

Table 3. Corporate Financial Performance of Composite CSP ranked Portfolios

	P1	P2	P3	P4	P5	Diff.	<i>p</i> -value
ROS	2.995	2.658	2.130	2.422	1.234	1.761	0.000
ROE	7.233	6.837	5.230	5.705	3.016	4.217	0.000
ROA	3.152	2.757	2.295	2.387	1.564	1.587	0.000
CFOTA	7.163	6.429	5.704	5.458	4.589	2.575	0.000
GSLs	3.555	3.229	2.805	2.774	2.335	1.220	0.002
GTA	2.725	2.207	1.675	1.604	0.963	1.761	0.000
HRET	0.542	0.541	0.411	0.522	0.301	0.241	0.001
Alpha	0.414	0.299	0.133	0.211	0.014	0.400	0.000
ROSSD	2.075	2.096	2.841	2.484	3.859	-1.784	0.000
ROESD	6.602	6.121	7.092	7.069	8.985	-2.383	0.001
ROASD	2.162	2.045	2.548	2.327	3.149	-0.988	0.000
CFOSD	2.991	2.874	3.818	3.467	4.722	-1.731	0.000
GSLSSD	8.646	8.798	9.943	9.565	10.713	-2.067	0.000
GTASD	8.286	8.487	8.513	8.673	10.125	-1.839	0.000
HVOL	9.074	8.858	9.889	9.900	10.317	-1.243	0.000
BHML	0.054	0.233	0.385	0.416	0.433	-0.379	0.000

Note: In each year, sample firms are ranked and divided into five groups (P1, P2, ..., P5) based on their Composite CSP scores. Numbers in the table are the average CFP values for firms in each of the five portfolios.

Table 4. Regressing Firms' Profitability Measures onto CSP Measures

	ROS	ROE	ROA	CFOTA	GSLs	GTA	HRET	Alpha
Intercept	7.722 ***	6.419 ***	5.795 ***	9.566 ***	1.088 **	3.243 ***	-0.188 ***	0.365 ***
CSP	-0.109 *	0.050	-0.001	0.148 **	-0.429 ***	-0.278 ***	-0.017	-0.004
DR	-0.098 ***	-0.055 ***	-0.074 ***	-0.075 ***	-0.009	-0.043 ***	-0.003 ***	-0.005 ***
FDR	0.016 ***	0.062 ***	0.025 ***	0.040 ***	0.042 ***	0.048 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.271	0.131	0.279	0.236	0.182	0.129	0.378	0.089
	ROS	ROE	ROA	CFO	GSLs	GTA	HRET	Alpha
Intercept	7.559 ***	6.387 ***	5.777 ***	9.727 ***	0.576	2.904 ***	-0.221 ***	0.349 ***
EMP	0.046	0.355 ***	0.058	0.148 **	-0.269 ***	-0.145	0.031 **	0.036 **
DR	-0.097 ***	-0.056 ***	-0.074 ***	-0.075 ***	-0.007	-0.042 ***	-0.003 ***	-0.005 ***
FDR	0.014 ***	0.059 ***	0.024 ***	0.041 ***	0.039 ***	0.046 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.270	0.133	0.279	0.235	0.176	0.125	0.378	0.091
	ROS	ROE	ROA	CFO	GSLs	GTA	HRET	Alpha
Intercept	7.740 ***	6.506 ***	5.827 ***	9.745 ***	0.566	2.855 ***	-0.184 ***	0.378 ***
SC	-0.261 ***	-0.027	-0.052	0.037	-0.103	0.012	-0.043 **	-0.030
DR	-0.097 ***	-0.055 ***	-0.074 ***	-0.075 ***	-0.008	-0.043 ***	-0.003 ***	-0.005 ***
FDR	0.016 ***	0.062 ***	0.025 ***	0.042 ***	0.038 ***	0.045 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.272	0.131	0.279	0.234	0.174	0.125	0.378	0.090

Note: \*\*\*p < .01; \*\*p < .05; \*p < .10.

Table 4. (Continued)

	ROS	ROE	ROA	CFOTA	GSLs	GTA	HRET	Alpha
Intercept	7.727 ***	6.712 ***	5.857 ***	9.654 ***	1.000 **	3.212 ***	-0.179 ***	0.384 ***
SS	-0.227 ***	-0.328 *	-0.094	0.169 *	-0.734 ***	-0.513 ***	-0.049 **	-0.037 *
DR	-0.098 ***	-0.056 ***	-0.074 ***	-0.074 ***	-0.010	-0.044 ***	-0.003 ***	-0.005 ***
FDR	0.015 ***	0.063 ***	0.025 ***	0.042 ***	0.039 ***	0.046 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.272	0.132	0.280	0.235	0.185	0.131	0.379	0.090
	ROS	ROE	ROA	CFO	GSLs	GTA	HRET	Alpha
Intercept	7.584 ***	6.509 ***	5.810 ***	9.775 ***	0.559	2.932 ***	-0.202 ***	0.369 ***
IG	-0.042	-0.074	-0.060	-0.022	-0.223 *	-0.257 **	-0.038 **	-0.036 *
DR	-0.097 ***	-0.055 ***	-0.074 ***	-0.075 ***	-0.008	-0.043 ***	-0.003 ***	-0.005 ***
FDR	0.015 ***	0.062 ***	0.025 ***	0.042 ***	0.037 ***	0.045 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.270	0.131	0.279	0.234	0.175	0.127	0.379	0.090
	ROS	ROE	ROA	CFO	GSLs	GTA	HRET	Alpha
Intercept	7.690 ***	6.611 ***	5.831 ***	9.634 ***	0.995 **	3.251 ***	-0.202 ***	0.362 ***
ENV	-0.182 *	-0.189	-0.059	0.210 **	-0.770 ***	-0.602 ***	-0.017	-0.005
DR	-0.098 ***	-0.055 ***	-0.074 ***	-0.075 ***	-0.008	-0.043 ***	-0.003 ***	-0.005 ***
FDR	0.016 ***	0.063 ***	0.025 ***	0.041 ***	0.041 ***	0.048 ***	0.005 ***	0.010 ***
Adjusted $R^2$	0.271	0.131	0.279	0.235	0.182	0.130	0.378	0.089

