



The price of ethics and stakeholder governance: The performance of socially responsible mutual funds[☆]

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ABSTRACT

Do investors pay a price for investing in socially responsible investments (SRI) funds, or do they obtain superior returns? This paper investigates these under- and overperformance hypotheses for all SRI funds across the world. Consistent with investors paying a price for ethics, SRI funds in the US, the UK, and in many continental European and Asia-Pacific countries underperform their domestic benchmarks by –2.2% to –6.5%. However, with the exception of some countries such as France, Japan and Sweden, the risk-adjusted returns of SRI funds are not statistically different from the performance of conventional funds. We also find that the underperformance of SRI funds is not driven by loadings on an ethics style factor. There is mixed evidence of a smart money effect: SRI investors are unable to identify the funds that will outperform in the future, whereas they show some fund-selection ability in identifying funds that will perform poorly. Finally, corporate governance and social screens yield lower risk-adjusted returns.

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1. 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 usually state that human behavior is driven by the maximization of self-interest, many people deviate from exclusively selfish behavior (Fehr and Gächter, 2000 and 2002). For example, recent experimental evidence indicates that altruism or selflessness is a powerful feature of human demeanor (Fehr and Fischbacher, 2003). An individual's utility partially depends on the utility of other members of the community, and ethical and social considerations are important determinants of economic behavior.² Economic theories of social norms (see Akerlof, 1980, and Romer, 1984) point out that, even when individuals

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¹ The Nicomachean Ethics, Book I.5; in the translation by Ross (1980).

² 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.

maximize self-interest, social norms that are financially costly to the individual may nevertheless persist if individuals are sanctioned by loss of reputation when disobeying the norm.³ Using a repeated game framework, Bovenberg (2002) formalizes various roles of social norms and values that facilitate economic cooperation. He argues that social considerations of corporate stakeholders (including consumers, employees and shareholders) may incite corporations to care for public goods such as the natural environment, even when such social considerations do not yield a direct benefit to the stakeholders.

This paper studies the impact of ethics and stakeholder governance on the risk-adjusted performance of the money-management industry. We define stakeholder governance as the amalgam of good corporate governance (protecting shareholders' interests), sound stakeholder relations (protecting the interests of other stakeholders, including those of employees and local communities), and environmental care (protecting the environment). Stakeholder governance (as defined by Tirole (2001:4)) takes thus a broader view: it is "the design of institutions that induce or force management to internalize the welfare of stakeholders". Over the past decade, ethical mutual funds, often also more broadly called socially responsible investment (SRI) funds⁴ which screen their investment portfolio based on ethical, social, corporate governance or environmental criteria, have experienced an explosive growth around the world. The assets in the SRI 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). This type of funds provides an ideal setting for studying the economic effects of ethical/governance/social strategies for the following reason. Investors in SRI funds explicitly pursue two types of goals: the economic rational goal of wealth-maximization and social responsibility. SRI investors are socially conscious and derive non-financial utility by holding assets consistent with their ethical and social values. Still, by investing in mutual funds rather than giving money to charity, SRI investors desire to enhance their financial utility as they expect positive risk-adjusted returns on their investments.

Academic interest has followed the rapid growth of the SRI industry. Most studies focus on SRI fund performance in individual countries (mainly, the US and the UK). Hamilton et al. (1993), Goldreyer and Diltz (1999), Statman (2000), and Bello (2005) show that the performance of SRI funds in the US is not significantly different from that of non-SRI funds. In contrast, Geczy et al. (2003) show that the financial costs of SRI screens on mean-variance optimizing investors can be substantial. Specifically, the SRI constraints impose a cost of more than 1.5% per month on investors believing in asset selection skills, i.e. investors who rely heavily on individual funds' historical risk-adjusted returns to predict future performance.⁵ The UK evidence (Luther et al. 1992; Mallin et al., 1995 and Gregory et al., 1997) concludes that the difference in performance between SRI and non-SRI funds is not statistically different from zero. A similar conclusion is drawn by Bauer, Otten and Tourani Rad (2006) and Bauer, Derwall and Otten (2006) for Australian and Canadian SRI funds, respectively. Multi-country studies are undertaken by Schroder (2004) for US, German and Swiss SRI funds; by Bauer et al. (2005) for US, UK and German funds; and by Kreander et al. (2005) for SRI funds in a few European countries. A detailed review of this SRI literature can be found in Renneboog, Ter Horst and Zhang (in press). Still, it is rather difficult to draw definitive conclusions on SRI performance as some of the performance evaluation methods used in the above papers are deficient. For example, some studies use the CAPM model to evaluate fund performance without controlling for other risk factors such as size, book-to-market value, and momentum. In addition, given that the above studies are not only based on different methodologies but also on fairly small samples, different sample periods and benchmarks, international comparisons of SRI performance are difficult to make.

This paper makes the following four contributions to the literature. First, we relate the SRI fund performance to the performance of conventional funds in each country. This setup allows us to examine whether SRI fund investors pay a price for the ethical, corporate governance, social and environmental policies that firms have adopted across different institutional settings and in different phases of the economic cycles. 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. publicly traded companies involved in producing alcohol or tobacco and in gambling, although these stocks have historically outperformed the market (see Hong and Kacperczyk, 2005). SRI investors who derive non-financial utility from investing in companies meeting high ethical/social standards may be content with a lower rate of return. Therefore, we expect SRI funds to do worse than their benchmarks and than conventional mutual funds (the *underperformance hypothesis*). On the other hand, the labor-intensive screening process applied by SRI funds may generate value-relevant information and yield superior fund performance (the *overperformance hypothesis*). Under this hypothesis, the SRI screens are usually also used as filters to identify managerial competence and superior corporate governance, or to avoid the potential costs of corporate social crises and environmental disasters.

Second, the paper investigates 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 et al. (2003) show that the fund selection process of SRI investors

³ 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).

⁴ In the fund industry and in some academic papers, SRI funds are often called 'ethical' funds. In this paper, we also use these terms interchangeably (e.g. an 'ethical' investor is an SRI investor). It should be noted that the screens that SRI funds apply are unambiguously labeled: ethical screens are based on the ethical standards of a religion or ideology; social screens are based on the social policies adopted by firms (e.g. no child labor); corporate governance screens are based on corporate governance regulation; environmental screens are based on policies geared at protecting the environment or limiting environmental damage (see Renneboog, Ter Horst and Zhang (in press), Table 3 for an overview of SRI screens).

⁵ To an investor who strongly believes in the CAPM and rules out stock selection skills, i.e. a market index investor, the financial costs of SRI constraints are merely 5 basis points per month.

determines the performance of the SRI fund portfolios relative to that of conventional portfolios. While the Geczy et al. study assumes that investors make fund selection decisions in a Bayesian way based on a funds' past performance, expenses and turnover, a number of other financial and non-financial fund attributes may significantly influence SRI investors' decision processes (see also 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 processes.

Third, the paper studies 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 academic literature. More specifically, we analyze the question whether or not the *screening intensity* (the number of screens employed) and *screening criteria* (i.e. sin, ethical, social, corporate governance, and environmental screens) influence the risk-adjusted returns and risk exposure of SRI funds. We examine the joint impact of other fund characteristics, such as fund size, age, the fee structure and the reputation of fund families on fund returns and risk.

Finally, we study the risk and return characteristics of SRI funds using a unique dataset consisting of nearly *all SRI mutual funds around the world* (Europe, North America, and Asia-Pacific). Hence, our sample covers a larger set of countries over a longer period of time than previous studies.

The paper yields several interesting results. First, the average SRI funds in the US, the UK, and most continental European and Asia-Pacific countries strongly underperform their Fama-French-Carhart (FFC) benchmarks. In particular, the risk-adjusted returns of the average SRI funds in Belgium, Canada, France, Ireland, Japan, Netherlands, Norway, Singapore, and Sweden are between –4% and –6% per annum. The FFC-adjusted alphas of UK and US SRI funds are –2.2% and –3.4%, respectively. These results imply that the firms included in SRI funds and hence meeting high ethical/social standards and strict stakeholder governance criteria may be overpriced by the market or that SRI funds are too expensive. It seems that investors pay a price for ethics. It is important to analyze the risk-adjusted returns difference between SRI and conventional mutual funds as it may well be the case that conventional funds are also underperforming the benchmarks especially when active management is costly. We find that the SRI funds' alphas are in almost all countries lower than those of conventional funds. Still, as the conventional funds do indeed also underperform the FFC benchmarks, their risk-adjusted returns are mostly not statistically different from those of their SRI counterparts. Exceptions are France, Ireland, Sweden, and Japan where the underperformance hypothesis for SRI funds unequivocally holds. When we augment the Fama-French-Carhart four-factor model by 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. The fact that a higher fraction of the return variation of ethical funds can be replicated by the well-known risk factors may indicate that SRI funds gradually converge to conventional funds by holding similar assets in their portfolios (or that conventional funds become more ethical or socially responsible).

Second, we find mixed results on a 'smart money' effect in the SRI fund industry: although ethical investors are unable to identify the funds that will outperform, there is some fund-selection ability to identify the ethical funds that will perform poorly.

Third, the screening activities and processes of SRI funds have a significant impact on the risk-adjusted returns. Funds adopting a community involvement policy or employing an in-house SRI research team to screen portfolios have better returns than SRI funds without such processes policies. Fund returns decrease with screening intensity on social and corporate governance criteria (proxied by the number of social and governance screens applied). This is also consistent with the underperformance hypothesis of SRI funds stating that high SRI screening intensity constrains the risk-return optimization and does not help fund managers to pick underpriced stocks.

Finally, while fund size erodes the returns of conventional funds, there is no such effect for SRI funds. This implies that larger SRI funds are not subject to decreasing returns to scale. However, fund management fees significantly reduce the risk-adjusted returns of both SRI and conventional funds.

The remainder of the paper is organized as follows. Section 2 develops the hypotheses and Section 3 describes the data on SRI and conventional funds, investment screens, and performance benchmarks. Section 4 presents the returns and risk characteristics of SRI funds and Section 5 focuses on the investors' portfolios of SRI funds, more specifically on the smart money effect. While Section 6 examines the determinants of returns and risk of SRI funds, Section 7 concludes.

