sum of front- and the back-end load fees. We also include an interaction term of total fees and an dummy equalling 1 if the total fees are above the median total fees of all funds in the domicile (*Total Fees*$_i$ **D(High Fees*$_i$*)).* The total risk is the standard deviation of monthly fund returns (*Risk*$_{i,t-1}$)), and *Average Return*$_{i,[t-1,t-12]}$ is the average returns of fund *i* over the months *t-1* to *t-12*. *D(Top Performer Family*$_{i,t-1}$*)* equals 1 if the raw returns of at least one SRI (or conventional) fund in the funds' family belongs to the top 20% of all funds in its domicile. *Number Funds Family*$_{i,\ t-1}$ is the number of SRI (or conventional) funds managed by the funds' family, *D(Market Leader Family*$_{i,t-1}$*)* equals 1 if the funds' family has the highest market share in its domicile, *D(European Diversification*$_i$*)* and *D(Global Diversification*$_i$*)* equal 1 if the fund invests across Europe or globally. We include dummies based on the domicile of the fund (*D(Europe ex. UK*$_i$*), D(US*$_i$*)* and *D(Rest of World*$_i$*)),* and 9 year dummies and 11 month dummies. The coefficients on indicator variables (denoted with a prefix "D") and the count variables (i.e. Constant, Age, Age *D Young, Number of Funds and Number of Screens) are multiplied by 100. The t-statistics are in *Italics*, calculated with White standard errors to account for heterogeneity. Bold coefficients indicate a significance level of at least 5%.

(Table 8 - Continued)

		Panel A: SRI				**Panel B: Non-SRI (UK)**			
Dependent variable		4-F Adj Return		Cond 4-F Adj Return		4-F Adj Return		Cond 4-F Adj Return	
	Constant	**-0.545**	*-3.181*	-0.251	*-1.464*	**0.803**	*4.452*	**1.144**	*7.130*
Screening Activity	Number of Screens	**0.026**	*2.648*	0.003	*0.263*				
	D Sin Screens	-0.070	*-0.971*	0.081	*0.963*				
	D Ethical Screens	-0.077	*-1.347*	-0.010	*-0.167*				
	D Governance & Social Screens	-0.092	*-1.399*	**0.171**	*2.335*				
	D Environmental Screens	-0.072	*-1.139*	**-0.136**	*-1.995*				
	D Islamic Fund	0.151	*1.334*	**0.386**	*3.203*				
	D Activism Policy	0.008	*0.159*	**-0.145**	*-2.563*				
	D In-House SRI Research	**0.098**	*2.055*	0.058	*1.104*				
Fund Characteristics	Size (t-1)	**-0.000**	*-3.333*	**-0.000**	*-1.949*	**-0.001**	*-4.070*	**-0.000**	*-3.048*
	Age (t-1)	**-0.012**	*-2.507*	**-0.017**	*-3.873*	**0.003**	*1.799*	0.002	*1.583*
	Age (t-1) * D Young (t-1)	0.003	*0.183*	**-0.029**	*-2.218*	0.007	*0.991*	0.008	*1.320*
	Total Fees	-0.009	*-0.173*	-0.061	*-1.063*	-0.045	*-0.857*	-0.009	*-0.183*
	Total Fees * D High Fees	-0.046	*-1.462*	-0.058	*-1.634*	**0.074**	*3.050*	**0.067**	*3.094*
	Risk (t-1,t-12)	**-0.035**	*-2.196*	-0.012	*-0.782*	**-0.051**	*-2.297*	**-0.142**	*-7.365*
	Average Return (t-1, t-12)	0.020	*1.100*	0.031	*1.598*	**0.095**	*4.493*	**0.083**	*4.594*
Fund Family	D Top Performer Family (t-1)	0.008	*0.187*	-0.015	*-0.347*	0.027	*0.594*	0.010	*0.235*
	Number Funds in Family (t-1)	-0.009	*-1.538*	0.003	*0.543*	0.001	*0.209*	-0.003	*-0.517*
	D Market Leader Family (t-1)	0.016	*0.255*	0.086	*1.328*	0.003	*0.035*	-0.012	*-0.147*
Internat. Diversification	D European Diversification	0.057	*0.576*	0.008	*0.050*	0.208	*1.849*	**0.190**	*2.027*
	D Global Diversification	**-0.127**	*-2.482*	-0.066	*-1.207*	-0.202	*-5.450*	**-0.315**	*-9.699*
Geographical Location	D Europe (ex. UK)	**-0.338**	*-4.462*	-0.137	*-1.613*				
	D US	-0.017	*-0.256*	**-0.158**	*-2.160*				
	D Rest of World	0.040	*0.482*	**-0.351**	*-3.793*				
Time Effect	D Year	Yes		Yes		Yes		Yes	
	D Month	Yes		Yes		Yes		Yes	
	Adjusted R^2 / F-statistics	0.034	15.277	0.021	7.086	0.039	*34.979*	0.045	*39.743*
	Observations	17889		12747		27402		27082	