Note: \*\*\* $p < .01$ ; \*\* $p < .05$ ; \* $p < .10$ .

Table 5. Regressing Firms' Risk Measures onto CSP Measures

	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.492 ***	-4.668 ***	1.660 ***	2.821 ***	9.893 ***	8.148 ***	6.170 ***	0.238 ***
CSP	-0.279 ***	-0.379 ***	-0.140 ***	-0.196 ***	-0.607 ***	-0.574 ***	-0.339 ***	-0.037 ***
DR	0.009 *	0.196 ***	0.011 ***	0.008 *	0.009	0.033 ***	0.048 ***	0.004 ***
FDR	0.023 ***	0.064 ***	0.023 ***	0.009 ***	0.084 ***	0.047 ***	0.047 ***	-0.008 ***
Adjusted $R^2$	0.092	0.171	0.123	0.093	0.157	0.088	0.232	0.115
	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.208 ***	-5.031 ***	1.529 ***	2.630 ***	9.230 ***	7.543 ***	5.791 ***	0.196 ***
EMP	-0.346 ***	-0.553 ***	-0.213 ***	-0.271 ***	-0.595 ***	-0.637 ***	-0.300 ***	-0.028 **
DR	0.010 *	0.198 ***	0.012 ***	0.009 **	0.012	0.036 ***	0.049 ***	0.004 ***
FDR	0.023 ***	0.064 ***	0.023 ***	0.009 ***	0.081 ***	0.045 ***	0.045 ***	-0.008 ***
Adjusted $R^2$	0.093	0.172	0.126	0.095	0.154	0.087	0.226	0.113
	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.238 ***	-4.846 ***	1.522 ***	2.621 ***	9.162 ***	7.374 ***	5.980 ***	0.218 ***
SC	-0.200 **	-0.533 **	-0.084	-0.106 *	-0.159	-0.020	-0.427 ***	-0.048 ***
DR	0.010 *	0.197 ***	0.011 ***	0.009 **	0.011	0.035 ***	0.049 ***	0.004 ***
FDR	0.021 ***	0.062 ***	0.022 ***	0.008 ***	0.077 ***	0.040 ***	0.045 ***	-0.008 ***
Adjusted $R^2$	0.086	0.170	0.118	0.088	0.148	0.077	0.226	0.114

Note: \*\*\*p < .01; \*\*p < .05; \*p < .10.

Table 5. (Continued)

	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.313 ***	-4.932 ***	1.531 ***	2.617 ***	9.658 ***	7.813 ***	5.940 ***	0.192 ***
SS	-0.298 ***	-0.377 *	-0.092 *	-0.094	-0.876 ***	-0.663 ***	-0.345 ***	-0.006
DR	0.009	0.196 ***	0.011 ***	0.008 **	0.008	0.033 ***	0.048 ***	0.004 ***
FDR	0.021 ***	0.061 ***	0.022 ***	0.007 ***	0.079 ***	0.042 ***	0.043 ***	-0.008 ***
Adjusted $R^2$	0.089	0.170	0.118	0.088	0.157	0.084	0.225	0.111
	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.122 ***	-5.224 ***	1.465 ***	2.562 ***	9.062 ***	7.418 ***	5.731 ***	0.190 ***
IG	-0.048	0.132	0.011	-0.032	-0.007	-0.211	-0.097	-0.010
DR	0.010 *	0.197 ***	0.011 ***	0.009 **	0.011	0.035 ***	0.049 ***	0.004 ***
FDR	0.020 ***	0.059 ***	0.022 ***	0.007 ***	0.076 ***	0.041 ***	0.043 ***	-0.008 ***
Adjusted $R^2$	0.085	0.169	0.117	0.087	0.148	0.078	0.218	0.111
	ROSSD	ROESD	ROASD	CFOSD	GSLSSD	GTASD	HVOL	BHML
Intercept	2.441 ***	-4.572 ***	1.678 ***	2.836 ***	9.775 ***	7.997 ***	6.027 ***	0.221 ***
ENV	-0.515 ***	-0.958 ***	-0.326 ***	-0.439 ***	-1.109 ***	-0.986 ***	-0.500 ***	-0.051 ***
DR	0.009 *	0.196 ***	0.011 ***	0.008 **	0.010	0.034 ***	0.048 ***	0.004 ***
FDR	0.023 ***	0.065 ***	0.023 ***	0.009 ***	0.083 ***	0.046 ***	0.045 ***	-0.008 ***
Adjusted $R^2$	0.092	0.173	0.126	0.096	0.157	0.087	0.227	0.113

Note: \*\*\* $p < .01$ ; \*\* $p < .05$ ; \* $p < .10$ .

