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The Performance of ESG ETFs vis-à-vis non-ESG ETFs in Hong Kong

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ABSTRACT

The performance of ETFs in Hong Kong that apply environmental, social and governance (ESG) criteria to make their investment decisions is examined in this study. The performance of these ETFs is assessed against the performance of competitive non-ESG ETFs. The study period spans from 1/12/2022 to 29/2/2024. From a methodological perspective, raw returns, tracking errors and risk-adjusted returns are computed. Raw returns are computed in percentage terms with daily close trade prices. Tracking error is calculated as the difference in daily returns between ETFs and Hang Seng Index, which is used as a proxy for the entire stock market of Hong Kong. Risk-adjusted returns include Sharpe, Treyor, Modigliani & Modigliani, and Information Ratios. A simple regression model is applied too, via which the daily excess return of each ETF, that is the return above the risk-free rate, is regressed on the corresponding return of the market index. The empirical results indicate that the ESG ETFs clearly underperform their non-ESG peers, also being a little riskier and more expensive than them. In particular, the average daily return of ESG ETFs is equal to -0.058%, while the respective return of non-ESG ETFs is slightly better at -0.033%. At the cumulative level, the average return of ESG ETFs is equal to -19.22%, while the respective return of the non-ESG ETFs amounts to -12.41%. When it comes to risk, the ESG group presents an average measure of 1.572%, whereas the non-ESG group has an average risk of 1.490%. In regard to expenses, the average management fee of the ESG ETFs is equal to 0.18%, while the average management fee of the non-ESG peers is 0.09%.

KEYWORDS

ETFs; Sustainable Investing; Performance; Risk-Adjusted Return; Hong Kong

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1. Introduction

The market of Exchange Traded Funds (ETFs) in Hong Kong is the subject of this study. This is one of the seven most significant ETF markets in the Asia-Pacific region, which covers Hong Kong, Australia, Taiwan, Korea, mainland China, Japan, and India. The first ETF to enter the stock market in Hong Kong in November 1999 was the "Tracker Fund of Hong Kong". This ETF tracks the Hang Seng Index,[1] being the biggest ETF in Hong Kong with assets of more than $16 billion.[2]

As one of the pioneering markets in the ETF industry worldwide, the ETF market in Hong Kong experienced a steady compound annual growth rate of 9% in terms of assets under management. The assets held by the Hong Kong-listed ETFs in August 2023 amounted to $47 billion.[3] Currently 149 ETFs and 25 leveraged and inverse ETFs are listed in the Hong Kong Exchange offering a diverse array of options from the equity, money, fixed income, and commodities markets. The ETF market in Hong Kong is characterized by deep liquidity and has successfully attracted internationally renowned issuers, market makers, and investors.

In this study we focus on ETFs adopting environmental, social and governance (ESG) criteria when making their investment decisions. This is the so-called "sustainable" or "responsible" investing, which has attracted major interest within the investing community worldwide over the last two decades. Sustainable investing entails that financial gain is no longer the sole driving force for investors, who have been taking seriously the environmental and social aspects of their investments. This type of investors make their investment decisions based on their ethical, social, environmental, religious and other values. They may try to make an impact through their investments too. Finally, they can just recognize that embedding ESG factors can contribute to managing investment risk and boosting long-term financial performance.

The sample of our study includes four ESG ETFs, which are written on the Hang Seng Index. Three comparative non-ESG ETFs are employed too. Daily data over the 15-month period 1/12/2022 to 29/2/2024 are used. Raw returns, tracking errors against the performance of the Hang Seng Index, and risk-adjusted returns are computed. The results reveal a clear underperformance of the ESG ETFs in comparison to their non-ESG peers. At the same time, the ESG ETFs are more expensive than the "traditional" ETFs. These results entail that responsible investing can come with a cost in terms of lost financial performance.

According to CFA (2019), unlike to what has happened in mainland China, which has experienced a significant uptake of ESG investing over the last years, there is a relatively low level of ESG integration in Hong Kong. Although weak, the ESG integration in Hong Kong is driven by risk management needs and the increasing relevant requests made by the clients. The latter are likely to continue as institutional investors, and some retail investors desire more ESG investment choices.

