SOCIALLY RESPONSIBLE INVESTMENT FOR PENSION STAKEHOLDERS:

EVIDENCE FROM JAPAN 1997 ~2005

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Abstract

As the level of retirement-related assets has grown, so too has public and private interest in so-called “Socially Responsible Investment” (SRI), an investment strategy that employs criteria other than the usual financial risk and return factors when selecting firms in which to invest. This study evaluates whether SRI indices would alter portfolio risk and return patterns for the new defined contribution pension plans currently on offer in Japan. Typical investment biases are also identified and controlled. We conclude that SRI funds can be included as an option, albeit with some cost; consequently, mandatory investment in SRI portfolios cannot reasonably be justified.

JEL Classification: G11; G20; G23
Keyword: SRI; Ethical investments; Performance evaluation; Pension funds

1 This paper develops and extends earlier joint research (Jin, Mitchell and Piggott forthcoming). A substantial extension was made as section 3.4 in this paper in identifying the dynamics of style biases of Japanese SRI. Funding for this research was provided by the Economic and Social Research Institute, Japan, the Pension Research Council, and the Australian Research Council. The author thanks Morningstar and the Securities Institute Research Centre of Australia (SIRCA) for valuable data resources. John Evans, Akira Kawaguchi, Kiyohiko Nishimura, Adrian Pagan, Makato Saito, Kenji Sekine, Michael Sherris, Susan Thorp, Emil Valdez, and participants at the 2005 ESRI Collaboration meetings in Tokyo provided useful research collaboration, advice, and comments. The author retains full responsibility for opinions and any errors.
# TABLE OF CONTENTS

1 Introduction.................................................................................................................................. 5

2 Literature Review....................................................................................................................... 7
   2.1 The Emergence of SRI ........................................................................................................ 7
   2.2 SRI Criteria ..................................................................................................................... 8
   2.3 Screening Agencies and Research Centres....................................................................... 10
   2.4 Major SRI Indices ........................................................................................................... 11
   2.5 SRI Performance and the Underlying Selection Criteria................................................ 14
   2.6 Conclusions of SRI Literature Review............................................................................ 19

3 Social Responsible Investment in Japan................................................................................... 21
   3.1 An Analysis of SRI Indexes in Japan .............................................................................. 21
   3.2 A Quick Look at SRI Performance in Japan .................................................................. 24
   3.3 Survivorship Bias and Benchmark Selection .................................................................. 27
   3.4 SRI Portfolio Performance in Japan: CAPM vs Multifactor Analysis.......................... 30
      3.4.1 CAPM Single Factor Model....................................................................................... 30
      3.4.2 Multifactor Model .................................................................................................... 31
      3.4.3 Time Sensitivity and Rolling Regression................................................................... 32
      3.4.4 Weighting Bias and Equally Weighted SRI Portfolio ............................................. 35
      3.4.5 Conclusions of SRI Portfolio Performances............................................................ 37
   3.5 SRI Flag Value of Japanese Stocks: A Econometric Panel Data Analysis...................... 38

4 Conclusions and Implications .................................................................................................... 43

Appendix A The Economic Rationale behind Socially Responsible Investment......................... 45
Appendix B Preliminary Data Processing..................................................................................... 50
Appendix C JBP index Construction and its Subsets................................................................ 53
Appendix D 3-Year Rolling Monthly Return.............................................................................. 55
Appendix E 3-Year Rolling Alpha and Beta............................................................................... 58
Appendix F SRI Portfolio Performance in Japan........................................................................ 60
Appendix G JBP Panel Data Construction................................................................................... 61
Appendix H SRI Sector Distribution: Evidence from JBP563.................................................... 62

BIBLIOGRAPHY.............................................................................................................................. 63
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Number</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE 1 POSITIVE AND NEGATIVE SR CRITERIA USED BY THE FRIENDS’ PROVIDENT STEWARDSHIP FUND (UK)</td>
<td>9</td>
</tr>
<tr>
<td>TABLE 2 REVIEW OF MAJOR SRI INDICES AROUND THE WORLD</td>
<td>13</td>
</tr>
<tr>
<td>TABLE 3 SUMMARY OF RELATIONSHIP BETWEEN CORPORATE FINANCIAL PERFORMANCE AND CORPORATE SOCIAL PERFORMANCE BY PUBLICATION DECADE</td>
<td>17</td>
</tr>
<tr>
<td>TABLE 4 RELATIONSHIP BETWEEN CORPORATE FINANCIAL PERFORMANCE AND CORPORATE SOCIAL PERFORMANCE BY PERFORMANCE PERIOD</td>
<td>17</td>
</tr>
<tr>
<td>TABLE 5 RELATIONSHIP BETWEEN CORPORATE FINANCIAL PERFORMANCE AND CORPORATE SOCIAL PERFORMANCE FOR KEY COUNTRIES</td>
<td>18</td>
</tr>
<tr>
<td>TABLE 6 STOCKS INCLUDED IN KEY JAPANESE SRI INDICES</td>
<td>22</td>
</tr>
<tr>
<td>TABLE 7 TOP 10 CONSTITUENT WEIGHTS IN FTSE4GOOD AND MORNINGSTAR SRI INDICES</td>
<td>23</td>
</tr>
<tr>
<td>TABLE 8 RETROSPECTIVE PERFORMANCE OF JAPANESE SRI INDEX FUNDS (1997 ~ 2005)</td>
<td>26</td>
</tr>
<tr>
<td>TABLE 9 JBP INDEX AND ITS SUBSETS AS OF MAY 2003</td>
<td>53</td>
</tr>
<tr>
<td>TABLE 10 SUMMARY OF JBP BY SRI AND MARKET CAP GROUPS</td>
<td>54</td>
</tr>
<tr>
<td>TABLE 11 PRE AND POST EVALUATION OF SRI PERFORMANCE IN JAPAN (1997 ~ 2005) WITH JBP AS BENCHMARKS</td>
<td>60</td>
</tr>
<tr>
<td>TABLE 12 JBP PANEL DATA AND ITS SRI COMPOSITION</td>
<td>61</td>
</tr>
<tr>
<td>TABLE 13 SECTOR DISTRIBUTION OF SRI IN JAPAN</td>
<td>62</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FIGURE 1 FINANCIAL PERFORMANCE OF MAJOR SRI INDICES IN JAPAN (1997~2005)</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>FIGURE 2 RETROSPECTIVE PERFORMANCE OF SRI INDEXES IN JAPAN (1997~2005)</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>FIGURE 3 CAPM ROLLING REGRESSION OF CAP WEIGHTED SRI PORTFOLIO</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>FIGURE 4 MULTIFACTOR ROLLING REGRESSION OF CAP WEIGHTED SRI PORTFOLIO</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>FIGURE 5 CAPM ROLLING REGRESSION OF EQUALLY WEIGHTED SRI PORTFOLIO</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>FIGURE 6 MULTIFACTOR ROLLING REGRESSION OF EQUALLY WEIGHTED SRI PORTFOLIO</td>
<td>36</td>
</tr>
</tbody>
</table>
1 Introduction

It is sometimes suggested that socially-targeted decisions can converge with individual retirement accumulation goals and investment strategies, by mediating the process of social targeting through individual preferences and the capital market. This study examines the pros and cons of socially responsible investment (SRI) criteria for pension investors in Japan, to develop a better understanding of how such criteria might be introduced into investment strategies for pension plans, and what the implications of SRI rules might be on investment performance.

There are diverse definitions of SRI, both in the West and in the growing Asian funded pension market. Defining what constitutes SRI is difficult, since criteria selected to target “in favor of” or “against” companies are often subjective and vary from one group, individual, and nation, to another. In addition, formulating benchmarks and evaluating performance for such socially targeted investments is a complex, involved, and sometimes costly objective process.

In the Japanese case, interest in SRI rules is just beginning to evolve, as indicated by recent amendments to the methods used for investment of Japanese Postal Saving System (JPSS) assets. Fiduciaries are gradually moving JPSS investment allocations away from social targeting toward more conventional financial criteria, in part because of concerns that sub-optimal investment decisions were made in the past (Lincoln, 2001). Nevertheless, many Japanese intellectuals, business leaders, and

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2 For example, the Social Investment Forum (http://www.socialinvest.org/Areas/SRIGuide/) defines SRI as “[i]ntegrating personal values and societal concerns with investment decisions …[i]t][c]onsiders both the investor's financial needs and an investment’s impact on society. With SRI, you can put your money to work to build a better tomorrow while earning competitive returns today.”

3 A discussion of SRI activity in Asia is available at ASRIA [2002], which states that “sustainable and Responsible Investment (SRI), also known as Socially Responsible Investment, is investment which allows investors to take into account wider concerns, such as social justice, economic development, peace or a healthy environment, as well as conventional financial considerations.” Globally, Ambachtsheer (2001) argues that large public pension funds can do social good by virtue of their investment behavior.
politicians remain convinced that socially targeted investment of some kind will be important for the future of the nation (Nishimura and Saiko, 2003).

The pension asset market in Japan is very significant. In March 2005, the Bank of Japan reported total pension fund assets at JPY 93.6 trillion. Since 2001, Japan has been encouraging the development of defined contribution (DC) plans, and there is currently debate over whether SRI portfolios should be offered in these plans. While Japan SRI portfolios are quite small, they are likely to grow rapidly in coming years.

In what follows, therefore, we begin with a literature review in the first section about SRI criteria, funds, and screening agents and international findings on SRI financial performance. In the following section, we start with discussion of the introduction of SRI developments in Japan and a comparison between the two most important SRI indices marketed in Japan, namely Morningstar SRI and FTSE4Good. The following compares the performance four hypothetical SRI portfolios derived from these two SRI indices with that of standard Japanese stock market indices. Then we create a hypothetical Japanese equity benchmark index with a will to adjust the survivor bias that might be introduced in backward looking analysis. In order to dynamically portray the SRI behaviour as a portfolio, thereafter, we run 36-month sliding window rolling regressions of CAPM and multifactor model respectively, so that not only are we able to identify the performance variation of SRI in Japan but also reveal the transition patterns of its underlying investment style biases. Subsequently we turn to the question of whether an SRI designation contains market information in its own right regardless of the weights attaching on each SRI stock, and again we use the hypothetical benchmark index to address this question in a panel data econometric analysis. A final section concludes.

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4 This compares with USD7.3 trillion in US pension funds [Bank of Japan 2005]
2 Literature Review

2.1 The Emergence of SRI

Put simply, socially responsible or ethical investment seeks to invest in companies which make a positive contribution to the world and seeks to avoid companies which harm the environment, people, or wildlife. The contemporary roots of SRI may be traced to the 1920s, when the Methodist Church in North America decided to invest in the stock market, having previously viewed this as a form of gambling. While moving toward the equity market, elders wished to exclude certain types of companies, specifically those involved in alcohol and gambling. The Quakers soon followed, and they were especially keen to avoid weapons manufacture.\(^5\) Public demand for ethical investment vehicles took off in America with the launch of the Pax Fund in 1971 as a reaction against the Vietnam War, which led some investors to question how their money was being used.

In the UK, the history of ethical investment goes back to the late 1960s and early 1970s, when several groups explored this type of investment fund. One of the individuals involved was Charles Jacob, then an investment manager with the Methodist Church, who prepared a proposal for the first ethical unit trust in 1973. At that time, it failed to obtain approval from the Department of Trade, but a few years later permission in principle was granted. In 1983, the Friends Provident fund (founded in 1832 to provide life assurance for members of the Society of Friends, more commonly known as Quakers) offered to manage an ethical fund with the investment criteria determined by a separate committee. This led to the launch of the Stewardship Unit Trust, Stewardship

\(^5\) See also [http://www.moneyextra.com/faqs/ethfaq3.htm](http://www.moneyextra.com/faqs/ethfaq3.htm)
Life Fund and Stewardship Individual Pension Fund in June 1984. Charles Jacob was appointed as a founding member of the Stewardship Committee of Reference.

