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The Performance Comparison of Socially Responsible Funds against Traditional Funds

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Abstract

The concept of SRI has been accepted by more and more people. SRI funds are very different from traditional funds in performance. This paper will compare 400 traditional funds' performance to SRI funds' performance in the Chinese market during the period of Nov 2020 to Nov 2021. This paper will make descriptive statistics on these 400 funds, observe their frequency distribution and SPSS analyze their Sharpe rate and annualized rate to compare their performance.

Keywords: ESG, ETF, SRI, Performance, CAPM, Sharpe ratio, Annualized rate, Comparison, SPSS, descriptive statistics, Chinese market.

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Introduction

Foreign research on fund performance is much ahead of China. In the early 1960s, Sharpe put forward the CAPM model, which laid the foundation for fund performance evaluation. Sharp's research revealed the relationship between asset price and its components of overall risk (Sharpe, 1964) CAPM model is widely used in fund performance evaluation and marks the birth of asset pricing theory. The influence of CAPM theory is still extensive and huge after 40 years (Fama & French, 2004). The three indexes used in this paper: sharp index, Treynor index and Jason index are all based on CAPM model. However, in the 1980s, many scholars put forward the concept of opposing and supplementing CAPM model, Anat and Stephen figures out that the CAPM is inappropriate when agents have diverse and asymmetric information and behave optimally (Anat & Stephen, 1985) More models are proposed in the following research and discussion, such as the improved Jason index, T-M model, H-M model, Fama model, and BHb model. For instance, Bhattacharya's "the feedback effect equilibrium" model are based on H-M model and can directly show if the performance of agent. These models are more or less pointed out by latecomers, and scholars have also conducted attribution research on fund performance. Among them, scale, expense ratio, liquidity ratio, capital flow and product manager's education are pointed out to be related to fund performance. Kuar's research about the relationship with education of agent and performance of fund figures out the importance of control variables about scale, expense ratio, liquidity ratio and capital flow (Kuar, 2017) We will also use these indexes to control variables and analyze funds' performance in

subsequent research. However, this paper will not use too complex models, but only use sharpe index and annualized rate to make a relatively simple quantitative analysis to preliminarily compare the performance of SRI fund and traditional fund.

Literature Review

After reading 15 relative papers in Google Scholar, it is necessary to show how it helps

me to narrow down my topic and build connection to my topic.

Investment sustainability trends

“ Domini Social Index, an index of socially responsible stocks, did better than the S&P 500 Index and that socially responsible mutual funds did better than conventional mutual funds over the 1990--98 period but the differences between their risk-adjusted returns are not statistically significant.”(Meir Statman, 2000) This research shows the financial performance of SRI is better than traditional funds though it doesn't show the management cost problems. “Not statistically significant” means better but not much. The meaning of this research are not proved the better financial performance of SRI but tells us that people show their interesting to the concept of GED and SRI in 1990s. This interest has lasted for a long time, and until now, it is still a very popular topic. Many investors shows more and more favorable to the SRI and they even would like to give up some financial benefit to satisfy their social performance. The social preferences and social signaling can explain the SRI decisions but the financial motives play less of a role. Invest are willing to forgo financial performance in order to invest with their social preferences.(Arno & Paul, 2017) This tendency and trend seems to continue and may be further focused in the future. People pay more and more attention to the balance between capital and social responsibility. There is a growing demand for SRI and Green Investment. Especially in countries that have set some regulations about this area. However, private and institutional investors still make decision to get maximize profit. (Muhammad & Verena, 2020) This research show two kinds of attitude that people treat to the SRI. The country would like to absorb more and more

SRI while some private and institutional investors still doesn't like it. At first let's focus on the attitude of country "being categorized as low sustainability resulted in net outflows of more than \$12 billion while being categorized as high sustainability led to net inflows of more than \$24 billion"(Samuel & Abigail, 2019) In the United States, a large amount of social responsibility capital flows in, while non social responsibility capital flows out. China also increasingly emphasizes corporate social responsibility. Actually, not all institutional and private investors doesn't like SRI. On the contrary, SRI is being gradually accepted by more and more institutional and private investors. Institutional and private investors are showing increasing interest in incorporating ethical issues into financial decision-making.