2. Hypotheses

In recent years, corporate social responsibility (CSR) has become a focal point of policy makers (and the public), who demand that corporations assume more responsibility towards society, the environment, and the stakeholders in general. SRI investors thus aim at promoting socially and environmentally sound corporate behavior. At the heart of the SRI movement is a fundamental question: should a firm aim at maximizing shareholder value or social value (defined as the sum of the value generated for all stakeholders)? The fact that SRI funds apply screens that limit the full diversification potential may shift the mean-variance frontier towards less favorable risk-return tradeoffs than those of conventional portfolios. For instance, excluding part of the stock market (firms producing alcohol, tobacco, pornography) may negatively influence the risk-return tradeoffs of SRI funds. In this logic, SRI funds are expected to generate weaker financial performance than conventional funds for two reasons. First, SRI funds underinvest in financially attractive investment opportunities as some of these opportunities are excluded from the investment universe due to the fact that they do not sufficiently contribute to the SRI objectives of the funds. Second, more intense screening intensity further reduces the investment universe which may further weaken the SRI funds' financial performance. This leads to the underperformance hypotheses 1 (a) and 1 (b):

Hypothesis 1.

- (a) SRI funds underperform conventional funds.
- (b) A higher screening intensity reduces the performance of SRI funds.

One of the main arguments in favor of CSR is that CSR is not necessarily inconsistent with shareholder value-maximization. [Heal \(2005\)](#) states that, by anticipating and minimizing the potential conflicts between corporations and society, CSR plays a role in reducing the costs of such conflicts which may in the long run lead to higher NPVs. Furthermore, [Allen, Carletti, and Marquez \(2007\)](#) compare the stakeholder-oriented and shareholder-oriented corporate policies and show that countries with predominantly stakeholder-oriented firms have higher prices and lower output due to reduced competition in product markets. They conclude that stakeholder-oriented economies have higher firm values relative to shareholder-oriented ones. It also cannot be excluded that the SRI screening processes generate value-relevant information otherwise not available to investors. Hence, SRI screens may help fund managers to select securities and generate higher risk-adjusted returns than conventional mutual funds. In this case, investors may do (financially) well while doing (socially) good, i.e. investors earn positive risk-adjusted returns while at the same time contributing to a good cause.

There are two arguments supporting this alternative ('outperformance') hypothesis: first, sound social and environmental performance signals high managerial quality, which translates into favorable financial performance. For example, several theoretical studies argue that CSR can be rationalized under asymmetric information in financial or labor markets. Firms may use CSR as an informational signal upon which stakeholders can base their judgments regarding the quality or reputation of those firms ([Fombrun and Shanley, 1990](#)). In addition, [Brekke and Nyborg \(2005\)](#) model CSR as a screening device for firms to attract motivated workers, while [Fisman, Heal, and Nair \(2006\)](#) show that CSR may act as a credible signal of firms' trustworthiness in providing quality products. Second, social, ethical and environmental screening may reduce the high costs that emerge during corporate social crises or environmental disasters. If financial markets tend to undervalue such costs, portfolios based on corporate governance, social or environmental criteria may outperform their benchmarks. For example, [Gompers et al. \(2003\)](#) and [Cremers and Nair \(2005\)](#) demonstrate that good corporate governance generates positive abnormal returns for US companies, and [Bauer, Gunster and Otten \(2004\)](#) confirm this for European companies. In addition, [Derwall, Gunster, Bauer and Koedijk \(2004\)](#) show that a portfolio of firms with high environmental scores outperforms a portfolio of firms with low scores.

A key assumption underlying the 'outperformance' hypothesis is that stock markets misprice information on CSR in the short run such that SRI funds may outperform conventional funds in the long run.⁶ This leads to the alternative outperformance hypotheses 2(a) and 2(b):

Hypothesis 2.

- (a) SRI funds outperform conventional funds.
- (b) A higher screening intensity enhances the performance of SRI funds.

3. SRI funds, investment screens and performance benchmarks

In this section, we introduce our sample of SRI and conventional funds. Furthermore, we document the occurrence of the various types of investment screens employed by the SRI funds around the world. Finally, we will describe how we construct the benchmark portfolios used to evaluate SRI and conventional fund performance.

3.1. Ethical and conventional mutual funds

We construct a database that contains socially responsible and conventional equity mutual funds domiciled in 17 countries and three regions. Specifically, the SRI funds are domiciled in the following regions: (i) *Europe*: Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Norway, Sweden, Switzerland, and the UK (including Guernsey and the Isle of Man), (ii) *North America*: the US and Canada, and (iii) *Asia-Pacific*: Australia, Japan, Malaysia, and Singapore.⁷ We also collect data on conventional equity mutual funds for each of the 17 countries, which serve as our reference groups. Our primary data source for SRI funds is the Standard & Poor's Fund Service (Micropal), from which we also collect conventional UK funds. The US ethical and conventional fund data is obtained from the CRSP (Center for Research in Security Prices) Survivor-bias Free Mutual Fund Database. Data on conventional equity mutual funds in all other countries are obtained from Bloomberg. As Bloomberg does not maintain data on mutual funds that have ceased to exist, we collect data for these funds from the Datastream 'dead' mutual funds research files to avoid a possible survivorship bias (see [Brown, Goetzmann, Ibbotson and Ross, 1992](#)). For each SRI fund (from the above 17 countries) and for each conventional US and UK fund, our database contains the monthly Net Asset Value (per share value of a

⁶ The 'outperformance' hypothesis is clearly at odds with the efficient market hypothesis. If SRI screening processes do generate value-relevant information, conventional portfolio managers could replicate the screens and the performance edge of SRI over conventional investments should then diminish. We investigate this issue further below.

⁷ SRI funds also exist in a number of other countries or offshore jurisdictions, including Austria, Brazil, Hong Kong (China), South Africa, Cayman Islands, and Netherlands Antilles. We drop these data due to the small number of observations.

fund's portfolio net of annual management fees, denoted as NAV), the monthly Assets Under Management (AUM), and other fund characteristics such as the management fees, load fees and the inception date. Data on conventional funds outside the US and UK contain monthly NAV and fund inception dates. Our sample period starts in January 1991 (prior to this year the number of SRI mutual funds is small) and ends in December 2003.

To determine the universe of SRI funds, we create a list of mutual funds which bear labels such as 'ethical', 'socially responsible', 'environmental', 'ecology', 'Christian values' or 'Islamic' in the databases mentioned above. 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 collect by hand 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 interviews). Hence, in order to be included in our sample, the SRI funds must employ at least one ethical, corporate governance, social, or environmental screen as part of their investment policies. 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.

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 432 equity SRI funds, including 45 funds with missing 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, implying a very low attrition rate (on average 0.25% p.a.). To avoid possible survivorship biases, 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 440 live and dead equity mutual funds.

Our benchmark sample of conventional funds consists of conventional equity mutual funds in each of the 17 countries. Our sample of conventional funds from continental Europe, the US, the UK, Canada and Asia-Pacific comprises 16,036 live and dead equity mutual funds.⁸

The cross-sectional characteristics of the SRI and non-SRI mutual funds are described by country⁹ in Table 1: the number of funds, number of fund families¹⁰, fund age, assets under management, and fees (including management fees and load fees¹¹) per fund in December 2003. The largest number of SRI funds in our sample comes from continental Europe (with a total of 189 funds which are part of 103 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 continental Europe and Asia-Pacific is young with a median age of about 3 years since the funds' inception. Furthermore, US and UK SRI funds are much larger than those in continental Europe and Asia-Pacific. For instance, while the average size (assets under management) of SRI funds in the US is € 142 million, the one in continental Europe amounts to € 32 million. The total fees (the sum of the annual management fees and one seventh of the load fees¹²) range from 1.3% per annum in Belgium and the Netherlands to 2.4% per annum in Malaysia. There are important differences across the various components of fund fees across the regions: European 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 average size of the reference group of non-SRI funds tends to be larger than that of SRI funds.

3.2. Social and ethical objectives

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 assets 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

⁸ For the continental European countries, the benchmark group comprises 2,050 conventional equity funds including 164 'dead' funds. The UK conventional funds include 716 non-SRI equity mutual funds, including 649 'live' equity funds and 67 'dead' equity funds (the attrition rate is about 3% p.a.). 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 its lifetime. Furthermore, we also collect data on 268 Canadian conventional funds (including 13 dead funds) and 378 Asia-Pacific conventional funds (including 33 dead funds).

⁹ 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 offshore jurisdictions, the investors' nationalities are unobservable. Luxembourg funds are usually sold across Europe. Fund managers choose Luxembourg as well as other offshore jurisdictions as domiciles for their funds 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), the UK (6), France (4), the Netherlands (4), Belgium (3), Sweden (2), and Austria (1). The remaining 15 funds domiciled in Luxembourg are evaluated using European-wide benchmarks.

¹⁰ All the funds issued by the same institution are called a fund family. E.g. the SRI funds issued by the Belgian-French bank Dexia are a fund family.

¹¹ 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).

¹² 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 returns.

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 in 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.¹³

We develop a list of SRI screens used by SRI funds around the world. Combining the information from a variety of data sources¹⁴, 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'. 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 principles. Funds that employ screens to identify superior corporate governance, good labor relations, or good human rights track records (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.

Panel B of Table 2 highlights the differences in screening activities across four regions. The UK SRI funds employ on average 9.5 investment screens jointly, 6 of which are so-called negative screens which exclude firms or industries with undesirable ethical characteristics. In contrast, SRI funds in the Asia-Pacific region 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 Asia-Pacific region. Interestingly, 47% of the US SRI funds report that they make active use of their shareholder voting rights, while in continental Europe 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 Asia-Pacific. Finally, continental European SRI funds are the most internationally diversified: 33% of the funds invest across Europe and 61% invest around the world whereas 6% invest domestically only. In contrast, only 16% of the SRI funds in the US invest overseas.

3.3. Benchmarks

We construct monthly returns of benchmark portfolios for each country and region in our sample. The benchmark factors are the Fama and French (1993) three factors, including the market, size, and book-to-market ratio, and 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 database¹⁵. For the excess market return factor (MKT), we use the return on 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.¹⁶ 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 their 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. 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 verify 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 using the London Share Price Database (LSPD)¹⁷. We also construct the US factors using the Worldscope database and compare them 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.