2.2 SRI Criteria

Three types of socially responsibility investment (SRI) are commonly identified in the literature on the subject. A first approach, often termed the “exclusion” strategy, is based on the idea of a boycott of certain firms or sectors. This “negative screening” approach characterized early SRI activity, and such funds merely excluded investment in specific activities or industries such as tobacco, gambling, alcohol and armaments. As a second approach, “positive screening” criteria may be applied, where investors actively seek companies involved in environmentally sound, socially progressive, businesses. A third option might be thought of as “activist,” based on the belief that ethical or socially responsible investment should go beyond simple ‘avoidance’ or ‘supporting’ approaches. Often called an 'engagement' or ‘shareholder advocacy’ approach, the activist investment fund will not apply any screening criteria to its investment choices. Rather, the fund manager will develop a dialogue with a targeted set of companies on a specific number of social and environmental issues. The aim is to encourage them to adopt “best business practices”. Those companies which demonstrate a good performance in this area are encouraged to continue to set the highest standards.

An illustration may be helpful. The Friends' Provident Stewardship fund is the oldest-established ethical investment fund in the UK. It seeks to invest in companies which make a positive contribution to society, in its belief, and to avoid those which harm the world. Some “harmful” activities are regarded so seriously that Stewardship will not invest in such a company under any circumstances; these include arms manufacturers. In other cases, harmful behavior may be counterbalanced by exceptional performance on the positive side of the equation. These marginal cases are scrutinized
closely and reviewed more frequently than those which are more clear-cut. The Stewardship fund uses both positive and negative criteria to decide whether a company is a suitable investment. Areas of focus are set out in Table 1.

<table>
<thead>
<tr>
<th>Positive criteria</th>
<th>Negative Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplying the basic necessities of life</td>
<td>Environmental damage and pollution</td>
</tr>
<tr>
<td>Providing high quality products and services which are of long term benefit to the community</td>
<td>Unnecessary exploitation of animals</td>
</tr>
<tr>
<td>Conservation of energy or natural resources</td>
<td>Trade with or operations in oppressive regimes</td>
</tr>
<tr>
<td>Environmental improvements and pollution control</td>
<td>Exploitation of Third World countries</td>
</tr>
<tr>
<td>Good relations with customers and suppliers</td>
<td>Manufacture and sale of weapons</td>
</tr>
<tr>
<td>Good employment practices</td>
<td>Nuclear power</td>
</tr>
<tr>
<td>Training and education</td>
<td>Tobacco or alcohol production</td>
</tr>
<tr>
<td>Strong community involvement</td>
<td>Gambling</td>
</tr>
<tr>
<td>A good equal opportunities record</td>
<td>Pornography</td>
</tr>
<tr>
<td>Openness about company activities</td>
<td>Offensive or misleading advertising</td>
</tr>
</tbody>
</table>


Similar criteria are applied by a number of other funds, including the Australian Ethical Investment Ltd., an ethical investment group which has been operating in Australia since 1986. Crutchley et al. (1998) focus on the activism of one large US public pension fund, the California Public Employee Retirement System (CALPERS), and that set of authors found that “visible and aggressive activism” was associated with
higher shareholder wealth. Work on the same question by Nesbitt (1994; 1995) concludes that activism had no negative impact on corporate performance, and it may have even been marginally positive.

Another factor to consider, as Woodward (1991) suggests, is that SRI is dynamic in its application of criteria; many of the issues of concern to current ethical investors differ from the issues considered important in earlier times. This is equally true of cultural differences, a dimension which has become clear since the SRI movement spread into Asia. The R-BEC001 corporate integrity questionnaire and index developed by a group at Reitaku University in conjunction with Daiwa Corporation has recently been proposed for the Asian region to aid in the development of SRI funds.6

Evaluation categories include management’s stance towards corporate social responsibility (CSR), ethical policies, implementation plans, internal systems, and risk management for legal compliance failure. Kawamura (2002) points out that CSR criteria vary considerably across countries, depending on cultural, religious, and other factors. He believes that the R-BEC001 approach constitutes a Japan-specific approach. He also notes that negative SRI screens could vary with cultural norms. For instance, the Kingsway Fund Management’s SRI screen does not rule out alcohol but does rule out tobacco. In the Asian context, it may be the case that corporate-owned gambling groups often donate to charity and hence be deemed socially acceptable; by contrast, privately-operated casinos might not have the same cachet.

2.3 Screening Agencies and Research Centres

Most ethical funds managers use external consultants to develop their social/ethical screens, such as the independent Ethical Investment Research Services

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6 For further information see http://www.csrwire.com/sfarticle.cgi?id=1416
This organization was established in 1983 with the help of churches and charities which needed a research organization to help them put their principles into practice when investing their pension funds and other assets. That group was later joined by several other screening agencies including the major index holders. Other important agencies include Ethibel, Innovest, ASrIA, EIA, and Vigeo. In addition to external research groups, many fund managers such as the Friends’ Provident Stewardship group have an in-house research team as well as a panel which sets criteria and establishes and monitors the approved list of companies.

Companies which find their way into ethical investment portfolios will have been screened to see if they match the fund's investment criteria on business practices and environmental impact. Ethical fund managers often argue that they know a great deal more about the companies in which they invest than do ordinary fund managers. The ethical screening process requires ethical managers to ask more questions to identify investment opportunities.

2.4 Major SRI Indices

Several of the major stock market indices around the world have now established SRI indices; Table 2 provides a guide to their attributes. The first such index to be launched was the Domini Social 400 index, based on the S&P 500, launched in 1990. Over the last five years, this has been joined by several others. The Dow Jones Sustainability World Index (DJSI World), established in September 1999, currently includes 318 stocks. It aims to track the top 10% of companies in the Dow Jones Global Index that lead the field in terms of corporate sustainability. It also reports sub-indices, which comprise the Global Sustainability Index excluding “sin” industries – alcohol, gambling, tobacco, armaments. Extensive questionnaire based research establishes an

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7 For additional information see http://www.eiris.org/index.htm
index of corporate sustainability. The index is thus heavily weighted to a positive type approach. Dow Jones has also launched a Europe based index “DJSI STOXX”. In the Japanese context, important indices include the FTSE4Good indices, a Japanese variant of which has just been launched and which we discuss in detail below, and the Morningstar index, the first Japanese SRI index fund. Less well established indices include the NPI Social index\(^8\), the Ethibel Index\(^9\), GIPS\(^10\), the ASPI Index\(^11\), and ESIG\(^12\).

\(^8\) see [http://www.ukbusinesspark.co.uk/npiaaaaa.htm](http://www.ukbusinesspark.co.uk/npiaaaaa.htm) for NPI
\(^9\) see [http://www.ethibel.org/subs_e/4_index/main.html](http://www.ethibel.org/subs_e/4_index/main.html) for Ethibel
\(^10\) see [http://www.bancoval.es/pdf/gips_perform_e.pdf](http://www.bancoval.es/pdf/gips_perform_e.pdf) for GIPS
\(^12\) see [http://www.isse.ucar.edu/newshp/](http://www.isse.ucar.edu/newshp/) for ESIG
### Table 2 Review of Major SRI Indices Around the World

<table>
<thead>
<tr>
<th>SRI indices</th>
<th>Index Universe</th>
<th>Launch Date</th>
<th>Number of Constituents</th>
<th>Constituent Entry Requirements</th>
<th>Index Oversight</th>
<th>Index Type</th>
<th>Index Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Jones Sustainability World Index (DJSI World)</td>
<td>DJGI Universe (3000 largest global free floating market cap)</td>
<td>8-Sep-99</td>
<td>318 (sep 2004)</td>
<td>Economic, Environment, social</td>
<td>DJSI World Index Design Committee and the DJSI STOXX Index Design Committee</td>
<td>free-float market cap weighted,</td>
<td>review constituents annually and review weight quarterly</td>
</tr>
<tr>
<td>Dow Jones STOXX Sustainability Indexes (DJSI STOXX)</td>
<td>Dow Jones STOXX 600</td>
<td>15-Oct-01</td>
<td>top 20% leading SRI Companies in each industry group</td>
<td>Economic, Environment, social</td>
<td>DJSI World Index Design Committee and the DJSI STOXX Index Design Committee</td>
<td>free-float market cap weighted,</td>
<td>review constituents annually and review weight quarterly</td>
</tr>
<tr>
<td>Domini Social 400 Index (DSI 400)</td>
<td>S&amp;P 500 plus</td>
<td>May 1990</td>
<td>400</td>
<td>250 from S&amp;P 500, 100 big-cap not in S&amp;P which passed the exclusionary screens, 50 companies with exceptional social characteristics.</td>
<td>Kinder Lydenburg Domini (KLD)</td>
<td>Bias to growth small cap</td>
<td>turnover 6-8% in a typical year</td>
</tr>
<tr>
<td>FTSE4GOOD GLOBAL</td>
<td>1915 stocks in FTSE GLOBAL</td>
<td>709</td>
<td>1. environmental sustainability 2.stakeholders, 3.human rights.</td>
<td>FTSE4Good Policy Committee</td>
<td>Market Cap Basis, Bias to large cap</td>
<td>Twice a year</td>
<td></td>
</tr>
<tr>
<td>MS SRI JAPAN</td>
<td>3600 listed Japanese Stocks</td>
<td>30-May-03</td>
<td>150 unless MA or out of business</td>
<td>corporate governance, HR, consumer relationship, social, environment. ALSO tradable criteria</td>
<td>Morningstar, Public Resource Centre, Prof Tanimoto</td>
<td>Market Cap Basis and market liquidity consideration</td>
<td>review constituents annually and review weight twice a year</td>
</tr>
<tr>
<td>FTSE4GOOD JAPAN</td>
<td>481 stocks in FTSE Japan</td>
<td>21-Sep-04</td>
<td>166 (sep 2004)</td>
<td>1. environmental sustainability 2.stakeholders, 3.human rights.</td>
<td>FTSE4Good Policy Committee</td>
<td>Market Cap basis, free float adjusted. Bias to large cap</td>
<td>Twice a year</td>
</tr>
</tbody>
</table>

2.5 SRI Performance and the Underlying Selection Criteria

As noted above, the SRI movement has a several-decade long history in the West. Accompanying this movement have been many empirical research studies reporting results on both the positive and the negative side of the ledger.\textsuperscript{13} The discussion usually begins with financial analysts pointing out that using non-economic ethical or social screens when designing an investment portfolio will tend to circumscribe investment in certain stocks but overweight others. As a result, many predict that ethical investment will entail financial sacrifice. For example, so-called “sin” industries (e.g. those in the alcohol, gambling, tobacco, and pornography sectors) have sometimes been singled out for exclusion on moral grounds. Ironically, firms in these sectors have often outperformed market benchmarks such as the S&P500. Luck and Tigrani (1994) suggested that avoiding “sin” may be costly to one’s portfolio. It is sometimes argued that larger firms are more likely to be screened out using this criterion, inasmuch as they are more likely to have exhibited at least one unacceptable (“sinful”) practice. On the other hand, fund managers and screening agencies are reluctant to exclude large cap stocks. SRI screening is expensive and fund managers are only likely to do it, or have it done, on larger cap stocks. As well, larger companies are more likely to be able to afford the processes for SRI accreditation. Proponents of the SRI approach have also argued that ethical investors may be rewarded with a positive premium in financial return for adherence to principle and diligent stock selection (Domini 1989). Further, companies known to be ethical in their conduct may enjoy lower monitoring costs (De George, 1997; Lacey, 1991).