Research on attribution of social responsibility fund

At the same time, the integration of ESG standards has a positive effect on financial results(Ouassil, 2020) But we still should clear that why some investor doesn't like SRI. These studies that we found before emphasize that people's social preference to SRI. SRI's financial preference is better than traditional funds, but not significantly. People are willing to sacrifice some financial preferences. All of these studies don't clearly describe the comparison the financial preference between SRI and traditional funds. The financial performance of SRI is better than S&P 500 index and higher than the traditional funds. In the period 1997-2005, the performance of SRI are better than the traditional funds but the differences are driven exclusively by SRI funds run by management companies socialized in SRI (Javier & Andre, 2010) This research shows the Performance of SRI is better than traditional funds in 90s-00s and shows the

advantages of SRI may be due to the well management of the funds. But it still doesn't have many pages to show how management influence the SRI, but it provide a direction of our research: pay attention to the management method of SRI. More stringent screening intensity will reduce the performance of the fund. When the screening intensity is further improved, this effect will increase in the opposite direction. (Gunther & Monjon, 2014) High management cost may reduce the financial performance of SRI. The performance of SRI will increase when the management is further improved. Performance analyses show that dividends and fees are accountable for a substantial difference in the returns of SRI and conventional funds. They connect with management factors and fee systems. (Andrea, Hans & Bert, 2011) This study give a more detail segment to the direction and focus on the dividends and fees. In our later research, dividend and fees will be an important index to compare the performance of SRI and traditional funds. SRI policies can increase capital flows to universities and provide other university benefits, but SRI has higher management costs and portfolio return volatility. (Aragon, jiang, Juha, Aalto & Cristian ,2021) This research focus on the SRI practice in university. This study finds the management cost is high and the management cost is an important issues that influence the financial performance of SRI. There is another research also about university SRI practice. An research about American university SRI practice shows highly selective and elite schools do not like SRI and are unlikely to sacrifice returns for SRI, and Less Selective schools appear to regard costs of SRI as branding investments. (Janet & Richard, 2016) Highly selective and elite school students don't like SRI while less selective school students regard it as

branding investment. It seems that we should also consider the ages as an variable. Countries, private and institutional investors and university students have different attitude to the SRI. SRI costs depends on the investor's opinions about asset pricing models and stock-picking skill by fund managers (Christopher, Robert & David, 2021) In conclusion, Both of Social performance and financial performance should be considered in this research. In the financial performance part, this research should focus more on how management method and cost influence the performance of SRI and traditional funds.

ESG and Traditional ETF performance

Piers Weston's research conducted regression analysis on the performance of ESG and traditional ETF funds. Weston and nnadi take the total return as the dependent variable and the P / E ratio, return on net assets and beta index as the independent variables to carry out the robust regression analysis of ESG and traditional funds' performance by using Stata. The results show that in terms of economic benefits, the regression of ESG and traditional EFT funds shows a similar state, but they find that ESG has become a general trend, and more and more companies choose to use the concept of ESG to manage companies.(Piers Weston and Matthias nnadi, 2020) Ivelina Pavlova studied the factor analysis of ESG and ETF funds in the collapsed market environment after Covid-19. This study found that the general ETF performance is better than ESG ETF. This study also found that a high ESG rating can not save the performance of ETF funds, but the performance of ESG ETS will not be worse than the market (Ivelina Pavlova and Maria E. de boyrie, 2021)Another study on ESG fund performance during covid-

19 also gave a similar conclusion. ESG score is not important, and the level of ESG score will not affect the performance of the fund in covid-19. However, different from the previous studies, this study uses the methods of analysis of variance and multiple regression, but the conclusions of the two studies are very similar. (Zachary.etc, 2020)

Srinidhi Kanuri's research has studied the risk and return of ESG fund. His research results show that ESG fund will be better than IWV and DGT in a specific period of time, but IWV and DGT's performance are better than ESG fund in the whole process. (Srinidhi Kanuri, 2020)

Methodology

Capital Asset Pricing Model (CAPM)

This study defines performance as annualized rate and sharp rate, so this study will use CAPM

model to measure performance. CAPM model was first proposed by William Sharpe. Sharpe put forward the concept of risk to measure the performance of funds through CAPM model. (Sharpe, 1964) CAPM model associates the risk of capital with the rate of return to generate a new index Sharpe rate. CAPM model and Sharpe rate are authoritative indicators to measure fund risk and return (Fama & French, 2004) There are some formula may used in this research.