4. Returns and risk

In Section 2, we have introduced two alternative hypotheses. The underperformance hypothesis claims that SRI funds underperform their conventional counterparts and that a higher screening intensity reduces SRI fund performance. The

¹³ For a clinical study of shareholder activism, see Becht, Franks, Mayer and Rossi (2006).

¹⁴ Our information sources are Social Investment Forum (2003), Natural Capital Institute (www.responsibleinvesting.org), SiRi SRI Fund Service (www.avanzisri.org), and Sustainable Investment Platform (www.sustainable-investment.org).

¹⁵ For the construction of the factor portfolios, we used the on-line research tool provided by Style Research Ltd., London.

¹⁶ When we use the MSCI country indices as a proxy for the market portfolio, 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.

¹⁷ We thank Elroy Dimson and Stefan Nagel for providing us with the UK factor data.

outperformance hypothesis states the opposite. In this section, we test these hypotheses by evaluating and comparing the SRI and conventional fund performance. As asset pricing models, we use the CAPM, the Fama French Carhart (FFC) 4-factor model, and the expanded FFC models. In order to allow for time-varying risk-loadings, we will also evaluate the performances by employing the conditional [Ferson and Schadt \(1996\)](#) pricing model.

4.1. Doing well by doing good?

In order to investigate whether investors (literally) pay a price for ethics and stakeholder governance, we examine the risk and return characteristics of SRI mutual funds around the world and compare them to reference groups of conventional funds in each country. As described above, most research on SRI fund performance does not find evidence supporting the hypothesis that the risk-adjusted returns of the average SRI mutual fund differ significantly from those of the average non-SRI mutual funds. In a model that considers the stock price implications of ethical investment strategies that exclude polluting companies, [Heinkel, Kraus and Zechner \(2001\)](#) show that the exclusion of polluting firms (or other types of non-SRI firms) by ethical investors reduces the risk-sharing opportunities among investors who hold shares of polluting firms. This may negatively influence the stock prices of polluting firms and raise their expected returns.¹⁸ 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.¹⁹

We study the performance of ethical and conventional funds by using the time-series returns of an equally weighted portfolio of funds. We evaluate the performance of the fund portfolios on a country 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. As a robustness check, we also assess fund performance from the perspective of an international investor by using international indices as benchmarks.²⁰ We first estimate the CAPM model:

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

where r_t is the return on 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 as introduced by [Jensen \(1968\)](#), β_{MKT} is the factor loading on the market portfolio, and ε_t stands for the idiosyncratic return.²¹ Furthermore, 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](#)) to control for the impact of investment styles on performance:

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

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 fund portfolios, β_{MKT} , β_{SMB} , β_{HML} , and β_{UMD} are the factor loadings on the four factors, and η_t stands for the idiosyncratic return.

Panel A of [Table 3](#) presents Jensen's alpha for equally weighted portfolios of ethical and conventional funds. A striking finding is that SRI funds in all countries underperform both the stock market index and conventional funds. After controlling for the exposure to the market risk, the alphas of the average SRI fund is significantly negative for many countries, including France, Ireland, Luxembourg, the Netherlands, Sweden, the US, Japan, and Singapore. Although the Jensen alphas of SRI funds in all countries are lower than those of their conventional peers, the differences in alphas are statistically significant for only a small number of European and Asia-Pacific countries, including France, Ireland, Sweden, Japan and Singapore. Consistent with previous studies on SRI performance (see, e.g., [Bauer, Koedijk and Otten, 2005](#)), we do not find significant differences in performance between SRI and conventional funds in the US and the UK.

The estimation results for the four-factor model are presented in Panel B of [Table 3](#). In line with the results from the CAPM, SRI funds in all countries underperform the benchmarks: the market, size, book-to-market, and momentum factors. The SRI four-factor alphas are significantly negative for the US, the UK, France, Ireland, the Netherlands, Sweden, Canada, Japan, and Malaysia. Furthermore, the alphas for the SRI funds in almost all countries are lower than those for the conventional funds. For a number of continental European and Asia-Pacific countries (France, Ireland, Sweden, and Japan), these differences in alphas range from –7% to –4% per annum and are statistically significant. These latter results are consistent with the underperformance hypothesis 1(a).

As the underperformance may be due to management fees and, to a lesser extent, transaction costs and non-stock holdings (see [Gruber, 1996](#), and [Wermers, 2000](#)), we examine the impact of management fees on SRI fund performance. We compute the alphas of SRI and conventional fund portfolios gross of management fees by adding back one twelfth of the annual management fees to

¹⁸ 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.

¹⁹ 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.

²⁰ We will only report the results from a local investor's perspective in the tables below. Our main results remain unchanged when we recalculate the returns from an international investor's perspective (these tables are available upon request).

²¹ 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 this section. 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.

the monthly fund returns and then re-estimate the four-factor model. We find that a. the returns of about half of the country SRI portfolios underperform the benchmarks by more than 3% per annum (Tables are available upon request) and b. SRI returns are lower than those of conventional funds (and significantly so for the countries listed above). Given that our results with gross alphas are similar to the ones reported above for alphas net of transaction costs, we conclude that the management fees cannot fully explain the strong underperformance of SRI funds relative to domestic benchmark portfolios.

We also unveil interesting differences in investment styles between SRI and conventional funds, possibly due to the use of SRI screens. The investment styles also vary across countries. For example, while German and UK SRI funds have a significantly larger exposure to the small-cap ('SMB') factor than the conventional funds, the SRI funds in the US, Canada and Japan invest relatively more in large-capitalization stocks than their conventional peers. The SRI funds in Norway, Canada and Japan have a significantly higher exposure to the value style ('HML') than the conventional funds.

In addition to the above analysis on the systematic risk loadings of SRI funds, we also study whether SRI investors incur a cost induced by the use of the SRI screens which may lead to inadequate diversification of idiosyncratic risk. Investors in actively managed funds may bear more idiosyncratic risk relative to passive investors (who hold e.g. the market). Following Fama (1972), we measure the welfare costs of inadequate diversification by investors' opportunity costs of bearing idiosyncratic risk. We do not find significant differences in the costs of inadequate diversification between SRI funds and conventional funds.²² This result suggests that SRI constraints have little influence on the diversification of idiosyncratic risk, which is consistent with the (traditional) view that to be well diversified a portfolio does not require a large number of stocks.

4.2. Does an ethics factor matter?

There are two potential explanations for the underperformance of SRI funds. The first is that the performance differences between SRI funds and conventional portfolios are driven by differences in the riskiness or 'style' of the two types of portfolios, which may not be fully captured by the benchmarks (CAPM or Fama-French-Carhart factors). In case the four-factor pricing model does not capture an ethical/SRI style, the estimated alpha may reflect the expected returns associated with this missing factor.

Second, it is possible that companies meeting high ethical standards may be overpriced in stock markets. More specifically, the overpricing of ethics may result from an 'aversion to unethical/asocial corporate behavior' when investors strongly dislike companies' unethical corporate behavior due to social norms, even if the behavior is not associated with higher financial risk. 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

In addition, the screening activities of SRI funds vary across countries and they may influence the SRI funds' risk loadings on an 'ethical style' (or SRI style). As shown in Section 3.2, US SRI funds apply many sin or ethical screens, whereas corporate governance, social and environmental screens are more popular in Europe. Therefore the risk-adjusted returns of SRI funds in continental Europe and Asia-Pacific may differ from those of US and UK funds due to differences in screening activities.

We investigate the relative importance of a missing ethics/SRI style factor and 'aversion to unethical behavior' to explain the underperformance of ethical funds. If underperformance is driven by the missing ethics/SRI factor, adding this factor to the four-factor model could improve the alphas of the SRI funds. We measure the 'ethics' factor returns via ethical equity indices, i.e. the FTSE 4 Good (FTSE4G) Indices returns 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.²⁵ In order to control for the potential style differences between SRI funds and conventional portfolios, we add the ethics factor to the conventional four-factor model:

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

where α_5 is the five-factor-adjusted alpha return of mutual fund portfolios, r_t^{ethic} captures the excess return of the regional ethical indices, β_{ETHIC} is the loading on the ethical factor, and v_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.

²² The tables are available upon request.

²³ This view is related to the taste-based theory of discrimination in labor markets (Becker (1957)). This theory states that employers with discriminatory tastes are willing to pay a financial price to avoid interacting with a particular class of people. 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.

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. We obtain very similar results (the 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 Using the Fama-French-Carhart model, we find that ethical indices in the UK and Europe underperform their local benchmarks by about 4.5% per annum. This is consistent with our results for ethical mutual funds. As ethical indices are in fact passive portfolios without any transaction costs that do not comprise non-stock holdings, the result supports the view that the underperformance of ethical funds is not driven by management fees, transaction costs, or non-stock holdings. Meanwhile, the risk-adjusted returns of ethical indices for the US and the World are not statistically different from zero.

Panel A of Table 4 presents the estimation results for Eq. (3). First, as expected, SRI funds in most countries have higher loadings on the 'ethics' factor than conventional funds. The differences in 'ethical' exposure are significant for the UK and US. Second, after controlling for the 'ethics' factor, the SRI funds in almost all countries still underperform the benchmarks (now comprising five factors). The five-factor alphas of SRI funds are significantly negative for France, Ireland, Sweden, UK, US, Canada, and Japan. Furthermore, the alphas of SRI funds in almost all countries are lower than those of conventional funds. However, the differences in alphas are significant for only Ireland, Canada and Japan. Overall, we find that adding the 'ethics' 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 a missing 'ethics' style factor. These results support the alternative hypothesis that investors pay a price for ethics due to their 'aversion to unethical behavior'.