Table 6. Results of Two-Stage Least Square Regressions

	CSP	EMP	SC	SS	IG	ENV
ROS	1.555 ***	0.506	2.987 **	4.131 ***	5.619 ***	1.987 ***
ROE	1.726 **	0.631	3.463	4.388 **	6.010 **	2.271
ROA	0.917 ***	-0.149	0.821	3.700 ***	4.768 ***	0.750
CFOTA	-0.325	-2.722 ***	-6.125 ***	6.532 ***	7.340 ***	-2.878 ***
GSLs	-2.262 ***	-3.677 ***	-10.529 ***	2.307 *	1.400	-5.658 ***
GTA	-1.846 ***	-2.945 ***	-8.475 ***	1.725	0.961	-4.565 ***
HRET	0.201 **	0.382 ***	1.051 ***	-0.358 *	-0.301	0.555 ***
Alpha	-0.097	0.142	0.178	-0.750 ***	-0.918 **	0.039
ROSSD	-1.565 ***	-1.665 ***	-5.438 ***	-0.889	-1.893	-3.088 ***
ROESD	-1.997 **	-2.943 ***	-8.659 **	1.180	0.250	-4.710 ***
ROASD	-1.050 ***	-1.731 ***	-4.939 ***	1.140 **	0.730	-2.649 ***
CFOSD	-1.790 ***	-2.117 ***	-6.665 ***	-0.415	-1.472	-3.731 ***
GSLSSD	-3.208 ***	-3.878 ***	-12.124 ***	-0.509	-2.368	-6.767 ***
GTASD	-3.200 ***	-3.275 ***	-10.845 ***	-2.181	-4.288 *	-6.191 ***
HVOL	-0.772 **	-1.077 ***	-3.219 ***	0.282	-0.105	-1.764 ***
BHML	0.373 ***	0.320 ***	1.133 ***	0.430 **	0.702 **	0.663 ***

Note: \*\*\*p < .01; \*\*p < .05; \*p < .10.

Table A1. Adopted Questions from CSR Survey of Toyo Keizai CSR Database

	Evaluation Point	Weights
<b>Employee Relations (EMP)</b>		
1	Ratio of female employees to total employees	-0.233
2	Ratio of female managers to total managers	-0.301
3	Ratio of physically handicapped employees to total employees	-0.305
4	Ratio of old employees (60 years old and over) to total employees	-0.275
5	Average years of continuous employment	-0.141
6	Labor turnover rate	-0.318
7	Average salary for a 30 years old	-0.306
8	Overtime hours	-0.329
9	Overtime wage per hour	-0.351
10	Rate of paid holidays taken	-0.342
11	Frequency rates of industrial injuries	-0.244
12	Flexible work arrangement (flex-time, short-time working, on-site child care, etc.)	-0.191
13	Incentive program (internal venture, bonus plan, education program etc.)	-0.165
<b>Social Contribution (SC)</b>		
1	Comprehensive evaluation (CSR department, director in charge, CSR document etc.)	-0.442
2	Corporate ethics (guidelines, business ethics document, etc.)	-0.259
3	Department of social actions	-0.693
4	Social expenditure per employee	-0.438
5	Matching gift and volunteer grant programs	-0.256
<b>Security of the Firm and Product Safeness (SS)</b>		
1	Specialty divisions on investor relations, consumer affairs, cooperation with NPO.	-0.282
2	Whistle-blower policy	-0.132
3	Specialty department for managing quality and safety of products and services	-0.907
4	Ratio of domestic business offices with ISO9000 certification	-0.201
5	Ratio of foreign business offices with ISO9000 certification	-0.202
<b>Internal Governance and Risk Management (IG)</b>		
1	Comprehensive evaluation (whistle-blower protection, CSR manual, complaint DB, etc.)	-0.191
2	Existence/nonexistence of compliance department	-0.450
3	Existence/nonexistence of CIO	-0.579
4	Existence/nonexistence of CFO	-0.601
5	Information systems (security policy, internal/external auditing etc.)	-0.220
6	Comprehensive evaluation (fair trade, compliance, closedown in the past 3 years, etc.)	-0.128
<b>Environment Preservations (ENV)</b>		
1	Environmental planning department, director in charge of environmental affairs, etc.	-0.497
2	Environmental accounting, disclosure and auditing.	-0.558
3	Ratio of environment related business to total revenue	-0.431
4	Promotion of procurement of eco-friendly goods and services	-0.462
5	Ecolabelling (ISO14020 series etc.)	-0.198
6	Environment related compliance (environmental disasters, law violation, etc.)	-0.050