Calculation method of Sharpe index

$$\text{Sharpe index} = [E(R_p) - R_f] / \sigma_p$$

$E(R_p)$ means the return of portfolio, R_f means risk-free rate and σ_p means standard deviation of the portfolio's excess return. The higher the Sharpe rate, the more return you get for each additional risk, that is, the better the performance.

$$\text{Alpha} = R(i) - (R(f) + B \times (R(m) - R(f)))$$

$R(i)$ = the realized return of the portfolio or investment

$R(m)$ = the realized return of the appropriate market index

$R(f)$ = the risk-free rate of return for the time period

B = the beta of the portfolio of investment with respect to the chosen market index

If the alpha is greater than zero, the performance is better than the market benchmark.

The greater the alpha index, the better the performance. If the alpha is less than zero, the performance is lower than the market benchmark

Method Used

The research strategy used in this study is experiment. This study uses the quantitative research method to compare the performance of social responsibility fund and

traditional fund. The time period of the research content is from November 2020 to November 2021, this research will compare the performance of social responsibility funds and traditional funds in the Chinese market during this period. Performance is defined as annualized rate and Sharpe rate in this study. This research will first collect the data in Excel and calculate their Sharpe rate with the formula. Then make a descriptive statistics to draw SRI and Traditional funds's frequency. At last, This research will use SPSS regression analysis to compare and analyze SRI and Traditional funds' performance.

Data Collection

This research Collects data using secondary sources. The data resource is from Tiantian fund website. Tiantian fund website is widely used by domestic novice investors in China. This website has been supervised by the CSRC. The fund are traded in the market and each data can be found in real time on the website. The time period of the data is from November 2020 to November 2021. The data in this time period can ensure that it is fresh and reliable enough to be consulted. Second, This research won't overlap with other people's research and make some own contributions. Third, This research won't use some new data so that I can't calculate the Sharpe rate and annualized rate. Since the domestic SRI fund market has not been fully developed in China, there are less than 200 Sri funds. The sample size this research selected is 100 SRI funds and 300 traditional funds: 100 stock funds, 100 mixed funds and 100 bond funds.

SRI fund data (some of them)

Name	Number	1MR	3MR	6MR	1YR	σp	Sharpe
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Huitianfu mixed social responsibility	470028	10.76%	2.94%	19.24%	15.67%	21.61%	0.63
Wanjia social responsibility 18 months to open A	161912	1.02%	3.27%	36.62%	52.95%	27.69%	1.55
CCB SSE social responsibility ETF connection	530010	-2.54%	-1.70%	-0.72%	2.05%	15.49%	0.17
CCB social responsibility	530019	3.19%	-2.08%	-1.49%	6.88%	21.87%	0.37
Xingquan social responsibility mixed	340007	3.18%	-3.76%	7.51%	14.20%	27.36%	0.54
E fund ESG responsible investment stock	007548	-2.69%	-2.15%	-6.03%	2.05%	28.36%	0.15
Wanjia social responsibility will be held in 18 months C	161913	0.98%	3.14%	36.28%	52.19%	27.69%	1.54
Southern ESG stock A	008264	-2.29%	-10.01%	-2.92%	3.09%	26.31%	0.17
Hua'an CES Hong Kong Stock Exchange ETF	513900	-0.70%	-6.09%	-10.94%	-5.92%	20.50%	-0.36
Yamamoto ESG quantitative mixing	009246	1.72%	-0.61%	21.91%	30.32%	27.30%	1.04

Huabao MSCI China A-share international communication (LOF) A	501086	-0.48%	-1.56%	3.60%	7.06%	17.02%	0.41
Southern ESG stock C	008265	-2.34%	-10.15%	-3.22%	2.47%	26.31%	0.14
Hua'an CES Hong Kong stock connect ETF connection A	005813	-0.85%	-5.98%	-10.67%	-6.50%	19.20%	-0.42
Hua'an CES Hong Kong stock connect ETF link C	005814	-0.89%	-6.07%	-10.85%	-6.87%	19.21%	-0.44