Table 9: Determinants of risk loadings

This table presents the OLS estimates of determinants of risk loadings (Equation (13)) for SRI funds (Panel A) and Non-SRI funds in the UK (Panel B). The dependent variable is the beta (i.e. the sum of time-constant and time-varying betas) of fund *i* in month *t* for factors MKT, SMB, HML or UMD in the conditional four-factor model as by Equation (5). Individual fund returns are in local currency and evaluated from a local investor's perspective (i.e. using local benchmark factors and local risk-free rate) for funds with at least five years' return history. The independent variables consist of variables capturing economic conditions including the one-month inter-bank interest rate or treasury bill rate (*Interest Rate*), the dividend yield of the value-weighted local market indices (*Dividend Yield*), a bond term-structure premium measured by the ten-year government bond yield minus the one-month treasury bill rate (*Term Structure Premium*), and a bond credit-risk premium measured by corporate bond yield minus the ten-year government bond yield (or the Moody's BAA rated bond yield minus the Moody's AAA rated bond yield for the US) (*Credit-Risk Premium*). The t-statistics are in *italics*, calculated with White standard errors to account for heterogeneity. Bold coefficients indicate a significance level of at least 5%.

		Panel A: SRI							
Dependent variable		Conditional MKT		Conditional SMB		Conditional HML		Conditional UMD	
Screening Activity	Constant	**0.636**	*21.740*	**0.120**	*2.566*	**0.255**	*6.752*	0.045	*1.810*
	Number of Screens	**0.009**	*7.970*	**0.011**	*6.450*	**0.007**	*4.383*	-0.001	*-1.199*
	D Sin Screens	**-0.114**	*-13.976*	**-0.116**	*-10.042*	**-0.091**	*-8.177*	-0.004	*-0.695*
	D Ethical Screens	**0.045**	*8.218*	0.016	*1.838*	**-0.053**	*-6.028*	**0.026**	*5.371*
	D Governance & Social Screens	**-0.016**	*-2.094*	**-0.134**	*-9.637*	**-0.239**	*-20.647*	**0.047**	*7.490*
	D Environmental Screens	**-0.036**	*-5.051*	-0.003	*-0.272*	**0.084**	*8.430*	**-0.042**	*-7.840*
	D Islamic Fund	**-0.114**	*-9.349*	**-0.073**	*-4.315*	**-0.080**	*-4.917*	**-0.052**	*-6.605*
	D Activism Policy	**-0.081**	*-13.539*	**-0.052**	*-5.550*	**0.098**	*11.731*	**-0.057**	*-11.243*
	D In-House SRI Research	**-0.024**	*-4.989*	**0.052**	*6.407*	**0.101**	*13.610*	**-0.046**	*-11.578*
Fund Characteristics	Size (t-1)	**-0.003**	*-3.419*	-0.002	*-1.280*	**0.008**	*6.440*	**-0.004**	*-4.805*
	Age (t-1)	-0.001	*-1.668*	**-0.002**	*-4.101*	**-0.004**	*-7.311*	**0.001**	*2.097*
	Age (t-1) * D Young (t-1)	**0.005**	*3.630*	**-0.005**	*-2.318*	**-0.004**	*-2.452*	**0.004**	*3.025*
	Total Fees	**4.293**	*7.122*	**7.356**	*7.775*	**4.303**	*5.621*	-0.643	*-1.657*
	Total Fees * D High Fees	**-3.972**	*-12.079*	**-2.110**	*-4.033*	**-1.426**	*-3.424*	0.188	*0.805*
	Risk (t-1,t-12)	**4.254**	*32.298*	**3.580**	*17.809*	**-3.363**	*-20.275*	-0.150	*-1.641*
	Average Return (t-1, t-12)	**0.510**	*3.273*	**1.086**	*4.360*	**-0.851**	*-3.718*	**0.473**	*3.874*
Fund Family	D Top Performer Family (t-1)	-0.002	*-0.607*	**0.042**	*6.565*	0.001	*0.129*	**0.020**	*5.835*
	Number Funds in Family (t-1)	**0.004**	*6.459*	**-0.003**	*-2.995*	**-0.005**	*-5.751*	0.001	*1.741*
	D Market Leader Family (t-1)	**-0.011**	*-2.012*	**-0.061**	*-7.021*	**0.061**	*7.956*	**0.011**	*2.826*
Economic Condition	Interest Rate (t-1)	**0.921**	*3.186*	0.567	*1.298*	**2.733**	*6.681*	**-2.498**	*-10.245*
	Dividend Yield (t-1)	-0.285	*-0.411*	**9.755**	*8.719*	**-6.672**	*-7.402*	**3.500**	*5.992*
	Term Structure Premium (t-1)	-0.081	*-0.238*	**5.289**	*10.379*	**-1.775**	*-3.963*	**-1.170**	*-4.096*
	Credit Risk Premium (t-1)	**4.502**	*6.616*	**-8.573**	*-8.068*	**6.737**	*7.064*	0.163	*0.352*
Internat. Diversification	D European Diversification	**0.129**	*7.246*	**-0.078**	*-2.682*	**-0.128**	*-7.501*	-0.024	*-1.807*
	D Global Diversification	**-0.087**	*-16.760*	**-0.086**	*-11.413*	**-0.054**	*-7.851*	**-0.023**	*-5.852*
Geographical Location	D Europe (ex. UK)	0.016	*1.571*	**-0.181**	*-11.353*	**-0.126**	*-10.298*	**0.053**	*8.186*
	D US	**0.106**	*8.653*	**-0.246**	*-11.447*	**-0.040**	*-2.432*	**0.125**	*11.161*
	D Rest of World	**-0.175**	*-17.166*	**-0.369**	*-23.015*	**0.067**	*5.163*	**0.062**	*8.348*
Time Effect	D Year	Yes		Yes		Yes		Yes	
	D Month	Yes		Yes		Yes		Yes	
	Adjusted R^2 / F-statistics	0.398	176.740	0.208	70.603	0.232	81.189	0.102	31.189
	Observations	12747		12747		12747		12747	