\textsuperscript{13} This survey relies in part on Tippet’s (2001) useful summary.
In evaluating the existing research, it is also important to note that many different approaches to measure SRI performance have been adopted in prior studies. For instance, some researchers focused on the role of ethics in corporate boardrooms; others examined whether firms invested in South Africa during the apartheid era; and still others asked whether investments were targeted to creating jobs in a geographic region. Generally the research compares the financial performance of SRI portfolios with major market indices, but sometimes analysts simply use a range of indicators to rate corporate or a portfolio’s social performance.

A further issue is that there is no consensus on how to measure CSP and CFP. Two categories of approaches are widely used to analyze the financial performance of SRI portfolios, namely risk-adjusted performance analysis and multiple factor regression analysis. In some cases, additional financial values have been calculated and compared, including among others, Jensen’s Alpha (Luther et al. 1992, 1994; and Tippet 2001); excess return, tracking error, beta, and the Sharpe ratio (Geczy 2003), Treynor ratio (Hussein and Omran 2005); the information ratio (Wood BARRA, 1992); and M-square analysis (Edwards and Samant, 2003). Some empirical studies sought to measure the pure impact of SRI on firm financial performance by controlling other factors using multifactor regression models (Bauer et al., 2005: Luck and Tigrani, 1994; Russo and Fouts, 1997). For example, Basso and Funari (2002) attempt to measure the relative efficiency of decision-making in the presence of a multiple input/multiple output production structure. Dillenburg et al (2003) constructs a “Total Social impact” (TSI) rating scheme to measure qualitative CSP measures.

To review the extensive international literature in a systematic way, it is helpful to recognize that most studies focus on the relationship between corporate financial performance (CFP) and corporate social performance (CSP). A slightly older review by Griffin and Mahon
(1997, hereafter GM) divided research findings into studies reporting a positive relationship between CFP and CSP, those finding a negative relationship, and an inconclusive set. That review reported that the apparent relationship was a positive one, overall. Of the studies which appeared in the 1970s, 12 indicated superior SRI performance, four reported no effect, and one reported inferior performance. Of those published in the 1980s, 14 found superior performance, five reported no effect, and 16 reported inferior performance. During the 1990s, seven reported superior performance and three reported underperformance.

We have updated the GM summary in Table 3. Focusing only on studies not reviewed by GM, we find two additional published studies from the 1980s had mixed results, with one showing inconclusive result and the other a negative effect; for the 1990s, seven studies were positive, three inconclusive, and three negative; six studies appearing from 2000 on have one positive results, three inconclusive, and two negative.

We further classify the studies from Table 3 by decade in Table 4, where we note that there appears to be an increasingly positive link between CFP and CSP over time. One reason for this might be that the criteria for classifying a corporation as “socially responsible” have changed over time. In particular, researcher emphasis appears to have shifted from “negative” or exclusionary criteria in the early days (requiring omitting firms that manufacture socially “bad” products such as tobacco), with more recent emphasis on “positive” criteria (requiring the inclusion of firms with transparent corporate governance and human resource management practices).14

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14 Another possible reason for the positive trend in published results could be publication bias, if it is difficult for author to publish negative or inconclusive studies.
### Table 3 Summary of Relationship Between Corporate Financial Performance and Corporate Social Performance by Publication Decade

<table>
<thead>
<tr>
<th>Positive</th>
<th>No Effect/Inconclusive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980s (2 studies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990s (13 studies)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Griffin &amp; Mahon (1997)</td>
<td></td>
<td></td>
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<tr>
<td>Russo &amp; Fouts (1997)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verschoor (1998)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000s (6 studies)</td>
<td></td>
<td></td>
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<tr>
<td>Geczy(2003)</td>
<td></td>
<td></td>
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<tr>
<td>Evans (2004)</td>
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</tbody>
</table>


### Table 4 Relationship between Corporate Financial Performance and Corporate Social Performance by Performance Period

<table>
<thead>
<tr>
<th>Study Period</th>
<th>Positive</th>
<th>No Effect/Inconclusive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 1980</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1981 ~ 1985</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1986 ~ 1990</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1991 ~ 1995</td>
<td>7</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1996 ~ 2000</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>after 2000</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 5 Relationship between Corporate Financial Performance and Corporate Social Performance for Key Countries

<table>
<thead>
<tr>
<th>Positive</th>
<th>No Effect/Inconclusive</th>
<th>Negative</th>
</tr>
</thead>
</table>
| Global (2 studies) | | Rudd (1981)  
| | | Evans(2004)  
| Australia (3 Studies) | Cummings(2000)  
| | | Tippet (2001)  
| | Bauer, Otten & Rad (2005)  
| United Kingdom (6 studies) | Luther, Matako & Corner(1992)  
| | | Wood (1992)  
| | Havemann&Webster (1999)  
| | | Gregory, Matako, & Luther (1997)  
| United States (12 studies) | Reyes & Grieb (1998)  
| | | Munnell(1983)  
| | Geczy(2003)  
| | | Luck & Tigrani (1994)  
| | | Bauer,Koedijk & Otten (2005)*  
|Luck & Pilotte(1992) | |  
|Herremans,Akataporn & McInnes(1993) | |  
|Diltz(1995) | |  
|Griffin & Mahon(1997) | |  
|Russo & Fouts(1997) | |  
|Verschoor(1998) | |  
|Edwards & Samant(2003) | | *

* Bauer, Koedijk & Otten (2005) had empirical studies on both the UK and the US.

Further evidence of the mixed results is available from early studies of US private-sector investors which find that SRI screens reduced investment returns (cf. Luck and Tigrani 1992 and Munnell 1983); a negative finding was also confirmed for public pension plan investment managers (cf. Mitchell and Hsin, 1997; Useem and Mitchell, 2000). Using earlier data (to 1980), Rudd (1981) concludes that unless there are serious diversification handicaps from the screen, there should be no downside to investing in SRI portfolios. Extending the analysis to include more recent years shows no statistically significant deleterious effect (Munnell and Sunden 2001). These studies do not control particularly well
for risk, however. A handful of more sophisticated studies does take account of risk variation, but here too, findings remain mixed.

Focusing on country studies, we also offer Table 5 which reviews studies for the UK, the US, and Australia published over the last two decades. Once again, these studies are grouped according to whether they report SRI performance above, below, or the same as market benchmarks. UK research reveals no clear pattern. Wood (1992) found underperformance due to small cap bias between 1988 and 1992; Bauer et al (2005) examined 103 US and UK ethical funds and found ethical trusts underperformed in the US but outperformed in the UK. Other researchers found either a range of UK results for subsectors of the market, or no conclusive evidence. In Australia, where SRI was introduced fewer than 20 years ago, only three studies have been conducted. The analysis by Cummings (2000) indicated that SRI funds outperformed the all-industry average, but they underperformed the small cap index (though not significantly). By contrast, Tippet (2001) reported underperformance relative to market for a period covering the 1990s. More interestingly, Bauer et al (2005) suggests that Australian ethical mutual funds underwent a “learning curve” before catching up the traditional mutual fund. The weight of the US evidence to performance superiority by SRI portfolios: of the ten US studies, six report superior SRI performances, while three concluded that underperformance was the norm. It is also worth noting that the positive performance studies were the more recent ones.

2.6 Conclusions of SRI Literature Review

To sum up, we can draw three conclusions from the SRI literature review. First, socially responsible investment has been attracting increasing commercial and academic attention over the last two decades.
Second, there is a dynamic interacting relationship between the primary two questions in the SRI research: “Why and how do we invest ethically?” and “Are we doing well while doing good?” The increasing popularity of SRI inevitably would raise the interests of better understandings of SRI financial performances. The empirical results of SRI performance, on the other hand, would give feedbacks to the SRI stakeholders, leading to further discussion and consideration of better implementations of socially responsible investment.

Third, it is nearly impossible to draw a clear picture of the financial performance of socially responsible investment worldwide. The diverging empirical findings of SRI performance might be due to the sample-specific issues and the methodology-specific concerns. For sample-specific issues, Elton et al (1996 and 2001) raised the problem of data accuracy, such as omission/selection bias, dividend & distribution, merger & acquisitions and the other corporate event adjustments. Bauer, Otten and Rad (2005) had a close look at the other sample-specific issues, such as country bias and time sensitivities. In term of methodology of financial analysis, the CAPM-inspired risk adjusted financial measures\(^{15}\) were widely used to create an initial understanding. However, a single factor CAPM model will be no longer sufficient to identify the variety of investment biases and the financial uncertainties. “Prior to 2000, few studies of SRI used state-of-art financial tools such as multifactor risk models.” (Kurtz 2005) After then, most recent SRI studies, e.g. Bauer et al. (2005), adopted a Fama and French (1993) three-factor model or its extension Carhart (1997) four-factor model. A rolling regression approach was used in their research to capture a “catching up phase” for SRI.

\(^{15}\) From CAPM, Jensen’s alpha (Jensen 1968), beta, Sharpe Ratio (Sharpe 1966) and Treynor ratio (Treynor 1965) were introduced and widely used in investment performance evaluations.
3 Social Responsible Investment in Japan

Few English-language papers discuss the topic of SRI funds in Japan (c.f. ASRIA, (2003), Kawamura (2002, 2004), and Solomon et al. (2004)), and while they are informative on the newly developing SRI movement in Japan, they offer little in the way of technical analysis of the performance of Japanese SRI funds. To this, we turn next.

There are currently two established SRI indices and around 10 SRI funds in Japan, most of which are environmentally-focused. The first SRI index was introduced by Morningstar in May 2003; in September of 2004, FTSE launched its FTSE4Good index for Japan. Both indices focus on socially responsible corporations in Japan. Our approach in addressing SRI performance in Japan is to focus on these two SRI indices, which we compare against key market indices. Because the indexes were established only recently, we also take a backward look at the performance of the SRI indices (from Jan 1997 to Feb 2005). The time period used is, in part, imposed by data availability; but also SRI advocates argue that it is only in the last few years that SRI principles have been explicitly and consistently adhered to by responsible firms. For this reason, they argue that a longer time period may in fact confuse the analysis.

3.1 An Analysis of SRI Indexes in Japan.

Our comparison relies on the components of the Morningstar-SRI Japan and the FTSE4Good indices as of September 2004. In that month, Morningstar reported 150 stocks in its SRI index, whereas there were 166 in the newly launched FTSE4Good set. Taken as a whole, 233 Japanese stocks were included in SRI Japan indices, but only 83 stocks were common to both indices. As indicated in Table 6, if we regarded these 233 Japanese stocks as the possible universe of socially responsible Japanese corporations, the FTSE4Good index includes 71% of the SRI stocks, and Morningstar includes 64% of the set.
Table 6 Stocks Included in Key Japanese SRI Indices

<table>
<thead>
<tr>
<th>INDICES</th>
<th>STOCKS</th>
<th>% of SRI stocks</th>
<th>TOP 10 STOCKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morningstar SRI</td>
<td>150</td>
<td>64%</td>
<td>10</td>
</tr>
<tr>
<td>FTSE4GOOD</td>
<td>166</td>
<td>71%</td>
<td>10</td>
</tr>
<tr>
<td>In both indices</td>
<td>83</td>
<td>36%</td>
<td>8</td>
</tr>
<tr>
<td>In at least one index</td>
<td>233</td>
<td>100%</td>
<td>12</td>
</tr>
</tbody>
</table>

Source: Author’s computations based on data provided by FTSE4Good and Morningstar SRI Japan as of September 2004.

Our further analysis also indicates some rather interesting differences between the two SRI-Japan indices, both in terms of the companies that are included and also in their weights. One striking finding is that the two indices differ strongly with regard to the top ten stocks included (Table 7). The top 10 group represents about 40% and 35% of the index weights for the FTSE4Good Japan and Morningstar SRI Japan indices, respectively. Most prominently, FTSE4Good includes the two large motor companies Toyota and Honda, while these are omitted by Morningstar. Conversely, Morningstar includes the Mizuho Financial Group and Takeda Chemical, but these are excluded by FTSE4Good.