Table A2. Definition of Profitability/Risk Measures

Variable Name	Firms' Profitability Measures and Their Definitions		Data Period
ROS	Return on Sales	$= (\text{Net Income}_t) / (\text{Sales}_t)$	Past 5 years Average
ROE	Return on Equity	$= (\text{Net Income}_t) / (\text{Book Value}_{t-1})$	Past 5 years Average
ROA	Return on Asset	$= (\text{Net Income}_t) / (\text{Total Asset}_{t-1})$	Past 5 years Average
CFOTA	Cash-flow to Total Asset	$= (\text{Cash-flow from Operations}_t) / (\text{Total Asset}_{t-1})$	Past 5 years Average
GSLs	Growth rate of Sales	$= (\text{Sales}_t) / (\text{Sales}_{t-1}) - 1$	Past 5 years Average
GTA	Growth rate of Total Asset	$= (\text{Total Asset}_t) / (\text{Total Asset}_{t-1}) - 1$	Past 5 years Average
HRET	Historical stock return	Historical average of realized monthly return	Past 60 months data
Alpha	Jensen's alpha	Computed based on Fama and French (1993)	Past 60 months data
Variable Name	Firms' Risk Measures and Their Definition		
ROSSD	Past 5 year standard deviation of Return on Sales (ROS)		
ROESD	Past 5 year Standard deviation of Return on Equity (ROE)		
ROASD	Past 5 year Standard deviation of Return on Asset (ROA)		
CFOSD	Past 5 year Standard deviation of Cash-flow to Total Asset (CFOTA)		
GSLSSD	Past 5 year Standard deviation of Growth rate of Sales (GSLs)		
GTASD	Past 5 year Standard deviation of Growth rate of Total Asset (GTA)		
HVOL	Past 60 months historical volatility		
BHML	Past 60 months HML beta computed based on Fama and French 3 factor model.		



## **Socially Conscious Funds, Luxury Consumption and the Style of the Market Index<sup>1</sup>**

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**Abstract:** The purpose of this paper is to indirectly investigate the risk attributes of Socially Conscious Funds that result from overseas investors in the Japanese market during the early 2000's. The risk attributes are proxied with benchmarks such as the domestic market index and an overseas apparel & luxury goods index. The apparel & luxury goods index is chosen as the benchmark for speculative overseas investors because luxury consumption is known to have a correlation with the investment activity of wealthy individuals with a high fraction of equity wealth. Such overseas investors tend to possess a relatively low level of risk aversion, and this paper identifies the impact of such speculative overseas investors (as approximated by the apparel & luxury goods index) in comparison to Socially Conscious Funds investors (who are argued to pursue long term goals with a buy-and-hold strategies). A rolling regression analysis also reveals the influence of speculative investors on various industries. A clear breakpoint is found around the financial crisis of 2008, but the change in the influence of Apparel & Luxury goods index differs between the industrial sectors.

**Keywords:** Socially Conscious Funds; Luxury Consumption; Fund Style Analysis, Japan, Risk

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## 1 Introduction

This paper examines the risk return characteristics of the Japanese equity market by observing socially conscious fund returns and U.S. market returns. The influence of overseas investors increased rapidly during the early 2000's, but suddenly decreased after the financial crisis that started in 2008. The speculative investments of such overseas investors are motivated by short term gains, as opposed to the aim of many socially conscious funds (SC funds) that invest in firms that fulfill their socially responsibility to the firms' various stakeholders and seek sustainable long term gains. The analysis of the two types of investors becomes important in assessing the long term financial risk. If the two types of investors truly do behave in these ways, it is natural to conjecture that the returns generated by these investors can be decomposed into two distinct factors. Even though I only consider two factors that may not span the entire market, it is still important to identify factors that may represent speculative and sustainable investment behaviors. The restrictions imposed on socially conscious investment forces fund managers to allocate funds in a smaller universe of assets, which may consequentially yield a portfolio that is less efficient in comparison to portfolios comprised of a broader class of assets. If the goal of a socially conscious investment policy is not to achieve the most efficient portfolio, what are SC funds pursuing? Such an investment policy may be justified if the returns earned from SC funds are generated by "sustainable" firm activities that are not affected by speculative investments chasing short term gains. This reasoning is in line with the finding of Cox et. al. (2004), who claims that social performance accrues in the long run.

Bauer et al (2005) show that socially conscious funds do not out/underperform conventional mutual funds and Ghoul et al (2011) show that there is no evidence that the cost of capital of firms selected by such funds is lower. At a glance, it appears as if there is no difference (nor advantage) of investing in either conventional or socially conscious mutual funds in the risk/return framework. This paper shows that socially conscious funds may not be superior, nor efficient in their financial performance, but still have a role (at least in the Japanese equity market) in the sense that they reveal a priced factor that is unaffected by speculative overseas investment. This conjecture is verified by decomposing the stochastic factors of SC funds and the speculative investments of overseas investors (as approximated by the U.S. market's luxury sector).

It is tempting to claim that the firms selected by SC funds tend to be more "conservative", i.e. possess a higher risk aversion against speculative investments in the standard risk/return framework. This seems to indicate that socially conscious funds are simply focusing on "low beta" firms as opposed to "socially conscious" firms. This issue is answered in subsequent analysis of the inter-temporal change in the relation between the Japanese market, socially conscious funds and the U.S. apparel & luxury goods index via a style analysis as proposed by Sharpe (1992).

The analysis provides evidence that Socially Conscious Fund returns are less dependent on the apparel & luxury good subsector index (as a proxy for luxury consumption returns) in comparison to the overall market index return. Because this apparel & luxury goods index is a SP500 subsector index, the price appreciations/depreciations are very likely to be associated with the equity ownership of the Japanese equity market due to the high correlation between the U.S. and Japanese equity market.