Traditional fund data

Number	Name	<u>One month bond yield</u>	<u>Three month bond yield</u>	<u>Half year yield</u>	<u>Annualized rate</u>	σ p	Sharpe
5669	Qianhai open source public	10.75%	11.00%	109.00%	149.81%	38.18%	2.54
828	TEDA transformation opportunities	16.99%	11.88%	82.43%	113.92%	43.51%	1.92
9147	CCB new energy	9.50%	14.18%	75.15%	105.92%	36.91%	2.16
6081	Haifutong electronic transmission	14.74%	9.61%	69.29%	64.58%	32.05%	1.66
6080	Haifutong electronic transmission	14.66%	9.39%	68.62%	63.28%	32.04%	1.64
8009	Chinese high- end equipment	12.88%	7.08%	67.61%	71.36%	28.71%	1.96

4784	Steady optimization of investment promotion	15.23%	17.72%	66.00%	87.61%	31.32%	2.11
9068	Cathay Pacific China Securities Xinneng	10.90%	7.05%	59.07%	80.53%	36.13%	1.77
164905	Bocom Guozheng Xinneng	11.94%	8.57%	58.79%	69.20%	33.66%	1.68
6257	Cinda Aoyin advanced	6.70%	6.42%	58.75%	50.01%	26.61%	1.59
1410	Cinda Aoyin Xinneng	7.08%	6.03%	58.74%	49.43%	27.18%	1.55
5037	Yinhua new energy	9.45%	6.13%	58.53%	85.89%	35.68%	1.87

Analysis and Findings

This study first makes descriptive statistics on the four groups of data. The following figure is the descriptive statistics of the four groups of data

Descriptive statistics

	N	minimum value	Maximum	mean value	Standard deviation
SRI	100	-.44	4.79	1.0837	.76960
Stock	100	.66	2.54	1.4655	.40664
Mix	100	1.15	2.76	1.7227	.33392
Bond	100	.04	3.25	1.2898	.55687
Number of valid cases (in columns)	100				

Table 1- Descriptive Data of SRI and Traditional funds

This table shows that among the four groups of funds, Mix funds have the best average sharp rate of 1.7, Stock funds have the average Sharpe rate of 1.46, bond funds have the average sharp rate of 1.28, and social responsibility funds have the lowest average sharp rate of 1.08. However, social responsibility funds have the highest Sharpe rate and the largest standard deviation, This shows that the performance of social responsibility funds is not stable and is likely to show a trend of two-level differentiation. In the subsequent research, this study also found this trend of two-level differentiation. In order to better compare their performance, this study uses histograms to describe their frequency distribution, as shown below

SRI			Stock		
<0	5	5.00%	<1	13	13.00%
0-0.399	30	30.00%	1-1.39	29	29.00%
0.4-0.79	21	21.00%	1.4-1.79	32	32.00%
0.8-1.19	9	9.00%	1.8-2.19	24	24.00%
1.2-1.59	17	17.00%	>2.2	2	2.00%
1.6-1.99	12	12.00%			
2-2.4	5	5.00%			
>2.4	1	1.00%			
	100	1		100	100.00%

Mix		
1-1.29	9	9.00%
1.3-1.59	24	24.00%
1.6-1.89	39	39.00%
1.9-2.19	21	21.00%
2.2-2.49	4	4.00%

			Bond		
			0-0.49	6	6.00%
			0.5-0.99	22	22.00%
>2.5	3	3.00%	1-1.49	38	38.00%
	100	100.00%	1.5-1.99	29	29.00%
			2-2.49	3	3.00%
			>2.5	2	2.00%
				100	100.00%