It is also interesting that the weights of the eight stocks that both indices list in their top 10 differ markedly. Thus, Toyota and Honda represent about 15% of the FTSE4Good Japan index, while Mizuho Financial Group and Takeda account for about 9% of the Morningstar index. Although both indices used free floating market capitalization as the basis of their index weights, it is apparent that important differences remain in the top 10 stock rankings for the two SRI indices.
Table 7 Top 10 Constituent Weights in FTSE4GOOD and Morningstar SRI Indices

<table>
<thead>
<tr>
<th>STOCK CODE</th>
<th>NAME</th>
<th>Weight in FTSE</th>
<th>Rank in FTSE</th>
<th>Weight in Morningstar</th>
<th>Rank in MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7751</td>
<td>Canon Inc.</td>
<td>4.40%</td>
<td>2</td>
<td>3.43%</td>
<td>5</td>
</tr>
<tr>
<td>9437</td>
<td>NTT DoCoMo,Inc.</td>
<td>3.90%</td>
<td>3</td>
<td>3.14%</td>
<td>7</td>
</tr>
<tr>
<td>6752</td>
<td>Matsushita Electric Ind.</td>
<td>3.50%</td>
<td>5</td>
<td>2.90%</td>
<td>8</td>
</tr>
<tr>
<td>6758</td>
<td>SONY Corp.</td>
<td>3.30%</td>
<td>6</td>
<td>3.19%</td>
<td>6</td>
</tr>
<tr>
<td>8316</td>
<td>Sumitomo Mitsui Financial</td>
<td>2.80%</td>
<td>7</td>
<td>3.61%</td>
<td>4</td>
</tr>
<tr>
<td>7201</td>
<td>Nissan Motor</td>
<td>2.60%</td>
<td>8</td>
<td>2.34%</td>
<td>9</td>
</tr>
<tr>
<td>9432</td>
<td>NTT</td>
<td>2.40%</td>
<td>9</td>
<td>5.31%</td>
<td>1</td>
</tr>
<tr>
<td>8766</td>
<td>Milla Holdings, Inc.</td>
<td>2.00%</td>
<td>10</td>
<td>2.33%</td>
<td>10</td>
</tr>
</tbody>
</table>

Sub Total Weights of Common 8 in indices 24.90% 26.24%

Sub Total Weights of Special 2 in FTSE4GOOD 15.00%

Sub Total Weights of Special 2 in Morningstar 8.70%

Total Weights of TOP 10 in Indices 39.90% 34.94%

Source: Author’s computations based on data provided by FTSE4Good and Morningstar SRI Japan as of Sep 2004.

As another example, NTT is ranked first in the Morningstar SRI, representing 5.31% of the portfolio, but that firm ranks only 9th by FTSE4GOOD, representing 2.40% of the mix.

Why do these two SRI portfolios differ so substantially? First, the two rating firms report that they draw from a different underlying stock universe in developing their indices. Elements in the FTSE4Good Japan list are selected from the FTSEJapan list. By contrast, Morningstar’s SRI stocks are selected from 3600 listed Japanese companies. Second, the
stock screening processes used by the two SRI groups are unlikely to be identical. This is because FTSE indicates that it relies more heavily on international SRI conventions,\textsuperscript{16} while Morningstar appears to adhere to more localized criteria.\textsuperscript{17}

In evaluating the performance of these two indexes, we are faced with the problem that the firms included in the two sets may have been influenced by “cherry-picking;” that is, the particular firms selected might have been influenced not only by positive screening reports, but also because of positive past returns. If this were the case, a positive retrospective statistical relationship between social and financial performance could be contaminated by selection bias. This problem is difficult to solve. The most persuasive study would have to compare the future performance of the SRI indices selected years earlier, against future market experiences.

3.2 A Quick Look at SRI Performance in Japan

In the meanwhile, we believe that a retrospective analysis does provide useful information. Specifically, we compare the financial performance of several alternative Japanese SRI portfolios against the major Japanese stock index TOPIX.\textsuperscript{18} A top 10 constituent portfolio and a full index portfolio were constructed respectively for Morning Star SRI Japan (MS) and FTSE4GOOD Japan (F4G) according to their launching weights as of in May 2003 and Sep 2004. The portfolios then were rebalanced monthly using their initial weights constantly.\textsuperscript{19}

Results of our retrospective analysis appear in Figure 1. One striking finding is that all four SRI portfolios outperformed the TOPIX index over the 98-month sample period (Jan


\textsuperscript{17} See \url{http://www.morningstar.co.jp/sri/about.htm} Morningstar SRI was developed with the Public Resource Centre and Professor Kanji Tanimoto of Hitotsubashi University.

\textsuperscript{18} TOPIX is selected as a proxy for the Japanese stock market because it is a market-cap weighted index, although it is not as popular as the NIKKEI225.

\textsuperscript{19} Dividends were not included in the comparison against TOPIX, which only reflects price movement.
1997 ~ Dec 2003). Indeed, it is rather remarkable that, while the TOPIX lost about 20% in this span, all of the alternatively-weighted SRI portfolios achieved positive returns. Figure 1 indicates that FTSE portfolios gained above 60% while Morningstar SRI hypothetical funds achieved over 50% total return in a 8-year recession period.

**Figure 1 Financial Performance of Major SRI Indices in Japan (1997~2005)**

![Graph showing financial performance of major SRI indices in Japan from 1997 to 2005.](image)

Sources: Author’s calculations based on data supplied by the Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters. A top-10 and a full index portfolio were constructed respectively for Morningstar SRI Japan (MS) and FTSE4GOOD Japan (F4G) according to their launching weights as of May 2003 and Sep 2004. The portfolios were then rebalanced monthly using their initial weights. Some of the stocks were not listed over the whole period of study, so their weights were shared by other stocks accordingly. Accumulation TOPIX (index with dividend reinvestments) was not available until June 2001, so dividends were not included in this comparison. See Table 12 in appendix for details.

Of course, higher returns may come with higher risks, so next we ask whether holding a Japanese SRI portfolio might have reaped higher performance in exchange for risk. Table 8 shows that the SRI portfolios we have devised were generally not significantly more volatile than the Japanese market indices, at least over the period from 1997-2005. For example, the
annualized monthly volatilities were around 16% and 17% for the two responsible full-index funds, just slightly below or equal to that of the TOPIX (17%). Further, as the entire stock market was moving, none of the funds appeared more volatile than the market as a whole, as indicated by the fact that all the betas of SRI portfolios are below one.

<table>
<thead>
<tr>
<th>Year</th>
<th>MS10</th>
<th>F4G10</th>
<th>MS150</th>
<th>F4G166</th>
<th>TOPIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>17.50%</td>
<td>19.30%</td>
<td>-3.90%</td>
<td>-0.20%</td>
<td>-20.10%</td>
</tr>
<tr>
<td>1998</td>
<td>-12.70%</td>
<td>-18.70%</td>
<td>-1.10%</td>
<td>-4.10%</td>
<td>-7.50%</td>
</tr>
<tr>
<td>1999</td>
<td>61.40%</td>
<td>90.30%</td>
<td>49.30%</td>
<td>58.20%</td>
<td>58.40%</td>
</tr>
<tr>
<td>2000</td>
<td>-3.30%</td>
<td>-16.80%</td>
<td>1.00%</td>
<td>-4.00%</td>
<td>-25.50%</td>
</tr>
<tr>
<td>2001</td>
<td>-13.40%</td>
<td>-9.60%</td>
<td>-10.90%</td>
<td>-9.30%</td>
<td>-19.60%</td>
</tr>
<tr>
<td>2002</td>
<td>-7.20%</td>
<td>-7.70%</td>
<td>-10.50%</td>
<td>-10.40%</td>
<td>-18.30%</td>
</tr>
<tr>
<td>2003</td>
<td>13.80%</td>
<td>19.00%</td>
<td>21.90%</td>
<td>27.30%</td>
<td>23.80%</td>
</tr>
<tr>
<td>2004</td>
<td>4.50%</td>
<td>7.80%</td>
<td>7.80%</td>
<td>8.10%</td>
<td>10.20%</td>
</tr>
<tr>
<td>2005*</td>
<td>-0.90%</td>
<td>-1.20%</td>
<td>1.20%</td>
<td>1.70%</td>
<td>2.40%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>51.70%</td>
<td>62.50%</td>
<td>51.70%</td>
<td>65.30%</td>
<td>-20.00%</td>
</tr>
<tr>
<td>Annualized % Return</td>
<td>5.23%</td>
<td>6.12%</td>
<td>5.24%</td>
<td>6.35%</td>
<td>-2.69%</td>
</tr>
<tr>
<td>Annualized % Volatility</td>
<td>17.60%</td>
<td>22.70%</td>
<td>16.00%</td>
<td>17.00%</td>
<td>17.00%</td>
</tr>
</tbody>
</table>

Sources: Author’s calculations based on data supplied by the Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters). * There are only two months data for 2005. A top-10 and a full index portfolio were constructed respectively for Morningstar SRI Japan (MS) and FTSE4GOOD Japan (F4G) according to their launching weights as of May 2003 and Sep 2004. The portfolios were then rebalanced monthly using their initial weights. Some of the stocks were not listed over the whole period of study, so their weights were shared by other stocks accordingly. Accumulation TOPIX (index with dividend reinvestments) was not available until June 2001, so dividends were not included in this comparison. See also Table 12 in appendix.

To summarize, these results indicate that the Japanese SRI portfolios constructed using a constant-weighting method with the Morningstar and FTSE4Good set of stocks outperformed the market averages using TOPIX over the 98 months ending in Feb 2005, without taking on additional market risk. Yet caveats remain. First, few years of data are available to track SRI fund performance. Second, it must be recognized that because the SRI
indices are quite new in Japan, retrospective analysis runs the risk of cherry-picking and other bias. Additional years of data will be required to generate firmer conclusions.

### 3.3 Survivorship Bias and Benchmark Selection

Thus far we have used TOPIX as the main Japanese benchmark against which we compare various hypothetical SRI portfolios derived from two key SRI indices in Japan. But a problem with this is that the TOPIX is a dynamically-changing index, whereas our analyses of SRI stock portfolios are of necessity backward-looking. Thus potential benefits of a hypothetical SRI portfolio are easily conflated with the benefits of hindsight. We have already mentioned cherry-picking, but there is also the broader issue that performance of the TOPIX index reflects corporate failures, mergers, and acquisitions, which a backward-looking approach does not take into account.

Accordingly, we seek to correct for this inconsistency by developing a hypothetical market portfolio of our own against which we compare the performance of SRI portfolio. This market portfolio, for convenience labeled as JBP\(^{20}\), is constructed from the Nikkei 500 and the FTSE Japan index,\(^{21}\) augmented to include those Morningstar SRI stocks not included in either index, for a total of 563 stocks. We then consider these as a ‘universe’ of current Japanese stocks, from which the SRI stocks may be drawn. Next we construct what we call a “JBP SRI index” (hereafter JBP-SRI), which includes all the stocks that ever appeared in either the Japanese Morning Star SRI or FTSE4GOOD index. Altogether, 255 SRI stocks\(^{22}\) are included, all of them drawn from our JBP benchmark.

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\(^{20}\) JBP stands for Japanese Benchmark Portfolio.

\(^{21}\) The number of stocks within the FTSE Japan index varies around 480 through time; there were 479 stocks included as of 15 March 2005.

\(^{22}\) Morning Star replaced 22 constituents in their monthly published Japanese SRI index about one year after its initial launch.
To construct both portfolios, we use dynamic market capitalization as weights, rebalance monthly, and, consistent with our earlier analysis, we exclude dividends. Both the JBP and JBP-SRI indices include only stocks which existed in September 2004, and for which at least two years of data are available. Both are thus subject to symmetric survivor bias. In our comparison analysis, we therefore implicitly assume that this bias has similar effects on both portfolios.