Table 1
Characteristics of equity SRI and non-SRI funds

	Panel A: SRI								
	No. funds	No. families	Mean age	Median age	Mean AUM	Median AUM	Mean management fees. (%)	Mean load fees (%)	Mean total fees (%)
(1) Europe									
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%
UK	67	26	9.0	7.2	95.5	48.4	1.3%	3.5%	1.8%
(2) North America									
US	98	32	8.0	6.7	142.1	17.9	1.6%	1.8%	1.9%
Canada	7	5	4.7	3.1	N/A	N/A	N/A	N/A	N/A
(3) Asia-Pacific									
Australia	36	11	5.2	2.8	7.9	1.7	1.6%	2.5%	1.9%
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%
Singapore	4	3	3.9	3.9	0.7	0.7	1.0%	5.0%	1.7%
World	440	209	5.9	4.0	63.9	14.1	1.4%	2.9%	1.8%
	Panel B: Non-SRI								
	No. funds		No. dead funds			Mean age		Median age	
(1) Europe									
Belgium	161		14			5.6		4.5	
France	790		57			9.0		7.8	
Germany	146		21			8.9		6.3	
Ireland	141		13			5.7		4.5	
Italy	230		18			6.7		5.8	
Luxembourg	360		22			5.7		4.2	
Netherlands	56		5			8.1		5.2	
Norway	17		2			6.9		6.0	
Sweden	28		2			8.1		6.6	
Switzerland	121		10			13.0		10.1	
UK	716		67			12.5		10.0	
(2) North America									
US	12624		3811			7.9		6.2	
Canada	268		13			6.7		5.0	
(3) Asia-Pacific									
Australia	237		19			5.9		3.5	
Japan	91		10			5.5		4.2	
Malaysia	28		1			6.1		3.7	
Singapore	22		3			5.2		4.5	
World	16036		4088			7.8		5.5	

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 total number of funds, the number of 'dead' funds, and funds' age in our benchmark sample of non-SRI funds around the world.

Table 2

Summary of screening activities of SRI funds

Panel A: Definition of SRI screens					
Categories	Screens				
Sin	Tobacco, Alcohol, Gambling, Weapons, Pornography				
Ethical	Animal Testing, Abortion, Genetic Engineering, Non-Marital, Islamic, <i>Healthcare</i>				
Corporate Governance and Social	Corporate Governance, Business Practice, Community, Labor Diversity, Labor Relations, Human Rights, Foreign Operations				
Environmental	Nuclear, <i>Environment</i> , <i>Renewable Energy</i>				
Panel B: Summary statistics					
	Europe ex. UK	UK	USA	Asia-Pacific	Overall
<i>By fund: Average number of</i>					
Screens	6.62	9.52	8.14	5.59	7.12
Negative screens	3.00	5.85	4.55	3.51	3.81
Positive screens	3.62	3.67	3.59	2.08	3.31
Sin screens	1.73	3.60	3.31	2.69	2.52
Ethical screens	0.56	1.40	0.67	0.53	0.68
Governance & Social screens	2.70	2.62	2.71	1.49	2.45
Environmental screens	1.63	1.90	1.45	0.88	1.47
<i>Percentage of funds with</i>					
Negative screens	56%	85%	97%	72%	72%
Positive screens	92%	87%	69%	58%	79%
Sin screens	54%	85%	92%	67%	69%
Ethical screens	38%	85%	57%	52%	51%
Governance & Social screens	78%	85%	68%	47%	70%
Environmental screens	88%	94%	72%	60%	80%
Islamic screens	3%	2%	3%	36%	9%
Activism policy	18%	31%	47%	6%	24%
In-house SRI research	22%	27%	55%	11%	28%
European diversification	33%	4%	0%	0%	15%
Global diversification	61%	40%	16%	17%	39%
Domestic investment	7%	56%	84%	83%	46%

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* whereas the remaining screens are negative ones (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 applied. 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.

4.3. Time-varying risk loadings and returns

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 vary the risk exposure of their portfolios according to macroeconomic conditions. In this subsection, we investigate the impact of time-varying risk loadings on the risk-adjusted returns of SRI funds. Furthermore, the SRI fund industry is a relatively young industry, and the industry may have experienced a learning phase during the early period of its development. [Bauer et al. \(2005\)](#) document that in the early 1990's US and German SRI funds significantly underperformed their conventional peers but that those SRI funds slightly out-performed by the end of the decade. Therefore, we also examine the evolution of SRI funds' returns over time.

To allow for time-varying risk loadings, 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 (Eqs. (2) and (3)), we estimate the following conditional four- and five-factor models via OLS regressions:

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

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

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 been shown to be good predictors of stock

Table 3

SRI fund performance around the world

		Panel A: CAPM	Panel B: FFC					Adj. R ² /Nr. Obs.
		α ₁	α ₄	MKT	SMB	HML	UMD	
(1) Europe								
Belgium	SRI	-3.75	-5.26	0.72***	0.26***	0.07	-0.01	0.53
		-1.12	-1.61	11.32	3.27	0.92	-0.23	140
	Conv	-0.05	-0.78	0.67***	0.21***	-0.01	0.05	0.68
		-0.02	-0.33	15.69	2.97	-0.17	1.40	155
	Difference	-3.70	-4.48	0.04	0.05	0.08	-0.06	
France	SRI	-0.89	-1.11	0.56	0.44	0.82	-1.02	
		-6.00***	-5.96***	0.77***	0.26***	0.01	-0.05**	0.77
	Conv	-3.19	-3.32	17.60	5.73	0.32	-2.08	155
		-1.93	-1.87	0.85***	0.26***	-0.01	-0.03	0.88
	Difference	-1.33	-1.47	30.13	6.30	-0.31	-0.99	156
Germany	SRI	-4.06*	-4.08*	-0.08	0.00	0.02	-0.02	
		-1.71	-1.85	-1.62	-0.07	0.45	-0.68	
	Conv	-2.43	-0.62	0.70***	0.35***	0.01	-0.10**	0.56
		-0.67	-0.17	12.12	3.86	0.08	-2.54	155
	Difference	-1.69	-1.35	0.76***	0.06	0.02	-0.05*	0.88
Ireland	SRI	-1.12	-0.93	19.59	0.81	0.60	-1.76	156
		-0.75	0.73	-0.06	0.29**	-0.01	-0.05	
	Conv	-0.19	0.19	-0.87	2.52	-0.13	-1.02	
		-4.71**	-6.14***	0.65***	0.21***	-0.05	-0.02	0.69
	Difference	-2.12	-2.75	16.86	4.02	-1.17	-0.73	155
Italy	SRI	0.98	0.55	0.63***	0.16	-0.02	0.08	0.59
		0.89	0.70	7.44	1.39	-0.26	1.19	154
	Conv	-5.69*	-6.69*	0.02	0.05	-0.03	-0.10	
		-1.72	-1.74	0.19	0.41	-0.38	-1.38	
	Difference	-3.22	-2.82	0.32***	0.07	-0.10**	-0.04	0.48
Luxembourg	SRI	-0.94	-0.89	6.06	1.37	-1.98	-0.79	118
		0.02	0.86	0.40***	0.08	-0.11**	-0.04	0.59
	Conv	0.01	0.35	8.30	1.37	-2.07	-0.92	156
		-3.24	-3.69	-0.09	-0.01	0.00	0.00	
	Difference	-0.75	-0.91	-1.21	-0.10	0.05	-0.04	
Netherlands	SRI	-4.27*	-3.34	0.72***	-0.15	-0.15**	-0.03	0.75
		-1.70	-1.18	11.59	-1.24	-2.26	-0.70	90
	Conv	-0.05	0.11	1.08***	0.63	-0.01	0.10	0.64
		0.94	1.00	4.30	1.43	-0.05	0.81	156
	Difference	-4.22	-3.45	-0.37	-0.77*	-0.14	-0.13	
Norway	SRI	-1.24	-1.20	-1.41	-1.70	-0.88	-0.99	
		-3.88*	-4.10**	0.81***	0.29***	0.06	0.01	0.73
	Conv	-1.82	-1.98	20.31	4.86	1.50	0.41	155
		-2.23	-2.59*	0.80***	0.34***	0.08***	0.00	0.86
	Difference	-1.14	-1.70	21.76	7.57	2.85	0.17	156
Sweden	SRI	-1.65	-1.50	0.01	-0.05	-0.03	0.01	
		-0.57	-0.59	0.28	-0.68	-0.59	0.15	
	Conv	-4.26	-4.20	0.88***	0.32***	0.07	-0.06	0.75
		-1.01	-1.36	16.88	3.03	1.26	-0.92	89
	Difference	-4.18	-1.12	0.60***	0.38***	-0.13*	-0.13**	0.57
Switzerland	SRI	-0.63	-0.21	4.53	5.12	-1.76	-2.00	75
		-0.08	-3.09	0.29**	-0.07	0.20**	0.07	
	Conv	-0.01	-0.62	2.02	-0.51	2.16	0.76	
		-6.23***	-6.46**	0.56***	0.12*	-0.13***	-0.05**	0.71
	Difference	-2.93	-2.36	7.97	1.70	-2.79	-1.95	142
UK	SRI	0.08	0.51	0.70***	0.23***	-0.07***	-0.01	0.87
		0.04	0.37	22.02	4.51	-3.75	-0.36	156
	Conv	-6.31**	-6.97**	-0.15*	-0.11	-0.07	-0.05	
		-1.98	-2.14	-1.89	-1.21	-1.28	-1.39	
	Difference	-3.91	-3.01	0.83***	0.41***	-0.06	-0.05	0.62
Belgium	SRI	-1.21	-1.10	13.30	4.47	-1.10	-1.06	155
		-2.14	-0.91	0.88***	0.40***	-0.01	-0.08***	0.84
	Conv	-0.88	-0.51	20.90	7.09	-0.30	-2.68	156
		-1.77	-2.10	-0.05	0.02	-0.05	0.03	
	Difference	-0.44	-0.64	-0.68	0.18	-0.73	0.52	
France	SRI	-2.68	-2.22**	0.89***	0.40***	-0.06***	-0.02	0.96
		-1.55	-2.63	53.01	20.38	-2.86	-1.30	155
	Conv	-1.23	-1.14	0.95***	0.18***	0.00	0.00	0.85
		-0.67	-0.66	26.73	4.60	-0.09	-0.15	155
	Difference	-1.45	-1.08	-0.06	0.22***	-0.05	-0.02	
Germany		-0.58	-0.56	-1.53	4.93	-1.31	-0.56	

Table 3 (continued)