The ownership proportion by overseas investors (U.S. investors are the most dominant) has increased significantly during the early 2000's followed by a rapid drop in the summer of 2008 (i.e. the financial crisis) as observed in Figure 1. If overseas speculative investment is well approximated by the apparel & luxury goods index, then principal component analysis (Figure 2, left) supports the conjecture that socially conscious fund managers are successful in mimicking the market component that is not linked to luxury consumption. Under this assumption, the SC funds appear to successfully filter out the impact of short term speculative investments funded by excess wealth generated by equity market shocks. One point that should be noted is that this overseas speculative investment component that is filtered out by SC fund managers is correlated to the overall equity market (as captured by the TOPIX representing 33 sectors) as depicted in Figure 2 (right). Figure 3 is the orthonormal biplot of the apparel & luxury goods index and the TOPIX composite index (T23). Similar to the case of the SC funds, the two factors are nearly orthogonal to each other. However, the two factors are both correlated with the first component, and have offsetting impacts on the second component. Because most of the SC funds are passive funds that are benchmarked to the TOPIX, it not surprising that the TOPIX and apparel & luxury goods index loadings are orthogonal to each other as observed in Figure 2. The difference lies in the fact that the SC funds are successful in reducing their correlation with second principal component that is highly correlated with the apparel & luxury goods index factor. Because it is hard to believe that SC fund managers are trading against the apparel & luxury goods index, it is more likely that they are trading away the volatility imposed by speculative overseas investment activity. This is confirmed by comparing the biplot of the TOPIX index (labeled T23) and its 33 sectors (labeled T1 to T22 and T24 to T34) differ to the SC fund factor biplot in Figure 2 (left and right respectively). All of the sectors do not significantly differ from the apparel & luxury goods index factor, and implies that the TOPIX sector factors do not substitute for the SC funds. Table 3 Panel C tells us factor loadings of the first four principal components. All of the TOPIX sectors have a positive loading for the first principal component, but differ in the second principal component. This result differs from the SC funds. The biplots of the apparel & luxury goods index versus the 33 TOPIX sectors, and the TOPIX composite index pairs are provided in Appendix E. Although all of the sectors are nearly orthogonal to the apparel & luxury goods index, none of the sectors yeild a principal component that is

nearly orthogonal to the apparel and luxury goods index. This supports the argument that there is no particular sector that substitutes for the movement of the SC funds.

Thus, it can be concluded that regardless of the performance and/or the risk-return characteristics of the SC funds, these funds play a role in the Japanese market by providing a benchmark of returns that are unaffected by speculative short term investors.

## **Literature**

### ***Insurance effect of SC funds***

Godfrey et al. (2005) find that Corporate Social Responsibility (CSR) provides an insurance-like property to stock market value at the firm specific level against negative events (idiosyncratic shocks that are not at the industry or economy wide level). Similarly, Pelozo (2006) argues that CSR can potentially serve as insurance for corporate financial performance (CFP) by mitigating the effects from negative events that could harm the CFP of firms. This situation is likely to be observed as a win-win situation such as when CFP and CSR are “complimentary” (rather than “conflicting”) and simultaneously when the time horizon of managers are “short-term” (rather than “long-term”). This suggests that SC funds are more resilient to adverse movements in the financial market. If investing in SC funds signals financial gains (i.e. provide a win-win relationship between CFP and CSR) that are immune to adverse movements due to financial turmoil, firms that are selected by SC fund managers are expected to reduce the possibility that CSR activities will be in “conflict” with CFP. With CSR insurance on hand, investors will be more likely to keep their money in the SC funds especially in the case of financial turmoil. But, this is only if the SC fund managers are really successful in screening/selecting firms whose activities are sustainable. Under this hypothesis, investors with long term goals will attempt to allocate their investment in SC funds to achieve sustained financial gains instead of liquidating their investment to receive immediate gains. This type of investor utility cannot be generated by short term equity shocks because the excess gain from short-term investments is difficult to maintain in volatile equity markets, and is thus often liquidated quickly to capture immediate gains.

If the investor’s wealth is generated by short term income shocks, it is very tempting for such an investor to liquidate her position immediately. Even if there is no consumption opportunity to capture with the wealth shock, the investor cannot achieve a higher utility level by investing in SC funds in comparison to the liquidation of wealth shock investment. Thus, such investors will seek higher gains that match the utility gains achieved by the immediate consumption of excess wealth.

The two types of investors mentioned above, possess distinct characteristics in the sense that the former investor will concentrate her assets in positions that provide long term sustainable gains, while the latter will pursue risky opportunities that promise high marginal gains that supersede the marginal gains obtained from immediately liquidating her investments. The two types of investors are complementary in their observed roles in financial markets. The first type of investor will be more passive in her investment strategy, thus holding a portfolio with a lower risk return profile, and maintaining a buy and hold strategy due to the sustainability of the assets on hand. The second type of investor will seek immediate financial gains and quickly withdraw her assets from any opportunity that seems to generate losses (and even gains that are inferior to the utility obtained from the immediate consumption of wealth). In a simplified world, this type of investor will either consume luxury goods to obtain high marginal utility or invest in risky financial assets that promise high gains in the short term that exceed the marginal utility gained by consuming luxury goods. The two types of investment behavior will be examined later by approximating their wealth with socially conscious funds and apparel & luxury goods index returns.