**Figure 2 Retrospective Performance of SRI Indexes in Japan (1997~2005)**

Source: Author’s calculations based on data supplied by the Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters. JBP stands for a hypothetical portfolio constructed by the author as a representation of the Japanese stock investment universe; it contains 563 stocks and is weighted by market cap and rebalanced monthly. The portfolio comprises all stocks in the NK500 index, the FTSE Japan index, and the Morningstar SRI index as of Sep 2004 (as long as there were at least 24 monthly return observations over the period). The rationale for the JBP index is to control for survivorship and new company bias. JBP SRI is the SRI subset of JBP index containing 255 SRI stocks, either from MS150 or F4G166. This combined SRI portfolio was rebalanced monthly using market capitalization. Accumulation TOPIX (index with dividend reinvestments) was not available until June 2001, so dividends were not included in this comparison. See also Table 12 in appendix.

Dividend effects were quite evenly distributed to SRI stocks and non SRI stocks, therefore including dividends does not change results. We do reinvest the dividend in the following regression exercises though. See also Appendix B for the detail steps of dividend adjustment.

---

23 Dividend effects were quite evenly distributed to SRI stocks and non SRI stocks, therefore including dividends does not change results. We do reinvest the dividend in the following regression exercises though. See also Appendix B for the detail steps of dividend adjustment.
Figure 2 plots the price performance of the JBP and JBP-SRI funds over our sample period; for comparison, we also reproduce the TOPIX index line. The results are striking: the JBP and the JBP-SRI portfolios track each other closely over the sample period, while the TOPIX return line falls significantly below these two. In other words, the apparently superior performance of the SRI portfolio detected in the previous section when compared to the TOPIX evaporates when we use our alternative all-Japan market benchmark (JBP).

We also note that the combined SRI portfolio (JBP SRI) substantially underperformed the various hypothetical SRI index portfolios such as MS150 or F4G166. A possible explanation could be the different weights attached to various stocks and the rebalancing strategies. The constituent weights of firms in both SRI index funds are not precisely consistent with their market capitalization due to liquidity, investability and other possible considerations. This finding also shows the importance of separating the active weighting effects from the genuine characteristics of the SRI.

In the following sections, therefore, JBP is used as the benchmark (market proxy) to evaluate the SRI performance in Japan, so that the well-concerned survivorship bias can be largely controlled. Also, we start to reinvest the dividends to reflect the complete returns for SRI investors.

---

24 Morningstar adjusts the market capitalization weights on the basis of liquidity considerations, while FTSE adopts the concept of “investability.”
25 Since the accumulative TOPIX index (RIC TOPXDV) was not available until Jun 2001, we do not include dividend in the previous analysis to avoid the inconsistency.
3.4 SRI Portfolio Performance in Japan: CAPM vs Multifactor Analysis

To study the SRI portfolio performance in Japan, we pool all the 255 SRI stocks together, creating a subset of JBP (563 stocks), namely JBP SRI, which is dividend inclusive and monthly rebalanced according to market cap.26

3.4.1 CAPM Single Factor Model

Our starting point of performance analysis is CAPM based single index model as shown as formula (2.1).

\[ r_{SRI,t} - r_{f,t} = \alpha + \beta(r_{\text{JMP},t} - r_{f,t}) + \varepsilon_i \]  \hspace{1cm} (2.1)

where

- \( r_{SRI,t} \) return of JBP SRI portfolio in month t.
- \( r_{f,t} \) risk free return in Japan in month t.
- \( r_{\text{JMP},t} \) return of JBP (Japanese equity benchmark) in month t.
- \( \alpha \) Jensen’s alpha.
- \( \beta \) beta (market risk exposure).
- \( \varepsilon_i \) error term.

The CAPM regression results are consistent with our finding from Figure 2. The combined JBP SRI portfolio slightly outperformed the JBP universe over the 98 months sample period up to Feb 2005, around 5 basis points per month. Meanwhile, the SRI portfolio was found having slightly higher market exposure than average. The beta was around 1.01. But neither \( \alpha \) nor \( \beta \) were significantly larger than zero and one respectively. At this point, we can conclude that the SRI portfolio performance in Japan was not significantly different from the market as a whole.
3.4.2 Multifactor Model

Investment style biases have been well documented in the SRI literature review. It has been a common finding that the SRI portfolios are usually biased to small cap stocks and growth stocks (Luck And Pilotte 1992, Wood 1992, Gregory et al.1997 and Bauer et al. 2005).

It would be interesting to see whether the recent SRI development had similar patterns in Japan. A Fama and French (1993) 3-factor (FF3F) model is used here to identify the pure SRI performance impact from the traditional investment biases. The FF3F model is also known as a performance attribution model. The estimating equation can be written as formula (2.2).

\[
    r_{SRI,t} - r_{f,t} = \alpha + \beta_{SMB} (r_{S,t} - r_{B,t}) + \beta_{HML} (r_{H,t} - r_{L,t}) + \epsilon_t
\]

where

- \( r_{S,t} \) return of bottom 30% small cap subset of JBP index in month t
- \( r_{B,t} \) return of top 30% big cap subset of JBP index in month t
- \( r_{H,t} \) return of top 30% high book to market ratio subset of JBP in month t
- \( r_{L,t} \) return of bottom 30% low book to market ratio subset of JBP
- \( \beta_{SMB} \) coefficient on small cap vs big cap bias
- \( \beta_{HML} \) coefficient on value vs growth bias.

With the control of various investment biases, the SRI portfolio underperformed the market by around 5 basis points per month. Its market exposure also increased to around 1.02. Again, none of the estimates were significant away from zero and one respectively. In term of investment styles of SRI in Japan, significant growth bias was found over the sample period from Jan 1997 to Feb 2005, which is similar to the other countries. Meanwhile Japanese SRI, being quite different from the findings elsewhere, was found significantly biased to the big

---

26 Please see the appendix B for preliminary data processing.
cap stocks. A possible reason for this could be the different criteria and implementation of SRI in Japan. In other words, those growth big cap stocks were more likely to have the incentives and resources to satisfy and comply with the Japanese specific SRI criteria.

### 3.4.3 Time Sensitivity and Rolling Regression

It is quite possible that a mutual fund outperforms the market over certain period and underperforms the market from then on. On top of the static results we had before, it is also worthwhile to understand the dynamic of the SRI performance and the style biases. In order to do that, we repeat the CAPM and FF3F model with a 36-month sliding window. Therefore, 63 set of estimates are obtained over the 98 months sample period. A similar rolling regression methodology was firstly introduced by Bauer, Otten and Rad (2005) in a study of Australian ethical investment.

The rolling regression results were plotted in the Figure 3 and Figure 4 for the CAPM and FF3F model respectively. A firm line and two dashed lines represent the dynamic track of the 3-year rolling estimate and its 95% confidence interval for each parameter. Three straight lines are the static estimate and its confidence interval for each parameter over the entire sample period, representing the average level of the parameter.\(^{27}\)

As shown in Figure 3, the CAPM estimates of SRI portfolio in Japan showed some kind of structure break in the middle of 2003. The Jensen’s alpha of the SRI portfolio dropped dramatically immediately after the first Japanese SRI index was introduce by Morning Star, averagely from a positive 10 basis point per month down to negative 10 basis points.

---

\(^{27}\) This should be consistent with our findings in the single run of CAPM and multiple factor model.
Figure 3 CAPM Rolling Regression of Cap Weighted SRI Portfolio

Figure 4 Multifactor Rolling Regression of Cap Weighted SRI Portfolio
The post-launch underperformance of SRI might be due to the selection bias that those ethical stocks with sound tracking records were more likely to be finally chosen as constituents of the SRI index. But the better tracking record might not able to continue, particular when those companies started to face higher compliance cost to stay in the SRI index. On the other hand, by looking at the changing pattern of beta, the market exposure of SRI stocks was decreasing from 1.02 to well below one. The SRI compliance process might be the reason to encourage risk-averse management style of those ethical companies.

Furthermore, it is interesting to find out the genuine drivers of SRI performance without the distortions due to the growth and big cap biases. The rolling regression results are summarised in Figure 4. With the control of the investment biases, the trends of the alpha and beta became quite stable, approximately underperforming the market by 5 basis points per month, and remaining a slightly high 1.025 beta market exposure.

More interestingly, the style biases of SRI portfolio were changing over time. As shown in the bottom two charts in Figure 4, the small cap parameter on SMB is showing strong negative over the entire period, and even declining after the initial introduction of SRI index, which means that the big cap bias of Japanese socially responsible investment was strengthened after the officially introduction. Meanwhile, the growth bias of SRI portfolio was substantially weakened no sooner after the first launching of the Morning Star SRI index, which also confirmed our finding of “growth-to-value” transition within the SRI world.
3.4.4 Weighting Bias and Equally Weighted SRI Portfolio

The rate of return of an investment portfolio is essentially market cap weighted average rate of return of underlying stocks. Obviously, the big cap stocks could substantially influence or even dominate the performance of the entire portfolio. For example, TOYOTA takes up over 11% market capitalisation of FTSE4GOOD index. A 9% rally of the stock will move the index by about 1%. But the Japanese motor giant was not included in another SRI index constructed by Morning Star. Hence, it would be inappropriate for us to make any SRI empirical conclusions without considering such kind of big cap distortion.

In order to identify the performance impact of weights attached on each underlying stocks, an equally weighted SRI portfolio, namely JBP SRIE, is constructed as a subset of JBP, which is containing 255 stocks, rebalanced monthly with the equal weight. The monthly return of JBP SRIE is just simple average return of all 255 underlying SRI stocks. We repeat the 3-year rolling regression for the new portfolio, and results are summarised in Figure 5 and Figure 6 by using the CAPM and the multifactor model respectively.

The results are striking. Over the 98 months up to Feb 2005, the Japanese SRI stocks, if equally weighted, significantly outperformed the market by averagely 50 basis points per month. Meanwhile the equally weighted SRI portfolio contained quite low market risk, although the rolling beta value jumped from 0.6 up to around 0.9 between 2002 and 2003.

With the style-bias control, the multifactor model generates much smoother lines for alpha and beta rolling estimates, with the central estimates remaining almost unchanged though. The equally weighted SRI portfolio, as expected, significantly biased towards small cap, but the degree of bias is declining over time. Meanwhile, we also find a similar post-launch “growth-to-value jump” for Japanese SRI regardless of the different weighting strategy.
Figure 5 CAPM Rolling Regression of Equally Weighted SRI Portfolio

Figure 6 Multifactor Rolling Regression of Equally Weighted SRI Portfolio
3.4.5 Conclusions of SRI Portfolio Performances

In the section, we study the group behavior of SRI in Japan from Jan 1997 to Feb 2005, with the special attentions to the various issues and biases that we found in some of SRI literature. First, in order to control the survivorship bias in a retrospective analysis, we combine the current constituents of FTSE Japan and NIKKIE 500 and create a 563-stock cap-weighted JBP index to replace the TOPIX as the benchmark.

Second, CAPM single index model shows that the SRI marginally outperformed the market with slightly high market risk exposure. But, FF3F model claims that the CAPM findings can be largely explained by the underlying style biases. The remaining pure SRI impact is found to be slightly negative. The FF3F model also implies that SRI in Japan was significantly biased to growth and big cap stocks. It is worth noting that the big cap bias is substantially different from the SRI implementations elsewhere.

Third, we repeat the CAPM and multifactor model by running 36-month rolling regressions. Not only are we able to study the average levels but also trace the dynamic trends of relative performance, market risk exposure and the style biases of the SRI in Japan. A typical “selection bias”, i.e. pre-launch outperformances followed by post-launch underperformances of SRI in Japan, could be identified by CAPM rolling regression. However, the performance disturbance can be largely attributed to the strengthening big cap concentration and the post-launch “growth-to-value” style switch as shown by a rolling FF3F study.