		Panel A: CAPM	Panel B: FFC					Adj. R^2 /Nr. Obs.
		α_1	α_4	MKT	SMB	HML	UMD	
(2) North America								
US	SRI	-2.84***	-3.37***	0.94***	0.10***	0.05***	-0.01	0.97
		-3.32	-4.48	67.68	3.62	2.73	-1.07	156
	Conv	-1.52	-2.48***	0.89***	0.18***	0.07***	0.00	0.97
		-1.52	-2.93	58.52	9.67	2.99	-0.23	156
	Difference	-1.32	-0.89	0.05**	-0.08**	-0.01	-0.01	
Canada	SRI	-1.00	-0.78	2.53	-2.27	-0.40	-0.48	
		-4.50	-5.35**	1.13***	0.04	0.08**	-0.08***	0.82
	-1.48	-2.07	21.61	0.43	2.51	-3.07	107	
	Conv	-1.71	-2.24**	0.75***	0.20***	-0.02	-0.01	0.81
		-1.28	-1.98	20.54	5.27	-1.01	-0.87	156
	Difference	-2.79	-3.11	0.38***	-0.16*	0.10**	-0.07**	
		-0.85	-1.59	5.92	-1.78	2.64	-2.17	
	(3) Asia-Pacific							
Australia	SRI	-1.33	-2.59	0.65***	0.10**	0.04	0.04*	0.78
		-1.07	-2.12	18.33	2.53	1.05	1.68	155
	Conv	0.38	-0.38	0.70***	0.21**	0.06	-0.08	0.71
		0.19	-0.17	14.54	2.05	1.32	-1.28	156
	Difference	-1.71	-2.21	-0.04	-0.11	-0.03	0.12*	
Japan	SRI	-0.73	-0.87	-0.71	-0.98	-0.47	1.77	
		-4.68***	-5.03***	0.73***	0.05	0.06	0.01	0.87
	-2.71	-3.15	23.35	0.94	1.41	0.36	155	
	Conv	1.07	0.81	0.71***	0.35***	-0.24***	0.07	0.80
		0.41	1.26	11.77	4.15	-4.31	1.58	156
	Difference	-5.76*	-5.84***	0.02	-0.30***	0.30***	-0.06	
Malaysia	SRI	-1.85	-2.86	0.32	-3.02	4.30	-1.08	
		-3.37	-2.99*	0.58***	0.18***	-0.13***	0.06***	0.92
	-1.59	-1.69	20.53	4.73	-2.82	2.84	155	
	Conv	0.29	0.44	0.65***	0.09*	-0.04	0.13***	0.79
		0.48	0.57	15.79	1.66	-0.70	6.16	156
Singapore	SRI	-3.66	-3.43	-0.06	0.09	-0.09	-0.07**	
		-1.36	-1.44	-1.24	1.38	-1.15	-2.35	
	Conv	-6.26*	-5.71	0.57***	0.13*	-0.18***	0.12***	0.52
		-1.70	-1.07	6.46	1.65	-3.00	2.81	75
	Difference	0.55	0.95	0.74***	0.17	-0.09	0.18**	0.49
	0.93	1.08	8.34	1.25	-1.41	2.22	154	
	-6.81*	-6.66	-0.17	-0.04	-0.09	-0.06		
	-1.75	-1.51	-1.35	-0.25	-1.07	-0.62		

This table presents Jensen's alpha based on the CAPM (Panel A) and the Fama-French-Carhart (FFC) four-factor model estimates (Panel B) for equally weighted SRI funds and conventional funds around the world. This table also reports the differences between SRI and conventional fund returns. 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 alphas (α_1 and α_4) are annualized and in percentage terms. The t -statistics are reported below the coefficient estimates, calculated with Newey–West standard errors and lags of order three to account for autocorrelation and heterogeneity. *, **, and *** stand for the significance levels at the 10%, 5%, and 1% thresholds, respectively. Nr. Obs. stands for the Number of Observations.

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

Panel B of Table 4 reports the conditional four- and five-factor alphas ($\alpha_{4,C}$ and $\alpha_{5,C}$). For virtually all countries, we demonstrate that the conditional four- and five-factor alphas are very similar to the unconditional alphas (which were presented in Panel B of Table 3 and in Panel A of Table 4). 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 none of the five-factor conditional alphas of SRI funds around the world is significantly different from those of conventional funds.

In addition, if fund managers have the ability to time the market and hence have some predictive power regarding the stock market evolution, they may increase their funds' exposure to the stock market prior to a market increase and reduce the exposure prior to a market decline. The fund's returns are then a convex function of the market returns. To test the market-timing ability of

Table 4

The 'ethics' style factor, time-varying risk, and subsample results

		Panel A: ethics factor		Panel B: conditional model		Panel C: sub-sample α_i		
		α_5	Ethics	Cond. $\alpha_{4,C}$	Cond. $\alpha_{5,C}$	1991–95	1996–99	2000–03
<i>(1) Europe</i>								
Belgium	SRI	-0.22	0.73***	-4.22**	-0.31	-8.31**	-5.33	-7.86*
		-0.11	14.11	-2.05	-0.15	-2.16	-0.97	-1.70
	Conv	2.43	0.52***	-0.50	2.02	-3.61**	-3.68	-4.75*
		1.26	10.72	-0.42	1.46	-2.37	-1.31	-1.64
France	SRI	-2.65	0.21**	-3.73	-2.33	-4.71	-1.65	-3.11
		-0.96	2.90	-1.57	-0.96	-1.68*	-0.55	-0.57
	Conv	-4.61**	0.35***	-5.73***	-4.24*	-6.02**	-2.97	-5.98***
		-2.37	3.92	-3.11	-1.68	-2.20	-0.96	-3.69
Germany	SRI	-1.50	0.31***	-1.76	-3.26	-0.02	-3.81	-3.98***
		-1.03	4.83	-1.39	-1.51	-0.01	-1.51	-3.62
	Difference	-3.11	0.04	-3.97*	-0.97	-6.00**	0.85	-2.00
		-1.28	0.32	-1.77	-0.29	-1.89	0.21	-0.73
Ireland	SRI	1.10	0.46***	-2.76	-1.67	-2.55	-1.28	1.59
		0.23	3.77	-0.97	-0.38	-0.55	-0.30	0.19
	Conv	-1.10	0.46***	-1.13	-0.84	-0.22	1.83	-2.66
		-0.77	7.32	-1.02	-0.63	-0.13	1.19	-1.64*
Italy	SRI	2.20	0.00	-1.63	-0.83	-2.33	-3.11	4.25
		0.44	-0.02	-0.53	-0.18	-0.47	-0.69	1.06
	Conv	-6.27***	0.60***	-4.23**	-2.69	-3.12	-0.28	-5.08**
		-3.15	6.81	-2.36	-1.17	-1.06	-0.08	-2.42
Luxembourg	SRI	0.60	0.65***	0.67	1.33	0.73	2.77	-2.82**
		1.13	5.58	1.15	1.50	0.25	1.60	-2.23
	Difference	-6.87**	-0.05	-4.91	-4.02	-3.85	-3.05	-2.27
		-2.34	-1.13	-1.89*	-1.54	-0.93	-1.58	-0.34
Netherlands	SRI	-2.84	0.48***	-3.91	-3.34	N/A	-1.04	-6.42**
		-1.31	7.73	-1.46	-1.25	N/A	-0.23	-2.36
	Conv	-1.82	0.47***	-1.52	-1.89	1.70	-0.30	-3.78**
		-0.93	10.91	-0.71	-0.78	0.53	-0.07	-2.54
Norway	SRI	-1.01	0.02	-2.39	-1.45	N/A	-0.74	-1.65
		-0.35	0.22	-0.70	-0.40	N/A	-0.12	-0.33
	Conv	-0.43	0.61***	0.18	2.18	N/A	-0.30	-6.39**
		-0.15	2.84	0.05	0.61	N/A	-0.06	-2.16
Sweden	SRI	1.19	0.41	2.90	3.51	-1.17	3.20	-2.35
		1.10	1.33	1.09	1.28	-0.67	1.05	-1.01
	Difference	-1.63	0.20	-2.72	-1.32	N/A	-3.51	-4.04
		-1.11	0.99	-1.04	-1.08	N/A	-1.05	-0.85
Switzerland	SRI	-3.15	0.52***	-2.66	-0.03	-3.74	-0.58	-5.60
		-1.41	5.61	-1.46	-0.01	-1.07	-0.23	-2.48
	Conv	-0.44	0.39***	-1.04	1.74	-3.17	2.57	-0.75
		-0.20	5.39	-0.73	0.86	-1.60	0.99	-1.43
UK	SRI	-2.70	0.13	-1.62	-1.77	-0.57	-3.15	-4.85
		-0.86	1.10	-0.70	-0.56	-0.14	-0.87	-1.08
	Conv	-5.30	0.37***	-4.53	-4.46	N/A	-3.34	-4.92
		-1.59	5.65	-1.12	-1.10	N/A	-0.88	-0.81
UK	SRI	-1.93	0.41***	-2.68	-11.44	N/A	-2.47	-1.04
		-0.66	6.09	-1.16	-3.18	N/A	-1.22	-0.74
	Difference	-3.37	-0.03	-1.85	6.98	N/A	-0.87	-3.88
		-0.76	-0.37	-0.40	1.28	N/A	-0.45	0.72
UK	SRI	-3.77**	0.33***	-5.31**	-5.37**	-4.76**	-3.89*	-6.05**
		-1.96	8.40	-2.55	-2.69	-2.57	-1.69	-2.46
	Conv	0.12	0.32***	0.57	-1.19	0.70	-3.06	-3.40
		0.05	6.23	0.30	-0.44	0.31	-1.16	-0.94
UK	SRI	-3.90	0.01	-5.88***	-4.18	-5.46**	-0.83	-2.65
		-1.30	0.13	-2.95	-1.25	-2.27	-0.24	-1.16
	Conv	-3.22	0.54***	-0.27	1.54	-2.94	-4.16	-2.93
		-1.01	3.70	-0.11	0.44	-0.68	-1.43	-0.59
UK	SRI	-0.94	0.39***	-0.11	-0.08	-0.04	1.52	-3.50
		-0.56	6.57	-0.07	-0.04	-0.02	0.60	-1.63
	Difference	-2.28	0.14	-0.16	1.62	-2.90	-5.68	0.57
		-0.63	0.91	-0.05	0.39	-0.56	-1.51	0.28
UK	SRI	-2.56**	0.06	-1.90	-2.97	-1.68*	-1.66	-4.18**
		-2.17	0.78	-2.31	-3.03	-1.68	-1.18	-2.40
	Conv	-3.65	-0.27*	-3.08	-5.30	1.42	-4.06	-4.16*
		-1.46	-1.85	-1.69	-2.29	0.44	-1.01	-1.89
UK	Difference	1.08	0.33**	1.17	2.34	-3.10	2.41	-0.02
		0.39	2.01	0.59	0.93	-0.92	0.56	-0.01