(Table 9 - Continued)

		Panel B: Non-SRI (UK)							
Dependent variable		Conditional MKT		Conditional SMB		Conditional HML		Conditional UMD	
Fund Characteristics	Constant	**0.849**	*23.408*	**-0.104**	*-1.959*	**0.195**	*3.896*	**-0.077**	*-1.954*
	Size (t-1)	**0.006**	*5.969*	**-0.037**	*-23.918*	-0.001	*-0.938*	-0.001	*-0.604*
	Age (t-1)	**-0.000**	*-2.910*	**0.002**	*7.757*	**0.000**	*2.925*	**0.000**	*3.471*
	Age (t-1) * D Young (t-1)	**0.002**	*6.078*	**0.007**	*10.946*	0.000	*-0.942*	0.000	*-0.061*
	Total Fees	-0.424	*-1.239*	0.861	*1.521*	**1.837**	*4.604*	0.496	*1.697*
	Total Fees * D High Fees	0.235	*1.624*	**4.619**	*20.263*	**-0.764**	*-4.357*	**0.699**	*5.378*
	Risk (t-1,t-12)	**4.709**	*37.577*	**4.167**	*22.350*	**0.642**	*4.832*	-0.012	*-0.085*
	Average Return (t-1, t-12)	-0.001	*-1.580*	**-0.001**	*-2.154*	0.000	*0.708*	0.000	*0.585*
Fund Family	D Top Performer Family (t-1)	**2.002**	*16.812*	**3.535**	*18.935*	**1.046**	*8.056*	**2.353**	*17.904*
	Number Funds in Family (t-1)	-0.064	*-1.804*	0.017	*0.282*	**0.216**	*5.226*	-0.049	*-1.721*
	D Market Leader Family (t-1)	-0.005	*-1.735*	**0.047**	*10.271*	0.000	*0.013*	**0.014**	*5.698*
Economic Condition	Interest Rate (t-1)	**5.924**	*16.137*	**4.301**	*7.356*	**-1.492**	*-2.629*	**-3.311**	*-7.575*
	Dividend Yield (t-1)	**-15.318**	*-27.281*	**-13.598**	*-14.381*	**-13.546**	*-18.845*	**5.832**	*10.778*
	Term Structure Premium (t-1)	**3.498**	*9.608*	**9.450**	*17.789*	**7.402**	*18.111*	-0.442	*-1.346*
	Credit Risk Premium (t-1)	**2.678**	*4.004*	**20.828**	*20.468*	**21.398**	*29.046*	**-4.912**	*-8.541*
Internat. Diversification	D European Diversification	**-0.058**	*-6.932*	**-0.027**	*-2.072*	-0.009	*-1.099*	**-0.058**	*-7.115*
	D Global Diversification	**-0.105**	*-41.479*	**-0.049**	*-10.752*	**0.129**	*38.656*	**0.061**	*26.083*
Time Effect	D Year	Yes		Yes		Yes		Yes	
	D Month	Yes		Yes		Yes		Yes	
	Adjusted R^2 / F-statistics	0.277	*281.930*	0.171	*152.690*	0.222	*209.830*	0.092	*75.291*
	Observations	27124		27124		27124		27124	