Table 2- Frequency statistics of Sri fund and traditional fund

Through descriptive statistics, This study finds

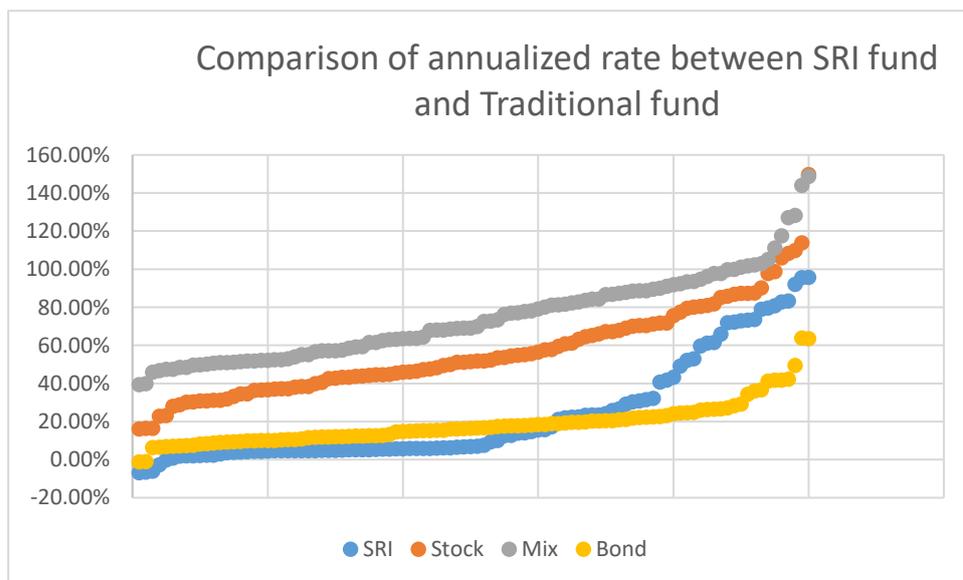
that the Sharpe rate of mix funds and Stock funds is mainly distributed between 1.3 and 2, while the Sharpe rate of bond funds is mainly distributed between 0.5 and 2.

The Sharpe rate of social responsibility funds shows a trend of class polarization, one is between 0 and 0.8, and the other is between 1.2-2. From the perspective of

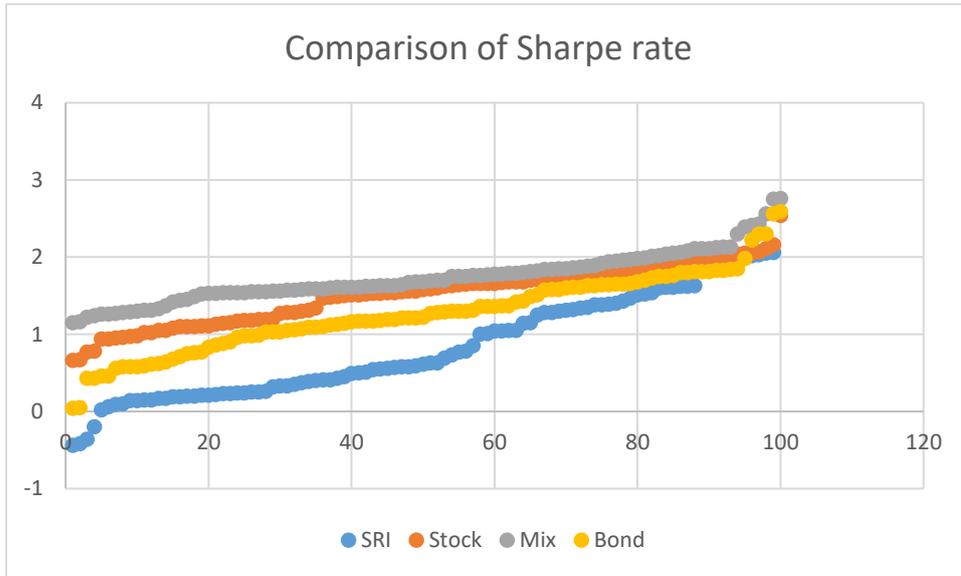
frequency distribution, the performance of social responsibility funds at the risk level from November 2020 to November 2021 seems to be far worse than that of equity

funds and hybrid funds. In order to more intuitively see the differences in their

performance, This study draw scatter charts of annualized rate and Sharpe rate of this four groups of funds.