Table 4 (continued)

		Panel A: ethics factor		Panel B: conditional model		Panel C: sub-sample α_4		
		α_5	Ethics	Cond. $\alpha_{4,C}$	Cond. $\alpha_{5,C}$	1991–95	1996–99	2000–03
(2) North America								
US	SRI	-2.74***	-0.03	-3.75***	-3.26***	-4.96***	-3.53***	-2.14
		-2.94	-0.46	-6.41	-3.75	-6.63	-3.99	-1.51
	Conv	-3.28***	-0.31***	-2.11**	-3.32**	-2.04**	-2.52	-2.56**
		-2.91	-5.87	-2.76	-2.73	-2.02	-1.48	-2.45
Canada	Difference	0.54	0.28***	-1.64*	0.06	-2.92**	-1.01	0.41
		0.37	3.45	-1.70	0.04	-2.32	-0.53	0.23
	SRI	-6.20***	0.24***	-4.82*	-3.42*	N/A	-6.76**	-6.81*
		-2.94	3.56	-1.92	-1.85	N/A	-2.47	-1.85
	Conv	-3.35**	0.21***	-1.79*	-2.41**	-1.06	-2.32	-4.27
		-2.01	4.84	-1.76	-2.21	-0.70	-1.19	-1.36
	Difference	-2.84*	0.03	-3.03	-1.01	N/A	-4.44*	-2.55
		-1.65	0.41	-1.37	-1.24	N/A	-1.77	-0.30
(3) Asia-Pacific								
Australia	SRI	-3.13	0.00	-2.75**	-4.55***	-1.38	-1.87	-3.74**
		-2.30	0.17	-2.15	-4.00	-0.57	-1.09	-2.04
	Conv	1.53	0.07	-1.92	-2.55	-3.29**	1.82	-1.72
		0.52	1.60	-1.19	-1.45	-2.01	0.77	-0.53
Japan	Difference	-4.65	-0.06	-0.82	-1.99	1.91	-3.69	-2.03
		-1.43	-1.28	-0.40	-0.95	0.66	-1.27	-0.55
	SRI	-4.27***	0.13***	-3.61***	-0.47	-6.06***	-3.42**	-0.30
		-2.76	5.01	-3.46	-0.35	-3.98	-2.17	-0.16
	Conv	0.67	0.11**	0.96	1.70	0.85	1.12	2.19
		1.49	2.46	0.71	1.96	0.36	2.01	1.62
	Difference	-4.95*	0.02	-4.57***	-2.16	-6.91**	-4.54***	-2.49
		-1.93	0.38	-2.69	-1.60	-2.46	-2.85	-1.41
Malaysia	SRI	0.07	-0.03	-1.72	-0.70	-6.63***	-3.06	0.59
		0.03	-0.76	-1.14	-0.33	-2.99	-0.98	0.88
	Conv	1.51	0.04	0.22	1.71	-1.59	2.50	2.58
		1.22	0.84	0.08	0.71	-0.34	0.51	1.55
Singapore	Difference	-1.44	-0.07	-1.95	-2.42	-5.04	-5.56	-2.00
		-0.90	-1.13	-0.61	-0.75	-0.98	-0.96	-0.68
	SRI	-4.97	0.59***	-3.79	-4.34	N/A	0.30	-6.53
		-1.17	6.02	-0.65	-1.09	N/A	0.71	-1.58
	Conv	-3.47	0.49***	1.28	0.30	2.71	-1.13	1.10
		-0.74	9.11	0.87	0.10	1.58	-0.86	0.46
	Difference	-1.50	0.10	-5.07	-4.65	N/A	1.43	-7.63
		-0.24	0.87	-1.58	-0.91	N/A	0.78	-1.44

This table presents the performance of the equally weighted SRI funds and conventional funds from around the world. Panel A presents the estimates of a five-factor model (Eq. (3)) including an 'ethics' (or SRI) factor which consists of the excess returns of the FTSE 4 Good indices. Panel B presents the conditional alphas in the conditional version of the four- and five-factor models (see Eqs. (4) and (5)). Panel C presents the alphas in the Fama-French-Carhart four-factor model (see Eq. (2)) for the pre-bubble period of 1991–1995, the bubble period of 1996–1999 and the post-bubble period of 2000–2003. All alphas are annualized and given in percentage. The *t*-statistics are reported below the parameter estimates, and are calculated with Newey–West standard errors and lags of order three to account for autocorrelation and heterogeneity. *, **, and *** stand for the significance levels of the 10%, 5%, and 1% thresholds, respectively.

SRI fund managers, we employ the [Treynor and Mazuy \(1966\)](#) measure by adding the quadratic term of the market premium to the conditional four-factor model (Eq. (4)). We find little evidence that SRI fund managers in the UK, US and continental Europe can time the market²⁶, a result that is consistent with most studies examining conventional mutual funds. Interestingly, SRI fund managers in Asia-Pacific exhibit significantly negative market timing, which implies that they time the market in the wrong direction.

Furthermore, we examine the evolution of SRI funds' returns over time by dividing 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 these three sub-samples, and report the estimated alphas in Panel C of [Table 4](#). Consistent with [Bauer et al. \(2005\)](#), the German and US ethical funds underperform their conventional peers in the pre-bubble period but catch up with conventional funds during the post-bubble period. However, in contrast to the US and German SRI funds, the SRI funds of other countries do not exhibit such a (learning) effect. We also observe that the *R*-squared of the regressions of continental European, UK, and Asia-Pacific SRI funds increases significantly over time. 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 or socially responsible).

²⁶ The tables are available upon request.

To summarize, we find evidence in line with our underperformance hypothesis. For almost all countries, we find that SRI funds have significantly negative alphas. SRI funds also underperform their conventional counterparts, but although this difference is economically significant, we only find statistically significant differences for four countries. Our findings are fairly robust with regard to the performance evaluation model employed, as both the conditional and unconditional models (with or without an ethics factor) yield similar results. In the next section we will examine whether ethical investors are nevertheless able to select funds that will perform well in future, i.e. whether ethical money is financially smart?

5. A 'smart money' effect?

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.²⁷ We therefore study whether or not such a smart money effect exists in the SRI fund industry.

The fund selection process of ethical investors may determine the performance of the selected SRI funds relative to a conventional fund portfolio. For instance, Geczy et al. (2003) show that an investor who believes that stock returns are generated by the four-factor model selects SRI mutual funds that 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. Geczy et al. assume 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 the investors' decision process and, consequently, the money flows to SRI funds (Renneboog et al., 2006).

Rather than making assumptions on the 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 assets 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 assets 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 available funds with negative new cash flows; (C) *High-flow portfolios* are equally weighted portfolios of all available funds with above-median new cash flows; 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 portfolios* of ethical and conventional funds, which are the value-weighted (i.e. assets under management-weighted) portfolios of all available funds.²⁸

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 5. 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 significantly negative for the UK SRI funds, and indistinguishable from zero for SRI funds from continental Europe, Asia-Pacific, and the US. 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 poorly 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 Asia-Pacific ethical funds. Furthermore, a hypothetical strategy of going long on the inflow portfolio and going short on 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 Asia-Pacific, respectively). In this strategy, the abnormal returns are driven by the significant underperformance of outflow portfolios. We also note that, in line with Sapp and Tiwari's (2004) findings, such a significant difference in alphas between the inflow and outflow portfolios does not exist for conventional funds of 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 has significantly positive alphas. There is some evidence that ethical investors have some ability to identify poorly performing funds ex ante, especially in the UK and US. However, these results are weaker than for the cash-flow weighted portfolios.

²⁷ An alternative explanation for the smart money effect is the momentum effect of stock returns: Sapp and Tiwari (2004) 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 the return regressions, the smart money effect disappears in their analysis.

²⁸ 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 less 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.

Table 5
Smart money

		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)
United Kingdom (£)	SRI	–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
	Conv	–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
	Difference	0.48	–1.04	–2.19	1.15	0.46	–1.62	2.08
United States (\$)	SRI	0.32	–0.52	–0.83	0.35	0.24	–0.68	0.68
		–0.99	0.07	–4.68**	4.74*	–1.71**	–4.85***	3.14**
	Conv	–0.96	0.04	–2.15	1.71	–2.07	–4.31	2.25
		–1.97***	–1.16	–3.03***	1.87	–1.93**	–3.16***	1.23
	Difference	–3.45	–1.26	–3.01	1.38	–2.39	–3.20	0.96
Europe ex. UK (€)		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
	SRI	–5.63**	–1.15	–4.69	3.54	–4.99**	–2.38	–2.60
Asia-Pacific (\$)		–2.32	–0.41	–1.51	0.84	–2.06	–0.96	–0.75
	SRI	–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

This table presents the alpha estimates of the Fama–French–Carhart four-factor model (α_4 in Eq. (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 5). 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 and in percentage terms. The *t*-statistics are reported below the coefficient estimates (in *Italics*), calculated with Newey–West standard errors and lags of order three to account for autocorrelation and heterogeneity. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Third, the results for the Average portfolio suggest that the performance of ethical money invested in continental European and Asia-Pacific 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.²⁹

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 continental Europe and Asia-Pacific, is significantly lower than the benchmarks.

6. The determinants of returns and risk

While we have shown the return and risk characteristics of *portfolios* of SRI funds in Sections 4 and 5, we now explore the *cross-sectional* differences between SRI funds and investigate the determinants of returns and risk of SRI funds around the world. In particular, we study the impact of screening activities on SRI performance and risk.

6.1. Control group and matching methodology

In order to investigate the impact of SRI screens on the risk and returns of SRI funds (relative to conventional funds), we create a control group of conventional funds which are matched with SRI funds based on fund characteristics. Our control group of conventional funds consists of a survivorship-bias free sample of conventional funds of the US and the UK. We cannot include the conventional funds of the other countries due to the unavailability of data on some of the fund characteristics. Each of the SRI funds in the US, continental Europe and Asia-Pacific are matched with two conventional US funds, while each UK SRI fund is matched with two UK conventional funds.³⁰

²⁹ 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.