### ***Corporate Behavior and the Financial Performance of the SC funds***

Although there are various motivations for corporations to be socially responsible, this paper focuses on the influence of corporate performance based on the evaluation received from socially conscious fund managers and speculative overseas investors. It is important to note that the aim is not to directly associate the socially conscious behavior of corporations to their financial performance, but rather shed light on the selection criterion of social conscious funds that screen the socially conscious behavior of firms that they consider for investment. The specific question of interest is whether socially conscious funds are successful in screening out firms that are likely to be targets of speculative overseas investors. Because SC fund performance is highly correlated with the market, principal component analysis is an effective tool to analyze these fund's characteristics. So, this task is achieved by explicitly decomposing the movements of socially conscious fund returns and speculative investment return proxies to identify the stochastic components which are common among the SC funds but different from speculative investment risk factors.

Margarita (2004) investigates financial performance at the individual firm level. This is difficult to investigate because individual stock returns are comprised of various firm specific factors that cause statistical problems in identifying the direct impact of being socially responsible. Some evidence of overseas investors is found at the firm level. Suto and Takehara (2012) show that foreign ownership structure is positively associated with socially responsible performance, when running a two stage least square regression with an originally constructed index after controlling for corporate

characteristics. Papers such as Benson and Humphrey (2008) and two papers by Renneboog, Horst and Zhan (2008a and 2008b) focus on the performance of socially responsible investment funds. They partially circumvent the firm specific effects problem and a similar approach is used in this paper as well.

Ioannis et. al. (2012) show that corporate socially responsibility is negative but weakly associated to systematic firm risk and positively related to its financial risk. This paper add to the literature by taking the approach of extracting the impact of CSR activities by focusing on the SC fund level (that are aggregate benchmarks of individual firm level activity); this allows the decomposition of the stochastic factors generated by socially conscious funds and speculative overseas investors (that are assumed to consume luxury goods). These two factors may not span the risk of the entire market, but observing the relative influence of the two factors provides insights on how SC funds are managed and what type of investors are attracted to such funds. Moreover, this analysis reveals one potential role for socially conscious funds in the financial market, i.e. providing a benchmark for sustainable long term investment. Because the sample period contains the financial crisis of September 2008<sup>2</sup>, the analysis leads us to the conclusion that SC fund managers are successful in filtering out investments that are short-term and speculative (as is approximated by individuals who consume/invest in the apparel & luxury items section of the market).

### ***The Luxury Consumption Hypothesis and The Equity premium***

The luxury consumption hypothesis indicates that there is a positive relation between luxury consumption of excess wealth generated by equity market shocks. Ait-Sahali, Yogo, and Parker (2004) construct a model that provides reasonable estimates of risk aversion under the hypothesis that the equity premium is dominated by investors who possess low levels of risk aversion. Such investors tend to consume their excess wealth with luxury goods that provide marginal utilities at a very high level. One example was given in Hiraki, Ito, Speith, Takezawa (2009) where fine art was considered as to be a luxury good. This paper is in line with the previous argument in the sense that wealthy individuals (who simultaneously consume luxury goods) are the dominant investors in the stock market, but differ in the sense that the dominant investors are further decomposed into two types when investing in the overseas market. The first type of investor is assumed to invest/divest in overseas markets when the investor's home country equity market receives positive/negative equity shocks. This investor is wealthy and is known to allocate a higher fraction of wealth to the equity market, which generates wealth shocks in conjunction with the equity market fluctuations. The quick cash

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<sup>2</sup> Schnietz and Epstein (2005) investigate the value of corporate social responsibility during a financial crisis.

generated by equity market shocks is quickly consumed because of the high marginal utility appreciated by this type of investor. Consequently, this type of investor will aggressively pursue returns. (Because the wealth generated by these equity holders is conspicuous, I assume that this type of investor will only invest overseas when the investor receives positive income shocks generated in her home country market.) The second type of investor is a long term investor that maintains a buy and hold strategy.

### **Model**

The proposed model considers two types of investors that partially represent the overall equity market. The first would be approximated by the returns of socially conscious funds, and the second is approximated by the apparel & luxury goods index (a sub-index of the SP500 composite), where the later type of investor is more susceptible to wealth shocks generated by equity market fluctuations due to their higher exposure.

#### *Type 1 (Representative Investor of the overall market)*

This investor will consist of Banks, Pension funds and/or corporations that follow a passive strategy and are reluctant to change (although they may increase) their equity position. This type of investor is more interested in long term sustainable gains rather than chasing short term gains. Such investment criteria are often observed in socially conscious funds.

#### *Type 2 (Representative Investor who possess high equity ownership that stimulates luxury consumption)*

This investor represents wealthy individuals that possess high fractions of equity in their individual portfolio, which in turn makes their exposure to equity price fluctuations higher. In addition, such individuals gain high marginal utility when consuming luxury goods (i.e. they have low risk aversion levels). This characteristic of these investors leads to an investment strategy that seeks high marginal utility in the stock market (higher than the marginal utility gain through individual consumption) and thus means that they keep a large part of their wealth in the equity market. The high risk tolerance in their investment strategy allows for speculative overseas investments to be conducted in the short term. As a consequence, it is assumed that the speculative investment behavior of such investors is highly correlated with the consumption of luxury goods, and aggressive investments that pursue short term returns, which are quickly reinvested and/or consumed.

The influence of the two types of investors is measured against the Japanese stock market that is represented by the TOPIX and its 33 industry sector classification indices. This analysis not only

provides indirect evidence the flow of overseas speculative investment, but also clarifies the sectors which have attracted investors with long term sustainable goals versus short term speculative goals. Because the sample period of interest covers the financial crisis of 2008, an inter-temporal analysis (using rolling style regressions) allows identification of the dynamic behavior of these investors. More specifically, the apparel & luxury goods index style may sustain, deteriorate or strengthen its influence on the market index of interest during the crisis. This phenomenon will be looked at carefully in the subsequent sections.