Graph 1- Scatter chart of Annualized rate of SRI fund and Traditional fund



Graph 2- Scatter chart of Sharpe rate of SRI fund and Traditional fund

These two graphs gives more information. We mentioned above that SRI funds show a trend of partial two-level distribution. The annualized rate of SRI funds with good performance is higher than bond funds, and even catch up with stock funds and Mix funds. However, the annualized rate of SRI funds with poor performance is lower than bond funds, which is the lowest among traditional funds. The level of sharp rate is consistent with the frequency distribution of previous descriptive statistics. The sharp rate of China's domestic social responsibility fund from November 2020 to November 2021 is very poor.

At last, This study uses SPSS analysis to study the correlation and significance of the differences between the four variables. The following is the regression analysis of the Sharpe rate of SRI and the Sharpe rate of other three traditional funds through SPSS

Model	Non standardized coefficient		Standard error	Standardization coefficient		t	Significance
	B	Beta	Beta	Beta			
					Beta		

1	(constant)	2.241	.456		4.914	.000
	Stock	-.167	.201	-.088	-.834	.406
	Mix	-.472	.247	-.203	-1.908	.059
	Bond	-.075	.147	-.051	-.512	.610

a. dependent variable: SRI

Table 3- Regression analysis of Sharpe rate between SRI fund and Traditional fund

In the regression analysis, the Sharpe rate of social responsibility fund and mix fund are the least significant. The Sharpe rate of social responsibility fund and mix fund are far less than stock fund and bond fund. However, from the perspective of variance, the gap between social responsibility fund and bond fund is far smaller than the gap between social responsibility fund and stock fund and mix fund. On the whole, the performance difference between social responsibility fund and mix fund is the most significant. The performance of SRI is close to bond fund, and the performance of mix fund is far better than SRI fund.

Model		coefficient ^a				Significance
		Non standardized coefficient		Standardization coefficient		
		B	Standard error	Beta	t	
1	(constant)	.478	.092		5.191	.000
	Stock	-.119	.139	-.115	-.857	.394
	Mix	-.231	.146	-.203	-1.590	.115
	Bond	.261	.329	.115	.795	.429

a. dependent variable: SRI

Table 4- Regression analysis of Annualized rate between SRI fund and Traditional fund

In terms of annualized rate, social responsibility fund shows great significance compared with stock fund and bond fund. As also analyzed above, this significance is mainly reflected in that the poor performance part of social responsibility fund is close to the bond fund. The good performance part of social responsibility fund is close to stock fund. However, the significance of the annualized rate of social responsibility fund and mix fund is still very small. Moreover, the annualized rate of mix funds is much better than that of social responsibility funds. However, different from Sharpe rate, at the level of standard deviation analysis, the performance evaluation of the annualized rate of social responsibility fund has been higher than that of bond fund. In terms of annualized rate, Mix funds are greater than Stock funds, social responsibility

funds and bond funds.

Conclusion

The overall performance of social responsibility funds in the Chinese market from November 2020 to November 2021 is not as good as that of traditional funds, in which the performance of mix funds is overwhelmingly ahead of that of SRI funds. The significance of social responsibility fund for mix fund is also the worst. The Sharpe rate of social responsibility fund for stock fund shows a low significance, while the annualized rate shows a high significance. The Sharpe rate of social responsibility funds is worse than that of traditional funds, but the annualized rate performance of social

responsibility funds is better than that of bond funds. The performance of social responsibility funds in the Chinese market has a two-level distribution trend, that is, the return of funds with poor performance is very low, while the return of funds with good performance is very high. SRI funds with good performance for the stock fund shows high significance. SRI funds with poor performance for the bond fund shows low significance.

Limitations and Contributions

One of the limitations of this study is that the domestic social responsibility fund market is still immature. According to the statistical data of wind in November, there are only 191 domestic social responsibility funds, and many of them can not be used to calculate the annualized rate and sharp rate because of the short profit time. Due to the limitation of the number of social responsibility funds, although the number of traditional funds is huge, Our experimental sample is still very small. Descriptive statistics on the number of 100 funds in each group may not be objective enough.

Due to the limitation of professional level, we can not use better models to analyze their performance. We can only use the sharp rate of CAPM model and the chart of SPSS to analyze their performance. The contribution of this study is that beginners can intuitively feel the performance comparison between Sri fund and traditional fund, and simply and clearly compare the investment risks of the two funds.

Although academic is not necessarily strong, it has a certain degree of functional contribution.

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