³⁰ As a robustness check, we match the SRI funds in continental Europe and Asia-Pacific to conventional funds in the UK. Our main results remain unchanged.

To make our sample of conventional funds comparable to SRI funds, we match by fund age, size, the presence of load fees, and risk exposures. After estimating the risk exposures of both SRI and conventional funds with a performance history of at least 24 months, we apply a matching procedure which is similar to that of Bollen (2006). The procedure consists of three steps. First, to control for fund age, we require that only those conventional funds that are no more than two years older or younger than an SRI fund are eligible as matching candidates. We also match inactive (or dead) SRI funds with dead conventional funds that disappear from the sample no more than two years before or after the last year with SRI fund data. These criteria ensure that the funds experience similar life cycle effects. Second, only conventional funds without load fees (front-and back-end fees) are eligible candidates for no-load SRI funds, and conventional funds with load fees can only be matched to SRI funds with load fees. This restriction controls for the impact of fund fees and investors' transaction costs on money flows. Third, for each SRI fund, all eligible conventional funds satisfying the above requirements receive a score based on the similarities in size as well as risk exposures. Following Bollen (2006), we compute this score for a given SRI fund (i) and each of the eligible conventional funds (j) using the following algorithm:

$$\text{Score}_{ij} = (\text{AUM}_i - \text{AUM}_j)^2 / \sigma_{\text{AUM}}^2 + (\beta_{\text{MKT},i} - \beta_{\text{MKT},j})^2 / \sigma_{\text{MKT}}^2 + (\beta_{\text{SMB},i} - \beta_{\text{SMB},j})^2 / \sigma_{\text{SMB}}^2 + (\beta_{\text{HML},i} - \beta_{\text{HML},j})^2 / \sigma_{\text{HML}}^2 + (\beta_{\text{UMD},i} - \beta_{\text{UMD},j})^2 / \sigma_{\text{UMD}}^2 \quad (6)$$

where AUM is the maximum size (in \$) of the fund during its life, σ_{AUM}^2 is the cross-sectional variance of AUM, β_{MKT} , β_{SMB} , β_{HML} , and β_{UMD} are the risk exposures to the four factors, and σ_{MKT}^2 , σ_{SMB}^2 , σ_{AUM}^2 , σ_{HML}^2 , and σ_{UMD}^2 are the cross-sectional variance of the risk exposures. Scaling the squared deviations by the variance normalizes the weights on each matching criterion. The lower the score of the two funds, the more similar they are. Finally, for each SRI fund, two conventional funds with the lowest Score are selected for the control group.³¹

The above procedure generates our control group of conventional funds. The empirical analysis of Sections 6.2 and 6.3 is based on a sample consisting of 1020 equity mutual funds, 340 SRI funds and 680 conventional funds matched by fund age, size, load fees and risk exposures.

6.2. Returns and SRI screens

In order to fulfill their objectives of social responsibility, SRI funds employ a set of screens that restrict the investment opportunities. While the exclusion of companies based on ethical, social, or environmental screens may constrain the risk-return optimization, the use of screens can also be 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' 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 and conventional fund returns around the world looks as follows:

$$\text{Risk-adjusted Return}_{i,t} = \gamma_0 + \gamma_1 \text{Screening Activity}_i + \gamma_2 \text{Fund Characteristics}_{i,t-1} + \gamma_3 \text{Investment Styles}_{i,t} + \gamma_4 \text{Fixed Effects}_{i,t} + u_{i,t} \quad (7)$$

where the Risk-adjusted Return $_{i,t}$ is the four-factor-adjusted return of fund i in month t .³² For SRI funds, Screening Activity $_i$ comprises the following variables: (i) SRI is a dummy variable that is 1 in case of an SRI fund, and zero otherwise (ii) $D(\text{Activism Policy}_i)$ is an indicator variable which equals one if the fund intends to influence corporate behavior through direct engagement or proxy voting, (iii) $D(\text{Community Involvement}_i)$ is an indicator variable capturing whether the fund has adopted a policy of active involvement with local communities, (iv) $D(\text{In-House SRI Research}_i)$ is an indicator variable which equals one if the screening activities of the fund are based on in-house SRI research, (v) $D(\text{Islamic Fund}_i)$ is an indicator variable capturing whether the fund is designed for Islamic investors, and (vi) the measures of the intensity of screening activity (*Number Sin Screens*, *Number Ethical Screens*, *Number Social Screens*, and *Number Environmental Screens* are the number of sin, ethical, social or environmental screens respectively). These variables equal zero for conventional funds.

The control variables in Eq. (7) are partitioned into three groups: Fund Characteristics, Investment Styles, and Fixed Country and Time Effects. The Fund Characteristics are lagged by one month and consist of: (i) Age $_{i,t-1}$, the number of years since the fund's inception, (ii) Size $_{i,t-1}$, the fund size (the natural logarithm of AUM in \$) in month $t-1$, (iii) Risk $_{i,t-1:t-12}$, the total risk of the fund measured as the standard deviation of monthly fund returns from months $t-1$ to $t-12$, (iv) Management Fees $_i$, (the annual management fee), (v) Load Fees $_i$, the sum of the front-and the back-end load fees, and (vi) Family Size $_{i,t-1}$, the size of the fund's family (the natural logarithm of AUM in \$ of all funds belonging to the same family) at month $t-1$. Family Size proxies for the visibility and reputation of fund families in the SRI or conventional fund industries.

³¹ We compute a number of alternative specifications of the Score. First, we measure a fund's risk exposure using the CAPM, and the Score includes only the market risk factor, instead of the four factors. Second, AUM is the average or median size of the fund during its life. Third, we match each SRI fund to one or three, rather than two, conventional funds of the lowest Score. Our main results remain unchanged when using these alternative score calculation (the tables are available upon request).

³² The risk-adjusted return (in local currency) is defined as $\alpha + \varepsilon$ (from Eq. (2)) and is estimated for each individual fund over the full sample period using the benchmark factors by country. The four-factor-adjusted returns are estimated for each fund with a return history of at least 24 months.

Table 6
Returns and SRI screens

		All Funds	SRI Funds	Conventional Funds
		Risk-adjusted return		
Screening activity	Constant	0.007 (3.91)***	0.000 (0.13)	0.006 (3.07)***
	D SRI	–0.006 (4.31)***		
	D Activism Policy	–0.000 (0.24)	–0.000 (0.20)	
	D Community Involvement	0.003 (2.94)***	0.002 (2.34)**	
	D In-House SRI Research	0.001 (1.86)*	0.001 (2.40)**	
	D Islamic Fund	0.004 (1.55)	0.005 (1.68)*	
	Number Sin Screens	–0.000 (0.61)	0.000 (0.22)	
	Number Ethical Screens	0.000 (0.06)	–0.001 (1.50)	
	Number Social Screens	–0.001 (1.78)*	–0.001 (1.66)*	
	Number Environ. Screens	0.001 (1.09)	0.001 (1.36)	
Fund characteristics	Age	–0.000 (0.97)	–0.000 (1.88)*	0.000 (0.44)
	Size	–0.000 (0.81)	0.000 (1.22)	–0.000 (1.85)*
	Risk	–0.034 (1.08)	–0.097 (2.80)***	0.008 (0.19)
	Management Fees	–0.082 (3.14)***	–0.105 (2.54)**	–0.092 (3.67)***
	Load Fees	0.006 (1.10)	–0.003 (0.25)	0.007 (1.23)
	Family Size	–0.000 (1.17)	–0.000 (1.41)	–0.000 (0.47)
Investment styles	D Investing Abroad	–0.002 (1.27)	–0.001 (0.95)	–0.002 (1.25)
	Beta MKT	–0.001 (0.53)	–0.001 (0.16)	–0.002 (0.58)
	Beta SMB	–0.000 (0.34)	–0.002 (1.43)	–0.001 (0.33)
	Beta HML	–0.003 (1.47)	–0.006 (2.22)**	–0.002 (0.97)
	Beta MOM	–0.003 (0.98)	0.002 (0.60)	–0.006 (1.33)
	D Country	Yes	Yes	Yes
Country effect	D Month	Yes	Yes	Yes
Time effect	Observations	48431	15182	33249
	R-squared	0.07	0.11	0.11

This table presents the estimates of determinants of abnormal returns (see Eq. (7)) for SRI funds and non-SRI funds around the world. The dependent variable is the four-factor-adjusted returns of fund i in month t (i.e. $\alpha_i + \varepsilon_{i,t}$ in Eq. (2)). Individual fund returns are in local currency and evaluated from a local investor's perspective. The explanatory variables are defined in Section 6.2. The t -statistics (in absolute values) are in parentheses, calculated with clustered standard errors over two dimensions (by month and by fund) to account for cross-sectional and time-series dependence. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

Furthermore, the Investment Styles variables are: (i) $D(\text{Investing Abroad}_i)$, an indicator variable which equals one if the fund invests abroad, (ii) the exposures to the market, size, growth, and momentum (β_{MKT} , β_{SMB} , β_{HML} , and β_{UMD} as estimated in Eq. (2)). Finally, we also include the fixed country and time effects, i.e. 20 country dummies and 150 year monthly dummies, denoted as $D(\text{Country}_i)$ and $D(\text{Month}_i)$, to control for unobservable differences in money-flows across countries and across the various time periods.

In order to account for the cross-sectional and time-series dependence between fund observations, the standard errors of regressions are clustered over two dimensions (see Peterson, in press).³³ Specifically, we impose 150 clusters by month and 1020 clusters by fund to allow for potential dependence, across funds and months, in the error terms of regressions.

We report the estimation results for Eq. (7) in Table 6. We find the following three interesting results. First, SRI funds on average significantly underperform the matched conventional funds, even after controlling for screening activities and other fund

³³ We thank Mitchell Petersen for providing us the programme to compute the standard errors clustered over two dimensions.