Finally, we repeat the rolling regression studies upon a newly created equally weighted SRI portfolio, and find that the Japanese SRI would have much better performance if the big cap bias had been properly hedged.
3.5 SRI Flag Value of Japanese Stocks: A Econometric Panel Data Analysis

Our last finding is focused on the SRI performance as a group or portfolio. At the firm level, however, it is still a question that whether new information is provided by knowing that a firm has been selected to be a member of a SRI portfolio. To investigate this question, we choose a panel containing 496 stocks\(^{28}\), and pool the data across both time and stocks in order to learn whether any information is carried by an SRI designation on a stock-by-stock basis, regardless of the weights.\(^{29}\)

Accordingly, Model 1 compares stock-by-stock performance with the overall market represented by the JBP index and asks whether an SRI flag adds statistical explanatory power. Specifically, we regress the excess return of each JBP stock over the 98 months for which we have data, on the monthly excess return of the market and an indicator which indicates whether a stock has been designated as SRI-admissible in either the MS-SRI or FTSE4Good set. The hypothesis is that if an SRI flag contained important market information, the flag would be significant. The model 1 is thus given by formula (2.3):

$$
r_{i,t} - r_{f,t} = \beta (r_{M,t} - r_{f,t}) + \gamma \cdot SRI_i + \alpha
$$

(2.3)

where \(r_{i,t}\) is the return of \(i\)th stock in \(t\)th month; \(r_{f,t}\) is the risk free return in \(t\)th month; \(r_{M,t}\) is the market return in \(t\)th month, represented by JBP496, cap weighted and monthly rebalanced; \(\beta\) is the market risk exposure indicator; \(\gamma\) is information value of SRI flag on return; \(\alpha\) is the combination of constant and residual. In Model 2 (formula 2.4), we add controls for market cap bias\(^{30}\) and investment style bias\(^{31}\).

\(^{28}\) Among 563 stocks in our JBP index, only 496 stocks were fully listed. See also appendix for the details of the panel.

\(^{29}\) Big cap stocks often dominate the overall performance of a portfolio, and therefore the equally-weighted approach may be a good compromise to control for weighting bias.

\(^{30}\) Small company effects and fund size effects were suggested by Luck et al. [1992], Wood [1992] and Gregory et al. [1997].

\(^{31}\) See also Bauer et al. [2005] for more detail on investment style bias in SRI analysis.
\[ r_{i,t} - r_{f,t} = \beta(r_{M,t} - r_{f,t}) + \gamma \cdot \text{Sri}_i + \beta_{\text{cap}} \cdot \log \text{Cap}_{i,t} + \beta_{\text{pb}} \cdot \text{PB}_{i,t} + \alpha \] (2.4)

where \( \log \text{Cap}_{i,t} \) represents the logarithm of the market cap of \( i \)th stock in \( t \)th month in the unit of billion Yen; and \( \text{PB}_{i,t} \) stands for the price to book value ratio of \( i \)th stock in \( t \)th month; \( \beta_{\text{cap}} \) is the risk control coefficient on market cap variation; \( \beta_{\text{pb}} \) is the risk control coefficient on growth/value investment style bias.

The two models above are designed to reveal the ability of SRI flag to carry additional \textit{alpha}. One step further, one might also be interested in finding the potential information of risk. Model 3 (Formula 2.5) adds an additional interaction term \( (r_{\text{IMP},t} - r_{f,t}) \times \text{Sri}_i \) on top of Model 2, so that the impact of SRI flag on \textit{beta} can be studied. Finally, Model 4 adds three typical Japanese sector dummy variables. Furthermore, a pre- and post-comparison is also carried out around the time when the first SRI index was launched in May 2003.

\[ r_{i,t} - r_{f,t} = \beta(r_{M,t} - r_{f,t}) + \gamma \cdot \text{Sri}_i + \gamma_{\text{SRI}}(r_{M,t} - r_{f,t}) + \beta_{\text{cap}} \cdot \log \text{Cap}_{i,t} + \beta_{\text{pb}} \cdot \text{PB}_{i,t} + \alpha \] (2.5)

Econometric estimates appear in Table 9. Model 1 indicates that the SRI flag is not significantly different from zero for the period prior to the initial launch of the SRI index. Using post-launch data, the SRI flag has a negative impact on financial performance. In Model 2, we also expand the regression models to take account of differences in cap size and price-to-book value ratios. Here we find a significantly positive pre-launch impact and a negative but slightly reduced post-launch impact when controlling on market capitalization bias and growth/value style bias. In Model 3, we evaluate the impact on intercept (alpha) and also the potential information on the slope (beta). Interestingly, the negative impact of alpha is no longer statistically significant, but the betas of SRI stocks are now significantly lower than the average of non SRI stocks. Model 4 adds tests for sectoral effects by adding three
typical Japanese sector dummies, but these are mostly not significant, and do not change our Model 3 findings.

From a statistical perspective, then, we conclude that the SRI flag is informative about a stock’s relative performance before the concept of SRI was officially introduced to Japan; that is, *ex ante*, SRI stocks did perform better. By contrast, the post-launch evidence suggests that holding a SRI portfolio might involve financial sacrifice\(^\text{32}\) *vis a vis* an unrestricted market portfolio. The pre-launch result may be attributable to selection criteria used in constructing the SRI indices. It appears that stocks which were outperforming the market in the period prior to index launch would be more likely included. The post-launch result is of course consistent with conventional portfolio theory [Rudd 1981 and Chami et al 2002], although others (for example Evans and Guido [2004]) find no underperformance in a global context.

Other possible explanations also exist for our results. Bauer, Koedijk and Otten [2005] and Bauer, Otten and Rad [2005], for example, provide evidence that SRI funds tend to perform poorly in their early years, when going through what they term a “learning effect” or “catching up phase”, and subsequently perform much better. As well, returns might be reduced because of the cost of compliance associated with SRI accreditation. Our results also suggest that Japanese SRI companies are risk adverse\(^\text{33}\) in their market performance. A possible explanation for this is that firms adhering to SRI principles, or striving to meet SRI criteria, take less risk and have a generally more conservative management style than others.

Finally, it is worthwhile to note our results was based on the 98-month sample period up to Feb 2005, when Japanese small cap and growth stocks (with high PB ratio) in average

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\(^\text{32}\) Risk-adjusted underperformance is estimated at around 18 basis points per month (2.2% p.a.) below the market average. See Appendix A for more detail.
significantly outperformed the big cap and value stocks respectively. Hence the information value carried by SRI flag may change as the market fundamentals change.

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33 The cap-weighted SRI portfolio had beta of 0.92 with JBP hypothetical market portfolio as the benchmark in a post launch analysis. Further, the volatility of SRI portfolio was about 74 basis points lower than that of the proxy of market.
Table 9 The Power of SRI in Japan 1997~2005: A Pre and Post Panel Data Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td>Pre#</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Excess return of JBP</td>
<td>0.834**</td>
<td>1.158**</td>
<td>0.832**</td>
<td>1.149**</td>
</tr>
<tr>
<td>SRI flag</td>
<td>0.0004</td>
<td>-</td>
<td>0.0062**</td>
<td>0.0045**</td>
</tr>
<tr>
<td>SRI * Excess return of JBP</td>
<td>0.0072</td>
<td>-</td>
<td>0.223**</td>
<td>-0.0074</td>
</tr>
<tr>
<td>LogCap In Billion Yen</td>
<td>-0.056**</td>
<td>-</td>
<td>-0.056**</td>
<td>-0.056**</td>
</tr>
<tr>
<td>Price to Book Value Ratio</td>
<td>-0.0003</td>
<td>0.0003</td>
<td>-0.0003</td>
<td>-0.0003</td>
</tr>
<tr>
<td>COM &amp; SVC</td>
<td>0.0032</td>
<td>0.0011</td>
<td>0.0032</td>
<td>0.0011</td>
</tr>
<tr>
<td>AUTO</td>
<td>0.0054**</td>
<td>-0.0026</td>
<td>0.0054**</td>
<td>-0.0026</td>
</tr>
<tr>
<td>ELC</td>
<td>0.1194</td>
<td>0.1484</td>
<td>0.1226</td>
<td>0.1515</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>40,920</td>
<td>11,823</td>
<td>40,920</td>
<td>11,823</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on data supplied by the Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters.

Model 1 is an OLS regression of the monthly excess returns of each stock in JBP against the excess returns of JBP index and a stock-specific SRI flag; Model 2 adds additional risk controls of big/small cap bias and value/growth style bias; Model 3 adds an interaction term between SRI flag and excess return of JBP; Model 4 extends Model 3 by adding three typical Japanese sector dummy variables. COM&SVC stands for the IT communication and service sector; AUTO represents the automobile sector and ELC refers to the Electric Machinery sector. ** and * denote significance of the coefficient at the 1 and 5 per cent levels respectively, using robust standard errors.

# Pre refers to the 77 months of the sample period prior to the formal launch of SRI indices in Japan (Jan 1997 to May 2003); Post stands for the rest of the sample period from June 2003 to Feb 2005 for a total of 21 months.
4 Conclusions and Implications

We examine socially responsible investments in Japan, focusing on possible roles for SRI in pension portfolios. Because the two key indices in Japan, the Morningstar-SRI Japan and FTSE4Good Japan indices, were established only recently, we opt first to take a backward look at the performance of these indices for the eight years between December 1996 and Feb 2005. Looking backward, we find that the benchmark selection is critical in evaluating the SRI performance. The widely advertised SRI outperformance against TOPIX could be largely explained by the hindsight selection bias, particularly prior to the official introduction of SRI in Japan. A stock-by-stock panel data analysis also confirms the pre-launch outperformance of SRI stocks. However, the post-launch evidence suggests that SRI involves some financial sacrifice, but with a possible reduction in exposure to overall market risk.

Quantitatively, neither a multifactor portfolio analysis nor a stock-by-stock panel data regression could help us identify the significant SRI impact upon the financial performance. But we do find different risk profile for the Japanese SRI, such as the strengthening big cap bias, the diminishing growth bias, and the reducing market risk exposure. Therefore, we believe that the future performance of SRI in Japan would be largely driven by the dynamics of those risk exposures.

The implication is that Japanese historical evidence offers no support for the position that Japanese pension participants would benefit from being *required* to invest in firms included on SRI lists. At the same time, we also find no strong reason to *preclude* Japanese pension participants from investing part of their pension assets in an SRI-based portfolio if they so desire, provided participants are made aware of the potential costs of this decision.34

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34 For a recent analysis of ill-advised portfolio choices by pension plan participants, see Douglass et al. [2004].
To this end, the experience of one of the largest US pension plans may be instructive, that of TIAA-CREF, a $325B (US) retirement system covering faculty and staff in higher educational and research institutions. This large and influential pension system offers pension participants several investment choices, among them a Social Choice Account which currently manages more than $6 billion (US) in assets. Individual employees and retirees may elect to invest in this, or several other funds, as they see fit.