The Sharpe style weights<sup>3</sup> were obtained by the following optimization problem described in Appendix C. The model becomes a two factor model with the coefficients adding up to unity.

$$\begin{aligned} Y &= \alpha_1 X_1 + \alpha_2 X_2 + \varepsilon \\ 1 &= \alpha_1 + \alpha_2 \\ \alpha_1, \alpha_2 &\geq 0 \end{aligned}$$

where  $\varepsilon$  is the residual of the regression,  $Y$  is the overall equity market approximated by the TOPIX index,  $X_1$  is the returns of the apparel & luxury goods index,  $X_2$  is the returns of the socially conscious fund index, and  $\alpha_1, \alpha_2$  are the weights associated with each of the independent variables. The coefficients are restricted to be between 0 and 1, and estimated by minimizing the sum squared of errors. This regression is run with a rolling 24 month window for the period starting from 2005 Jan. to 2010 Dec. These results are reported in figures 3 and 4. The two stylized investors are assumed to represent the behavior of overseas investors and investors seeking long term sustainable growth.

## 2 Empirical Evidence and Results

### 2.1 Data Description

All of the fund returns were obtained from the Morningstar Direct database at a monthly frequency for the period between January 2005 and December 2010. There were 15 SC funds available at the end of the period in the Tokyo Stock Exchange. The complete list of fund names and management companies is shown in Table 1. Among the 15 SC funds, only 7 funds had historical data that could be tracked back to January 2005; they were used in the principal component analysis (A list of the funds used in the principal component analysis is provided in Table 2). The luxury consumption of overseas investors was approximated by the apparel & luxury goods index that was later converted into Japanese yen returns.<sup>4</sup> For a detailed explanation of the apparel & luxury goods index, refer to Appendix B. In addition to the SC fund data, I have also used the 33 industrial subsectors of the

<sup>3</sup> Refer to appendix C for a detailed discussion on the Sharpe style weights.

<sup>4</sup> The U.S. dollar / Japanese yen foreign exchange rate was obtained from the Bank of Japan website.



TOPIX market index and 108 SP500 subsector indices for comparative purposes. Appendix D provides a full description of the SC fund and TOPIX variables used in the subsequent analysis along with their summary statistics.

### **Basic Statistics and Motivation of Analysis**

The SP500 apparel & luxury goods index return (LUXYEN) is moderately correlated with the Socially Conscious Fund (Japan All Equity) returns, but the socially conscious funds are mutually correlated at a rather high level. This is verified by the correlation analysis in Panel A Table 3 (ordinary correlations). It should be noted that the TOPIX index is marginally correlated with both the SC fund indices and the apparel & luxury goods index. This observation motivates the principal component analysis of the socially conscious funds and the apparel & luxury goods index, in order to decompose the overall market index (TOPIX) into two distinct stochastic factors that represent the two types of investors under consideration.

The choice of the apparel & luxury goods index to be used as a proxy for the overseas speculative investors may appear to be rather arbitrary. Thus, although the results are not reported in detail, I have conducted a robustness check on other SP500 sub-indices that possessed a high correlation with the apparel & luxury goods index. The correlations among all of the SP 500 subsectors (108 in total) were calculated, and only those indices with a correlation higher than 0.69 are shown in Table 4. A principal component analysis was run against a subset of these indices (those with a correlation higher than 0.69) with the socially conscious fund returns. This is presented in Figure 4. The analysis yields a result that is comparable to the apparel & luxury goods factor. The high correlation with Tobacco, Movies is reasonable and Entertainment may be considered similar to sectors where excess wealth is consumed. However, the interpretation of the other sectors was not clear. This led to the decision that the analysis should be focused on the apparel & luxury goods sub-index in the following sections.

## **2.2 Empirical Evidence and Results**

### **Principal Component Analysis**

Principal component analysis is conducted for all of the SC funds that existed over the sample period starting from January 2005 and ending in December 2010 (This period includes the financial crisis of September 2008). Although there are 15 SC funds available today, only 7 were used in the analysis due to data availability. These SC funds represent the investors that choose long term sustainability

over high risk/return profile portfolios. In addition to the SC funds, the returns (in Japanese yen terms)<sup>5</sup> of the apparel & luxury index is added to the principal component analysis to represent the speculative investment behavior generated by investors who seek short term gains. After decomposing the stochastic components of the SC funds and apparel & luxury goods index as described in Table 2 and Appendix B, there are at least two distinctive components whose eigenvalues, proportion of variability, and cumulative proportion of variability appear to be interesting. From Table 3 Panel A, it can be seen that the first component has an eigenvalue of 6.76, which explains 85% of the variance. This stochastic factor is highly correlated with the socially conscious fund returns and marginally correlated with the apparel & luxury goods index returns. The second component has a rather small eigenvalue of 0.61; it explains 8% of the variance. The second factor is not a dominant factor, but is highly correlated with the apparel & luxury goods index and is almost orthogonal to the socially conscious fund returns as can be observed in the orthonormal biplot depicted in Figure 2 (left). A list of the first 11 eigenvalues is reported in Table 3 Panel B, and a complete list of the corresponding eigenvectors is reported in Table 3 Panel C.