Table 10: Economic effects of the determinants of risk-adjusted returns and risks

This table summarizes the (annualized) economic effects of a standardized change (e.g. a change of one percent, an event (a dummy variable of 1), or a change of one standard deviation (1 S.D.)) in the explanatory variables (which are statistically significant at the 5% level) in Tables 8 and 9.

Panel A: Determinants of risk-adjusted returns (in Table 8)

	Exp. Sign	Event Size	Impact on 4-factor adj. returns		Impact on conditional 4-factor adj. returns	
			SRI	Non-SRI	SRI	Non-SRI
Screening Activity						
Number of Screens		1 SD (4.1)	1.3%			
D Sin Screens		1				
D Ethical Screens		1				
D Governance & Social Screens		1			2.1%	
D Environmental Screens		1			-1.6%	
D Islamic Fund		1			4.6%	
D Activism Policy		1			-1.7%	
D In-House SRI Research		1	1.2%			
Fund Characteristics						
Size	-	1 SD (2.2)		-2.6%		-1.5%
Age Old		1 SD (5.3)	-0.8%	0.2%	-1.0%	
Age Young		1 SD (5.3)	-0.8%	0.2%	-2.9%	
Total Fees Low	-	1%				
Total Fees High	-	1%		0.9%		0.8%
Risk	-	1 SD (2.2%)	-0.9%	-1.3%		-3.7%
Average Return		1%		1.1%		1.0%
Fund Family						
D Top Performer Family		1				
Number Funds in Family		1 SD (4.2)				
D Market Leader Family		1				
Int. Diversification						
D European Diversif.		1				2.3%
D Global Diversif.		1	-1.5%			-3.8%
Geographical Location						
D Europe (ex. UK)		1	-4.1%			
D US		1			-1.9%	
D Rest of World		1			-4.2%	

(Table 10 - Continued)

Panel B: Determinants of risk loadings (in Table 9)

	Event Size	Impact on MKT loadings		Impact on SMB loadings		Impact on HML loadings		Impact on UMD loadings	
		SRI	Conv	SRI	Conv.	SRI	Conv	SRI	Conv
Screening Activity									
Number of Screens	1 SD (4.1)	4%		5%		3%			
D Sin Screens	1	-11%		-12%		-9%			
D Ethical Screens	1	5%				-5%		3%	
D Governance & Social Screens	1	-2%		-13%		-24%		5%	
D Environmental Screens	1	-4%				8%		-4%	
D Islamic Fund	1	-11%		-7%		-8%		-5%	
D Activism Policy	1	-8%		-5%		10%		-6%	
D In-House Research	1	-2%		5%		10%		-5%	
Fund Characteristics									
Size	1 SD (2.2)	-1%	2%		-8%	2%		-1%	
Age Old	1 SD (5.3)	3%		-1%	1%	-2%	0%	0.5%	0%
Age Young	1 SD (5.3)	3%	1%	-4%	5%	-4%		3%	
Total Fees Low	1%	4%		7%		4%	2%		
Total Fees High	1%			5%	5%	3%	1%		1%
Risk	1 SD (2.2%)	9%	10%	8%	9%	-7%	2%		
Average Return	1%	0.5%	2%	1%	4%	-1%	1%	0.5%	2
Fund Family									
D Top Performer Family	1			4%	5%			2%	1%
Number Funds Family	1 SD (4.2)	2%		-1%	-0.5%	-2%			
D Market Leader Family	1	-1%		-6%	6%	6%	2%	1%	
Economic Condition									
Interest Rate	1%	1%	6%		4%	3%	-1%	-2%	-3%
Dividend Yield	1%		-15%	10%	-13%	-7%	-13%	4%	6%
Term Structure Premium	1%		3%	5%	9%	-2%	7%	-1%	
Credit Risk Premium	1%	5%	3%	-9%	20%	7%	21%		-5%
Int. Diversification									
D European Diversif.	1	13%	-6%	-8%	-2%	-13%			-6%
D Global Diversif.	1	-9%	-10%	-9%	-5%	-5%	13%	-2%	6%
Geograph. Location									
D Europe (ex. UK)	1			-18%		-13%		5%	
D US	1	11%		-25%		-4%		13%	
D Rest of World	1	-18%		-37%		7%		6%	