Table 7
Risk and SRI screens

		SRI funds' risk loadings			
		MKT	SMB	HML	UMD
Screening activity	Constant	0.652 (5.57)***	−0.036 (0.14)	0.034 (0.39)	0.183 (5.70)***
	D Activism Policy	−0.009 (0.90)	0.071 (1.62)	−0.014 (1.95)*	0.074 (0.48)
	D Community Involv.	−0.002 (0.06)	−0.04 (0.80)	0.004 (0.11)	0.013 (0.54)
	D In-House SRI Research	−0.019 (0.84)	0.065 (1.83)*	−0.004 (0.17)	−0.023 (1.81)*
	D Islamic Fund	0.119 (1.08)	0.073 (1.14)	−0.211 (5.91)***	−0.011 (0.40)
	Number Sin Screens	−0.003 (0.51)	−0.003 (0.29)	−0.011 (1.65)*	−0.009 (3.00)***
	Number Ethical Screens	0.015 (0.63)	0.046 (2.64)**	0.03 (1.82)*	0.029 (2.46)**
	Number Social Screens	−0.001 (0.07)	−0.015 (1.03)	−0.019 (1.11)	−0.003 (0.62)
	Number Environ. Screens	−0.004 (0.26)	−0.018 (0.98)	0.011 (0.83)	−0.002 (0.15)
	Age	−0.003 (0.73)	0.005 (1.64)*	−0.005 (2.08)*	−0.004 (4.92)***
Fund characteristics	Size	−0.018 (2.94)***	−0.001 (0.34)	0.008 (1.46)	−0.002 (0.72)
	Risk	9.107 (5.00)***	1.796 (0.54)	−1.813 (1.76)*	−3.209 (4.30)***
	Management Fees	−4.49 (2.02)*	0.384 (0.12)	3.271 (1.32)	−2.932 (3.17)***
	Load Fees	0.588 (1.22)	1.373 (2.11)**	0.112 (0.38)	0.479 (2.26)**
	Family Size	0.006 (1.12)	−0.001 (0.05)	0.006 (1.60)	0.002 (0.58)
	D Investing Abroad	−0.068 (2.22)**	−0.093 (1.48)	−0.091 (1.46)	0.004 (0.13)
	D Country	Yes	Yes	Yes	Yes
	Observations	336	336	336	336
Country effect	R-squared	0.46	0.35	0.17	0.25

This table presents the estimates of determinants of risk loadings (Eq. (8)) for SRI funds around the world. The dependent variable is the beta of fund i in month t for factors MKT, SMB, HML or UMD in the four-factor model as by Eq. (2). Individual fund returns are in local currency and evaluated from a local investor's perspective. The explanatory variables are defined in Section 6.2. The t -statistics (in absolute values) are in parentheses, calculated with standard errors clustered by country to account for cross-sectional dependence. *, **, and *** indicate significance levels of 10%, 5%, and 1%, respectively.

characteristics. The four-factor alphas of SRI funds are lower than those of matched conventional funds by 60 basis points per month, or 7% per annum (significant at the 1% level). This is consistent with our earlier findings on the underperformance of SRI funds, and further supports Hypothesis 1(a).

Second, we find that the screening activities of SRI funds have a significant impact on the risk-adjusted returns. Funds that invest in firms adopting policies that focus on community involvement (e.g. providing services to low-income individuals or small businesses in local communities, such as job training, child care, and healthcare) can expect an additional return of 30 basis points per month (3.6% per annum). Furthermore, employing an in-house SRI research team increases the 4-factor adjusted return by 10 basis points per month (1.2% per annum). This finding supports the conjecture that the screening process generates value-relevant information. Fund returns decrease with screening intensity (proxied by the number of SRI screens applied) on social and corporate governance criteria. All else equal, funds with one additional screen are associated with a 1% lower four-factor-adjusted return per annum (significant at the 10% level). These results support Hypothesis 1(b) stating that high SRI screening intensity constrains the risk-return optimization and does not help fund managers to pick underpriced stocks. In addition, this finding also helps us to explain the performance differences in SRI funds across countries as the average screening intensity and the dominant type of screens differ from country to country.

Third, in line with [Chen et al. \(2004\)](#), we find that fund size erodes the returns of conventional funds. Interestingly, the effect is not significant for SRI funds, which implies that larger SRI funds are less subject to decreasing returns to scale. Furthermore, fund management fees significantly reduce the risk-adjusted returns of both SRI and conventional funds. Fund age and risk reduce the risk-adjusted returns of SRI funds, whereas these characteristics do not significantly affect the returns of conventional funds. Finally, the risk-adjusted returns of SRI funds decrease with risk exposures to the 'value' style.

6.3. Risk and SRI screens

Whereas we investigated the impact of screening activities and other fund characteristics on the risk-adjusted returns for SRI funds, we now turn to SRI fund risk loadings and estimate the following regression:

$$\text{Risk Loading}_{i,t}^F = \gamma_0 + \gamma_1 \text{Screening Activity}_i + \gamma_2 \text{Fund Characteristics}_i + \gamma_3 \text{Fixed Effects}_i + \theta_{i,t} \quad (8)$$

where $\text{Risk Loading}_{i,t}^F$ stands for the betas of SRI fund i for factor F which in turn stands for MKT, SMB, HML, or UMD. The risk loadings are estimated over the full sample period using Eq. (2) for each fund. The definitions of the explanatory variables are given in Eq. (7). The standard errors of regressions are clustered by country to allow for potential dependence across funds from the same country.

As fund characteristics such as size and risk may be determined endogenously, we do not claim to explain the direction of the causality based on the results from Table 7. We find that the risk loadings of SRI funds depend on their screening activities. SRI funds adopting a policy of shareholder activism exhibit higher loadings on the growth style, whereas funds employing an in-house SRI research team invest more in small-cap stocks. Islamic funds and SRI funds with sin screens have higher loadings on the growth style, whereas employing ethical screens increases investment exposures to small-cap stocks. Interestingly, social and corporate governance screens, as well as environmental screens, do not have a significant influence on the risk loadings. In addition, we also show that the characteristics of mutual funds relate to the risk loadings of SRI funds. For instance, older SRI funds invest more in small-cap stocks, and funds with higher management fees have lower exposure to high-beta stocks or a momentum strategy.

To summarize, we have shown in this section that the screening criteria of SRI funds are a significant determinant of the risk-adjusted returns of SRI funds. While screening intensity on social and corporate governance criteria have a negative impact on performance, other characteristics like e.g. in-house SRI research have a positive impact. Interestingly, we do not find evidence for the decreasing returns to scale phenomenon in the SRI fund industry.

7. Conclusion

This paper contributes to the literature on socially responsible investments and stakeholder governance as it studies the risk and return characteristics of nearly all ethical/SRI mutual funds around the world. Our main hypothesis is that ethical/social/environmental/governance considerations influence the stock prices and that investors pay a price for the use of SRI screening by funds. The main reason why SRI investors may be willing to pay such a price for ethics or social responsibility is based on aversion to corporate behavior which is deemed unethical/asocial. Investors of SRI funds may thus explicitly deviate from the economically rational goal of wealth-maximization by pursuing social objectives. Alternatively, one would expect SRI funds to outperform its benchmark portfolios or conventional funds if SRI screening processes unveil new value-relevant information not completely embedded in the share prices.

We find that SRI funds in many European, North-American and Asia-Pacific countries strongly underperform domestic benchmark portfolios (such as the Fama-French-Carhart factors). In particular, the average risk-adjusted returns of the SRI funds in Belgium, Canada, France, Ireland, Japan, Malaysia, the Netherlands, Singapore, Sweden, the UK and the US range from -2.2% to -6.5% per annum. However, when we compare the alphas of the SRI funds with those of matched conventional funds, we conclude that there is no statistically significant evidence that SRI funds underperform their conventional counterparts in most countries (as the differences in alphas are not statistically different from zero). Exceptions are the SRI funds in France, Ireland, Sweden, and Japan for which we find evidence consistent with investors paying a price for ethics: these SRI alphas are 7% to 4% per annum below the conventional alphas. Only these latter results are consistent with the underperformance hypothesis of SRI funds.

As the underperformance of SRI and actively managed conventional funds may be due to transaction costs (such as fees), we compute the gross alphas of all fund portfolios before deducting management fees. The gross returns of about half of the country portfolios underperform the benchmarks by more than 3% per annum. We also measure the potential welfare costs of inadequate diversification – which may be induced by the SRI screens – by considering investors' opportunity costs of bearing idiosyncratic risk. We do not find any such costs.

In case the conventional four-factor pricing model does not capture an 'ethics or SRI' style, the alpha may reflect the expected returns associated with the missing factor. In addition, the screening activities of SRI funds vary across countries and they may influence the SRI fund risk loadings on this ethics or SRI style. An alternative explanation is that, to the extent that SRI funds invest in companies that are considered ethical or socially responsible, the companies meeting high ethical standards may be overpriced by the stock markets. We find that SRI funds do indeed have higher loadings on the ethics factor than conventional funds. However, after controlling for the ethics factor, the SRI funds still underperform the benchmarks (now comprising five factors) in many countries and the SRI alphas are significantly lower than those of conventional funds in Canada, Ireland and Japan. Overall, we find that adding the ethics factor to the four-factor model has only limited influence on the risk-adjusted returns of ethical funds. Consequently, the underperformance of ethical funds is not driven by a missing ethics style factor. Furthermore, the fact that – over time – a higher fraction of the return variation of ethical funds can be replicated by the well-known risk factors, may indicate that SRI funds gradually converge to conventional funds by holding similar assets in their portfolios (or that conventional funds become more ethical or socially responsible).

We also examine whether a 'smart money' effect exists for SRI funds by investigating the relation between SRI money flows and future performance. We find mixed results: 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.

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 corporate governance and social screens yield lower risk-adjusted returns. All else equal, funds with one additional screen are associated with a 1% lower 4-factor-adjusted return per annum. This is consistent with the underperformance hypothesis of SRI funds stating that high SRI screening intensity constrains the risk-return optimization and does not help fund managers to pick underpriced stocks. In addition, employing an in-house SRI research team increases the 4-factor adjusted return by 10 basis points per month.

Finally, we find that fund size erodes the returns of conventional funds. Interestingly, the effect is not significant for SRI funds, which implies that larger SRI funds are not subject to decreasing returns to scale. Fund management fees significantly reduce the risk-adjusted returns of both SRI and conventional funds.

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