SRI funds in Japan are still quite new, but we anticipate that they are likely to grow in popularity as pension asset pools develop and as individual employees are granted more influence over their pension asset allocation decisions. Accordingly, our analysis should be of use in demonstrating how performance measures for socially-targeted investment funds might be constructed and evaluated in the Japanese context. Additional research is required to evaluate whether SRI funds should be expected to play a different role in defined benefit versus defined contribution pensions, and also whether public sector versus corporate pension funds should take a different stance regarding SRI policies. Further analysis is also required on how pension supervisors and regulators might respond if socially-targeted investments in pension funds were to become very popular in Japan. As pension asset pools become increasingly important in financing the retirement benefits of a growing elderly population, clearer policies will be needed defining when and how pensions might be permitted to opt for SRI investments.
Appendix A  The Economic Rationale behind Socially Responsible Investment

- Motivation of SRI -- investor behavior analysis
  - Investment horizon
    - Short term -- mean-variance rational investor
    - Long term -- sustainable return with more integrity
  - Investor choices (analogy of food consumption choices)
    - Financial return -- utilitarian benefits (nutrition and flavor)
    - Psychic return\(^\text{35}\) -- expressive benefits (life style, view)
    - Ethical premium (widely exists in consumer product industry) paid for psychic return (or fun of participation)
  - Fiduciary Duties of Pension Fund\(^\text{36}\)
    - Dual roles of pensions: guarantors of benefits and financial institutions.
    - SRI has two parents: shareholder activism and social screening.
    - Owning and governing: the SRI template.
    - Qualitative screening vs. Exclusionary screening areas.

- Disclosure\(^\text{37}\) and social and environmental data
  - Underlying reason for Social and Environmental disclosure.
    - Continues privatization and deregulation and globalization.
    - Private sector has acquired increasing power and influence over the past three decades, a corresponding expectation has emerged that corporations will act in the public’s general interest.

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\(^{35}\) See Beal, Goyen and Phillips (2005) for more detail about psychic return.

\(^{36}\) See Kinder (2005) for more about new fiduciary duties.
- Corporate Scandal at firms like Enron, WorldCom and Tyco have put ethics in corporate governance
- Simple maximization of profits does not create true wealth. Demand for social responsible behavior will increasing
  - Primary uses of social and environmental data
    - Client mandates for social and environmental criteria
    - Voting proxies on social and environmental issues
    - Long term investment horizon – concerned about long term environmental and social stability of our economy as whole.
    - SRI disclosures improve market efficiencies.

- **Best Practice to foster SRI? Competition or regulation**
  - **Germany** had introduced regulations with the idea of fostering socially responsible investments. The regulations mandate that pension funds, both public and private, report annually to their members the application of SRI policies or exclude themselves from socially responsible funds. However, the regulations backfired. Many private pensions chose to exempt themselves from social responsibility consideration.
  - **Sweden** introduced regulations of the Swedish National Pension Funds, stating that these funds “must take ethical and environmental considerations into account without relinquishing the overall goal of a high return on capital”. The funds were free to choose how to implement that social responsibility mandate, that freedom fostered competition.

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37 See Lydenberg (2005) for more details about social and environmental disclosure.
Netherlands does not have specific regulation on SRI, but its pension funds are active on the SRI front.

In 2003 France became the first country to mandate social and environmental reporting. Most funds use positive screens, a best-in-class approach.

In the U.K., occupational pension laws require funds to disclose social, ethical and environmental policies to the publics.

In Spain, there are two different investment vehicles with social mission. One screens a portfolio for various social considerations, and the other, so called “sharing fund” directs a portion of management fees to non-governmental organizations or social projects.

The Eurosif report says that, apart from the German case, regulations have given SRI a substantial push in Europe, and it looks as if the momentum will continue. But competition might be better at fostering SRI than regulation.

- **Shareholder resolution and investor advocacy.**

  - In 1971 Episcopal Church filed first shareholder resolution on a social responsibility issue – the South African operations of General Motors under apartheid was the first firm being filed shareholder resolution in 1971.

  - In 2004 alone, over 1100 resolutions on social, environmental, and corporate governance issues were reported by Investor Responsibility Research Centre (IRRC).

  - Pension fund activism believes that company performance on corporate governance and social and environmental issues is linked to business success. The substantial

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38 See White (2005) for the various SRI implementations in Europe.
size and some kind of universal ownership have been making shareholder advocacy one of the few effective tools to add long term shareholder value.

- **Good business practices can enhance long-term shareholder value**⁴⁰.
  - Helping to avoid costly litigation and other contingent off balance sheet liability and reduce the chance of reputation damage.
  - “Merck is a pharmaceutical company with an admirable reputation among social investors on many fronts. Yet when Merck announced the withdrawal of its Vioxx painkiller for safety reasons at the end of September 2004, and allegations surged that the company had withheld information on the dangers of the drug, the stock plummeted by more than 40% in a six-week period and public doubt soared. Merck now faces a significant lawsuit that is sure to drain resources and cause additional damage.”
  - Better vendor standard or strong corporate culture will help to attract and retain high-quality employees, and improve productivity. While those firms with overseas sweatshops will be likely to face substantial legal settlement (back payment of wages, see “Saipan Sweatshops Lawsuit Ends” [2004]).
  - Exploiting new market opportunities. Greenhouse gas emission, for example, has been believed to be one of the key reasons related to any possible disastrous changes in climate and weather pattern. Swiss-Re views this change as a business opportunity, and created a Green-house Gas Risk Solutions business unit (see Walker [2004]). It makes the case that “non-action [on climate change] potentially affects shareholder value.”

⁴⁰ See Smith (2005) for the in-depth discussion about shareholder resolutions and investor advocacy.
Theory of SRI ⁴¹

- Negative view from MPT and CAPM perspective: restricting the universe for any reason will push the investor into a sub-optimal portfolio, which as called “diversification costs”

- Cautionary notes by using Fama-French risk models: SRI performance will be driven by market as well as other investment style risk factors.

- Arbitrage Pricing Theory (APT): It should be possible to engage in social investing without a performance penalty, as long as the factor bets of portfolio can be replicated and fully hedged.

- Behavior finance, from a different perspective, gives people a pause and rethink the rule of economic rationality, indicating that ethical investors are just like those green consumers who are happy to pay an extra premium to be green, or those amateur gamblers who are largely enjoying the fun of participation ⁴² rather than worrying about the statistically negative expected outcomes.

⁴⁰ Please also refer to page 59 of Smith (2005) the detailed business cases.
⁴¹ See also Kurtz (2005) for detailed illustration of the theories of ethical investment.
⁴² See Beal, Goyen and Phillips (2005) for the details about the ethical investor’s utility function.
Appendix B  Preliminary Data Processing

Raw Data

The REUTERS Japanese stock data provided by SIRCA consist of three basic data tables: stock price data, corporate event data and dividend data. The constituents stocks and their weights within the two SRI indices are provided by the FTSE (UK) and Morning Star (Japan) respectively. The key data fields are listed as follows for the three data tables:

- stock price data: year, month, RIC, end of month price, PE ratio, PB ratio
- corporate event data: RIC, description, ex date, adjustment factor, event type
- dividend data: RIC, pay date, dividend rate, period end date, announcement date, annual dividend

- Morning Star weights: year, month, stock code, month end weights in MS SRI
- FTSE4GOOD weights: year, month, stock code, month end weights in F4G

where RIC stands for Reuters Instrument Code. As a 4 digit number in Japanese stock context, it is equivalent to stock code, uniquely identifying the Japanese listed stocks. For example, 7203 represents Toyota, Japan.

Corporate Events Adjustment

With the information above, we would not be able to directly conduct formal investment evaluation without some preliminary data processing. The corporate events adjustment, for example, would be a crucial step to ensure the data accuracy before the regression analysis. Without the adjustment, the monthly return formulae would be

\[ r_{i,t} = \frac{P_{i,t}}{P_{i,t-1}} - 1. \]  

(2A.1)

where \( P_{i,t} \) is the closing price of stock \( i \) in month \( t \) and \( r_{i,t} \) is the rate of return of stock \( i \) over the month \( t \).
In case of an 1 for 1 bonus issue, for example, the stock price would be approximately adjusted to 50% of its original level after the ex-right date. Let us assume the stock price closed at 1000 Yen last month, and closed at 600 Yen this month. Without an appropriate corporate event adjustment, the formula (2A.1) would give a misleading -40% monthly investment loss. The actual return during month should be 20%. Therefore, the monthly return formula with the corporate events adjustment would be

\[
    r_{i,t} = \frac{P_{i,t} / Adj_{i,t}}{P_{i,t-1}} - 1
\]

where \( Adj_{i,t} \) is the corporate event adjustment for ith stock over the month t.

**Dividend Adjustment**

The two key drivers of stock investment are capital gains and dividend cash distributions. In order to incorporate the dividend distribution, we extend the formula (2A.2) to (2A.3).

\[
    r_{i,t} = \frac{P_{i,t} / Adj_{i,t} + D_{i,t}}{P_{i,t-1}} - 1
\]

where \( D_{i,t} \) is the dividend payment in Yen for stock i during the month t. In some special scenarios when the corporate events and the dividend payment happened in the same month, we assume that companies would normally prefer a bigger pre-event dividend to a smaller diluted dividend.

**Dividend Reinvestment and Monthly Portfolio Rebalance**

The dividends were assumed to be reinvested across the portfolio according to the weighting strategy. This reinvestment strategy was implemented mathematically by monthly rebalance.
process. As shown in formula 2A.4, the monthly return of a portfolio was calculated as the weighted average rate of return of its constituent stocks.

\[
r_{\text{PORT},t} = \frac{\sum_{i} w_{i,t} \cdot r_{i,t}}{\sum_{i} w_{i,t}}
\]

(2A.4)

where \( r_{\text{PORT},t} \) is the rate of return of portfolio in month \( t \) and \( w_{i,t} \) is the weight assigned to stock \( i \) in the month \( t \).

**Weighting Strategies**

Several different weighting strategies were adopted in this research, namely constant weighting, market cap weighting and equally weighting. We compile the following lists to illustrate their application in our research.

- **Constant weighting strategy** → SRI portfolio MS10, MS150, F4G10 and F4G166 were rebalanced monthly using the constant initial weights as they were launched.

- **Market cap weighting strategy** → our hypothetical JBP index and its SRI subset JBP SRI are rebalanced monthly using the market capitalization at the end of last month.

- **Equally weighting strategy** → also used for JBP and JBP SRI to have control of the large cap stock dominance.

**SMB and HML Factor-Mimicking Portfolio**

In order to control the various biases, we construct the factor-mimicking portfolio SMB (Small Minus Big) and HML (High Minus Low).

- SMB is mimicking the small cap bias factor, represented by the performance gap between top 30% and bottom 30% portfolio in the order of market cap.

- HML is mimicking the value/growth bias factor, represented by the performance gap between top 30% and bottom 30% portfolio in the order of book to market ratio.
Appendix C  JBP index Construction and its Subsets

JBP stands for a hypothetical portfolio constructed by the author as a representation of the Japanese stock investment universe; it contains 563 stocks and is weighted by market cap and rebalanced monthly. The portfolio comprises all stocks in the NK500 index, the FTSE Japan index, and the Morningstar SRI index as of Sep 2004 (as long as there were at least 24 monthly return observations over the period). The rationale for the JBP index is to control for survivorship and new company bias.

JBP SRI is the SRI subset of JBP index containing 255 SRI stocks, either from MS150 or F4G166. This combined SRI portfolio was rebalanced monthly using market capitalization.

In order to control the various biases, we construct the factor-mimicking portfolio SMB (Small Minus Big) and HML (High Minus Low) as subsets of JBP index. SMB is mimicking the small cap bias factor, represented by the performance gap between top 30% and bottom 30% portfolio in the order of market cap. HML is mimicking the value/growth bias factor, represented by the performance gap between top 30% and bottom 30% portfolio in the order of book to market ratio.