The first component (PC1) is the most dominant factor; it explains a nearly 61% of the variability; the second factor (PC2) explains about 6 to 7% of the total variability. The interesting part of the analysis lies in the fact that the apparel & luxury goods index returns are more or less orthogonal to the SC fund returns when spanned by the first two stochastic components. This evidence supports the conjecture that SC funds are successful in filtering out the speculative investment behavior of overseas investors (when approximated by the apparel & luxury goods index). If the fund returns are decomposed into two factors, one would be related to the SC fund and the other would be related to the apparel & luxury goods index. This static analysis suggests that there are potentially two factors that influence the overall equity market. The following section investigates the inter-temporal change of these two factors by using a Sharpe style regression with a 24 month rolling window.

### **Sharpe Style Analysis with a Rolling window**

A rolling style regression was run with a moving window of 24 months for the period starting in 2005

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<sup>5</sup> The results are relatively robust against the change of currency.

Jan. and ending in 2009 Jan. This includes observations within the range of 2005 Jan. to 2010 Dec. For a detailed explanation of the estimation procedure, refer to Appendix C. The dependent variable of the style regression is the TOPIX market index and its 33 sectors as classified by the Tokyo Stock Exchange. The full list of market indices used is provided in Table 5. The style factors are the Socially conscious funds listed on the Japanese market whose complete list is provided in Table 2 (i.e. Fund 2, 4, 5, 6, 12 and 14) and the apparel & luxury goods index returns converted into Japanese yen. The results are presented in Figure 3 Panel A through Panel F, where the vertical axis represents the coefficient for the apparel & luxury index. This means that that the vertical axis can be interpreted as the influence of overseas speculative investors. Although the behavior of the SC funds differ moderately, the overall trend of all of the funds are more or less the same. In order to capture the general trend of the overseas investors' influence dynamically, the estimated coefficients are averaged and graphed in Figure 4 Panel A through Panel F.

Several interesting observations can be made from figures 3 and 4. The most prominent point is that many sectors dramatically reduce their exposure to the apparel & luxury goods index after the financial crisis of September 2008. The declining trend is observed as early as the summer of 2006 because the regression estimation is run on a 24 month (forward looking) window. Some of the sectors that reduced their exposure to overseas speculative investors, recovered their exposure eventually, but even if these sectors are included, 24 out of the 33 sectors fall in this category. One sector maintained a low exposure throughout the sample period, indicating a very low interest from overseas investment (the T2-banking sector). And two out of the 33 sectors maintained almost no change (or a minor increase) in their exposure to speculative overseas investors (these sectors include T5-Construction and T19-Non Ferrous metals). Although the change in exposure is small, the level of exposure to speculative investments maintained a high level for three industrial sectors (these include T22-Pharmaceuticals, T28-Rubber Products and T16-Marine Transport). The most interesting observation is that two (T26-Real Estate and T12-Insurance) out of the 33 sectors increased their exposure during the sample period. This was probably because these sectors were hit pretty hard during the financial crisis, and became a bargain for speculative overseas investors. One sector (T-13 Iron & Steel) showed a counter cyclical exposure to overseas speculative investors, whose interpretation is rather difficult. The reason is not clear, but this might indicate a temporary shift in

wealth to relatively stable or significantly underpriced sectors during the financial crisis, or may be just considered to have decreased its exposure to speculative overseas investors.<sup>6</sup>

Figure 5 shows the fraction of breakpoints identified by the Quandt-Andrews break point test with a 15% cutoff level. The breakpoints were calculated based on the weight for the apparel & luxury goods index for the rolling style regression run on the 33 TOPIX sectors (and TOPIX) against the 7 socially conscious funds. The figure only shows those breakpoints that had p-values less than 0.1. A clear trend can be observed that most of the break points are concentrated in the period from 2005 Dec. to 2006 Sept. Because the rolling regression is run on a forward looking 24 month window, the breakpoints are concentrated around the 2008 Sept financial crisis. There are a number of breakpoints after the financial crisis as well. These points are either indicating the recovery of the style weight given to the apparel & luxury goods index or an increase of index's influence after the financial crisis. The Quandt-Andrews test is a Chow-test run for various windows over the sample period. The Wald test statistic is used to test the assumption that the residual variance is identical before and after the break point.

Table 6 shows the average standard deviation of the fund of flows for all equity Japanese mutual funds for the period from 2009 Sept. to 2012 May. The standard deviation of SRI fund of flows (in yen value) is much smaller than the small cap, large cap and middle cap mutual funds. This supports the hypothesis that the fund flow of SC funds are relatively small, which implies that such investors who hold these funds maintain a buy-and-hold strategy as opposed to pursuing short term capital gains.

## 2.3 Conclusion and Implications

This paper has documented the socially responsible fund behavior and its potential role to reveal sustainable growth in Japanese financial markets. The level of each firm's social responsibility is measured in terms of the market assessment which is approximated by the SC fund managers' stock selection policy. The portfolio approach (i.e. using the SC fund data instead of individual stock data) enabled the extraction of a stochastic component that appears to be orthogonal to the apparel & luxury goods index that is used to measure the overseas speculative investment influence on the various Japanese market index returns. A general trend can be observed that most of the market subsectors

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<sup>6</sup> The R-square value of the regression is given in Appendix F for the Iron & Steel sector. It increases over time, which implies that only the increased exposure observed in the latter years is reliable.