Table 9 JBP index and its subsets as of May 2003

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>JBP</th>
<th>JBP SRI</th>
<th>JBP SMALL</th>
<th>JBP LARGE</th>
<th>JBP LOW</th>
<th>JBP HIGH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>563</td>
<td>255</td>
<td>443</td>
<td>15</td>
<td>127</td>
<td>239</td>
</tr>
<tr>
<td>Stocks %</td>
<td>100%</td>
<td>45%</td>
<td>79%</td>
<td>3%</td>
<td>23%</td>
<td>42%</td>
</tr>
<tr>
<td>Market Cap (bY)</td>
<td>201,113</td>
<td>61,527</td>
<td>60,334</td>
<td>60,334</td>
<td>60,334</td>
<td>60,334</td>
</tr>
<tr>
<td>Market Cap %</td>
<td>100%</td>
<td>69%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: Author’s construction and calculation based on REUTER Japanese equity market data provided by SIRCA
## Table 10 Summary of JBP by SRI and Market Cap groups

<table>
<thead>
<tr>
<th>Cap Group</th>
<th>Stocks</th>
<th>Stock %</th>
<th>Total Cap</th>
<th>MktCap %</th>
<th>Average Cap</th>
<th>Average BTM</th>
<th>MIN Cap</th>
<th>Max Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SRI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big</td>
<td>2</td>
<td>0.4%</td>
<td>5,792</td>
<td>2.9%</td>
<td>2,895.83</td>
<td>0.97</td>
<td>2,518</td>
<td>3,274</td>
</tr>
<tr>
<td>Medium</td>
<td>31</td>
<td>5.5%</td>
<td>20,595</td>
<td>10.2%</td>
<td>664.36</td>
<td>0.78</td>
<td>424</td>
<td>1,734</td>
</tr>
<tr>
<td>Small</td>
<td>275</td>
<td>48.8%</td>
<td>35,140</td>
<td>17.5%</td>
<td>127.78</td>
<td>1.04</td>
<td>16</td>
<td>404</td>
</tr>
<tr>
<td>Subtotal</td>
<td>308</td>
<td>54.7%</td>
<td>61,527</td>
<td>30.6%</td>
<td>199.76</td>
<td>1.01</td>
<td>16</td>
<td>3,274</td>
</tr>
<tr>
<td><strong>Non SRI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big</td>
<td>13</td>
<td>2.3%</td>
<td>55,594</td>
<td>27.6%</td>
<td>4,276.44</td>
<td>0.71</td>
<td>1,921</td>
<td>12,344</td>
</tr>
<tr>
<td>Medium</td>
<td>74</td>
<td>13.1%</td>
<td>58,557</td>
<td>29.1%</td>
<td>791.30</td>
<td>0.85</td>
<td>419</td>
<td>1,768</td>
</tr>
<tr>
<td>Small</td>
<td>168</td>
<td>29.8%</td>
<td>25,436</td>
<td>12.6%</td>
<td>151.41</td>
<td>1.08</td>
<td>5</td>
<td>418</td>
</tr>
<tr>
<td>Subtotal</td>
<td>255</td>
<td>45.3%</td>
<td>139,586</td>
<td>69.4%</td>
<td>547.40</td>
<td>0.99</td>
<td>5</td>
<td>12,344</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>563</td>
<td>100.0%</td>
<td>201,113</td>
<td>100.0%</td>
<td>357.22</td>
<td>1.01</td>
<td>5</td>
<td>12,344</td>
</tr>
</tbody>
</table>

Source: Author’s construction and calculation based on REUTER Japanese equity market data provided by SIRCA
Appendix D  3-Year Rolling Monthly Return

**Benchmark JBP (563 Stocks)**

Rolling regression estimates for jmp

![Rolling Regression Graph for JBP](chart1)

**JBP SRI (255 SRI Stocks)**

Rolling regression estimates for jmpsri

![Rolling Regression Graph for JBP SRI](chart2)
JBP SMALL (Bottom 30% Small Cap)

Rolling regression estimates for small

Coefficient on roll3y (95% CI)
vs full-sample estimate

JBP LARGE (Top 30% Big Cap)

Rolling regression estimates for big

Coefficient on roll3y (95% CI)
vs full-sample estimate
JBP HIGH (Top 30% Value Stocks)

Rolling regression estimates for high

Coefficient on roll3y (95% CI)
vs full-sample estimate

JBP LOW (Top 30% Growth Stocks)

Rolling regression estimates for low

Coefficient on roll3y (95% CI)
vs full-sample estimate
Appendix E  3-Year Rolling Alpha and Beta

**JBP SRI (Cap weighted SRI)**

Rolling regression estimates for sri

![Graph showing rolling regression estimates for SRI](attachment:graph.png)

**JBP SRIE (Equally weighted SRI)**

Rolling regression estimates for srie

![Graph showing rolling regression estimates for SRI](attachment:graph.png)
**JBP Small (Bottom 30% Small Cap)**

Rolling regression estimates for exsmall

![Graphs showing rolling regression estimates for exsmall](image)

**JBP Big (Top 30% Large Cap)**

Rolling regression estimates for exbig

![Graphs showing rolling regression estimates for exbig](image)
# Appendix F  SRI Portfolio Performance in Japan

<table>
<thead>
<tr>
<th></th>
<th>MS10</th>
<th>F4G10</th>
<th>MS150</th>
<th>F4G166</th>
<th>TOPIX</th>
<th>JBP</th>
<th>JBPSRI</th>
<th>JBP_E</th>
<th>JBPSRI_E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual % Return</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-launch</td>
<td>5.23%</td>
<td>6.12%</td>
<td>5.24%</td>
<td>6.35%</td>
<td>-2.69%</td>
<td>-0.42%</td>
<td>-0.11%</td>
<td>5.59%</td>
<td>5.16%</td>
</tr>
<tr>
<td>post-launch</td>
<td>3.47%</td>
<td>2.67%</td>
<td>1.58%</td>
<td>2.18%</td>
<td>-8.40%</td>
<td>-5.13%</td>
<td>-3.85%</td>
<td>-0.18%</td>
<td>0.34%</td>
</tr>
<tr>
<td><strong>Annualized % Volatility</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-launch</td>
<td>11.94%</td>
<td>19.83%</td>
<td>19.81%</td>
<td>23.15%</td>
<td>21.47%</td>
<td>18.95%</td>
<td>14.91%</td>
<td>29.76%</td>
<td>24.88%</td>
</tr>
<tr>
<td>post-launch</td>
<td>11.46%</td>
<td>14.01%</td>
<td>12.56%</td>
<td>13.17%</td>
<td>13.49%</td>
<td>12.46%</td>
<td>11.72%</td>
<td>14.85%</td>
<td>13.11%</td>
</tr>
<tr>
<td><em><em>JBP</em> AS BENCHMARK</em>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Alpha</strong></td>
<td>0.48%</td>
<td>0.62%</td>
<td>0.46%</td>
<td>0.56%</td>
<td>-0.19%</td>
<td>0.00%</td>
<td>0.03%</td>
<td>0.52%</td>
<td>0.47%</td>
</tr>
<tr>
<td>pre-launch</td>
<td>0.71%</td>
<td>0.81%</td>
<td>0.51%</td>
<td>0.60%</td>
<td>-0.30%</td>
<td>0.00%</td>
<td>0.13%</td>
<td>0.38%</td>
<td>0.41%</td>
</tr>
<tr>
<td>post-launch</td>
<td>-0.18%</td>
<td>0.14%</td>
<td>0.09%</td>
<td>0.24%</td>
<td>0.07%</td>
<td>0.00%</td>
<td>-0.18%</td>
<td>0.53%</td>
<td>0.37%</td>
</tr>
<tr>
<td><strong>Beta</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-launch</td>
<td>0.88</td>
<td>1.06</td>
<td>0.88</td>
<td>0.94</td>
<td>0.99</td>
<td>1.00</td>
<td>1.01</td>
<td>0.88</td>
<td>0.86</td>
</tr>
<tr>
<td>post-launch</td>
<td>0.78</td>
<td>0.96</td>
<td>0.98</td>
<td>1.04</td>
<td>1.08</td>
<td>1.00</td>
<td>0.92</td>
<td>1.16</td>
<td>1.03</td>
</tr>
</tbody>
</table>

Sources: Author’s calculations based on data supplied by the Securities Industry Research Centre of Asia-Pacific (SIRCA) on behalf of Reuters over the 98 month period up to Feb 2005.  
* JBP stands for a hypothetical portfolio constructed by the author as a representation of the Japanese stock investment universe; it contains 563 stocks and is weighted by market cap and rebalanced monthly. The portfolio comprises all stocks in the NK500 index, the FTSE Japan index, and the Morningstar SRI index as of Sep 2004 (as long as there were at least 24 monthly return observations over the period). The rationale for the JBP index is to control for survivorship and new company bias.
Among the 563 stocks within JBP index, we only look at 496 firms, who were fully listed over the entire 98 months study period from Jan 1997 to Feb 2005. The purpose of that is to avoid the asymmetric data distortion without losing the regression power. These 496 stocks represent 88% of JBP stocks and 86% market capitalization.

The SRI composition in the panel is summarized in Table 13. 231 SRI stocks, less than half of the panel member, surprisingly represent over 70% of the total market value of the panel.

<table>
<thead>
<tr>
<th>Group</th>
<th>non SRI</th>
<th>SRI</th>
<th>JBP496</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>265</td>
<td>231</td>
<td>496</td>
</tr>
<tr>
<td>Stocks %</td>
<td>53%</td>
<td>47%</td>
<td>100%</td>
</tr>
<tr>
<td>Market Cap</td>
<td>49,174</td>
<td>124,003</td>
<td>173,176</td>
</tr>
<tr>
<td>Market Cap %</td>
<td>28%</td>
<td>72%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Author’s construction and calculation based on REUTER Japanese equity market data provided by SIRCA
### Table 13  Sector Distribution of SRI in Japan

<table>
<thead>
<tr>
<th>SECTOR</th>
<th>NON_SRI</th>
<th>SRI</th>
<th>TOTAL</th>
<th>SRI %</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0.0%</td>
</tr>
<tr>
<td>TEXTILE</td>
<td>6</td>
<td>8</td>
<td>14</td>
<td>57.1%</td>
</tr>
<tr>
<td>UTILITY</td>
<td>5</td>
<td>9</td>
<td>14</td>
<td>64.3%</td>
</tr>
<tr>
<td>RESOURCE</td>
<td>14</td>
<td>8</td>
<td>22</td>
<td>36.4%</td>
</tr>
<tr>
<td>TRANSPORT</td>
<td>17</td>
<td>5</td>
<td>22</td>
<td>22.7%</td>
</tr>
<tr>
<td>PROPTY</td>
<td>17</td>
<td>10</td>
<td>27</td>
<td>37.0%</td>
</tr>
<tr>
<td>AUTO</td>
<td>16</td>
<td>14</td>
<td>30</td>
<td>46.7%</td>
</tr>
<tr>
<td>BIOTECH</td>
<td>14</td>
<td>18</td>
<td>32</td>
<td>56.3%</td>
</tr>
<tr>
<td>FOOD</td>
<td>12</td>
<td>20</td>
<td>32</td>
<td>62.5%</td>
</tr>
<tr>
<td>CHEMICALS</td>
<td>20</td>
<td>29</td>
<td>49</td>
<td>59.2%</td>
</tr>
<tr>
<td>COM&amp;SVC*</td>
<td>34</td>
<td>15</td>
<td>49</td>
<td>30.6%</td>
</tr>
<tr>
<td>LOGISTIC</td>
<td>35</td>
<td>25</td>
<td>60</td>
<td>41.7%</td>
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<tr>
<td>ELECTRIC</td>
<td>24</td>
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<td>64</td>
<td>62.5%</td>
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<tr>
<td>FINANCE</td>
<td>49</td>
<td>23</td>
<td>72</td>
<td>31.9%</td>
</tr>
<tr>
<td>MANUFACTURE</td>
<td>43</td>
<td>31</td>
<td>74</td>
<td>41.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>308</td>
<td>255</td>
<td>563</td>
<td>45.3%</td>
</tr>
</tbody>
</table>

Source: authors’ calculation based on JBP563 hypothetical market portfolio, among which 255 stocks labeled as SRI since they were listed on FTSE4GOOD or Morning Star SRI for at least one month.
* COM&SVC stands for communication and service sector.
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