The weak integration of ESG principles into investing strategies in Hong Kong may explain the small number of available ESG ETFs in Hong Kong for the moment (i.e., 19 ETFs compared to the total number of ETFs that trade on the market of Hong Kong) and the lack of a relevant study. To the best of our knowledge, this is the first study on ESG ETFs trading in Hong Kong. Our study has also been motivated by the steady growth of the ETF market in Hong Kong and the corresponding increasing interest of investors and other local and international market participants in these ETFs. The main aim of our study is to fulfill the gap in the literature concerning ESG investments in Asia in general and Hong Kong in particular. Our study also seeks to provide empirical insights that can be useful to investors, practitioners, analysts and researchers from the local market, as well as international players that are

[1] This is a free-float market capitalization-weighted index of the largest companies that trade on the Hong Kong Exchange, which is one of the largest stock exchanges in the world, with an aggregate market capitalization of $31 trillion as of December 2023 (https://www.investopedia.com/terms/h/hangseng.asp).

[2] https://www.trahk.com.hk/content/dam/hsvm/trahk/fund_docs/offering/TraHK_Factsheet-English.pdf.

[3] https://cms.hangseninvestment.com/cms/hsvm/insights/Chapter%201%20Comparative%20Analysis%20of%20APxJ%20ETF%20Market_final.pdf.

interested in applying ESG investing strategies with assets from Hong Kong.

From a practical perspective, our results indicate that investors with solely financial targets should possibly refrain from embarking on ESG investment vehicles. This is because the cost of ESG investing, in terms of lost relative performance and in terms of management fees, can be quite significant. ESG ETFs are more suitable for investors who can tolerate financial sacrifices towards serving their ethical values or making an impact through their investment activity.

Even though our study is the first to focus on ESG investing via ETFs in Hong Kong, the relevant literature on other stock markets worldwide has been steadily growing. Several studies, such as those by Marozva (2014), Meziani (2020), Rompotis (2016, 2022a and 2022b), Plagge and Grim (2020), ElBannan (2023), and Tan et al. (2023) investigate the performance of ESG ETFs and other relevant assets using data from several regions including the United States, Europe, Asia, and Africa. These studies provide mixed results on whether such investments can be profitable in financial terms. Financial gains are not supposed to be the primary goal of such investments. On the contrary, serving more noble causes is the top priority of these investments. These noble causes include the promotion of an environmentally friendly agenda, the enhancement of corporate governance and serving the needs of various stakeholders rather than solely focusing on the financial aspects of asset management.

In the remainder of this paper, Section 2 provides a review of some representative studies on the performance of ESG ETFs and other assets. Section 3 describes the sample of the study and develops the research methodology that will be applied. Empirical findings are discussed in Section 4 and conclusions are provided in Section 5.

2. Literature Review

In this section, we discuss the findings of key studies in the literature concerning the performance of ESG ETFs and other relevant investments. Marozva (2014) examines the performance of ETFs that trade on the Johannesburg Stock Exchange during the period 2004-2014. During periods of economic growth, no significant return differences are detected between ETFs and the JSE SRI Index. However, during periods of recession, the market index significantly underperform ESG ETFs. In the same context, Meziani (2014) reports that the annual growth and risk-adjusted returns of ESG ETFs relative to market returns are quite significant. However, the same inference cannot be drawn when performance is assessed in combination with the risk taken to achieve these returns. Meziani (2020) notes that despite the weak start of ESG ETFs during their infant days, their recent performance records have started to improve.

Rompotis (2016) examines the performance of water ETFs against the underlying indexes, the S&P 500 Index, and the market portfolio built for the United States by Fama and French, which is found on the website of Kenneth French.[4] Based on the results, water ETFs cannot achieve significant above-market returns, no matter what benchmark is used. On the contrary, in several cases, significantly negative alphas are provided. These negative alphas are commensurate to the fees charged by these ETFs. The return and risk of ESG ETFs are assessed by Kanuri (2020) over a period spanning from February 2005 to July 2019. The author reveals that ESG ETFs periodically outperformed investable proxies for the US and the global equity markets. Nevertheless, the market indexes outperformed ESG ETFs over the entire study period.

Plagge and Grim (2020) assess the performance of ESG equity index funds, active mutual funds and ETFs in the US over the period 2004-2018. The majority of the ESG funds examined do not produce statistically significant alphas, neither positive nor negative. Milonas et al. (2022) study the returns of 80 European and 64 US funds attempting to identify whether the performance of funds investing in firms that abide by strong ESG principles differ from that of conventional funds. The alpha, Sharpe ratio, Treynor ratio, and excess daily returns are used as

[4] Refer to https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

performance measures. The five-factor Fama-French model is also applied. The findings do not reveal any significant difference between ESG and non-ESG funds although the former have slightly higher returns than the latter.

Rompotis (2022a) examines the performance of 49 ESG ETFs in the UK. Raw and risk-adjusted returns are estimated with standard methodology including the single-factor market model, the augmented Fama and French (2015) six-factor model, and the Sharpe and Treynor ratios. On average, no significant alpha is achieved by these ETFs. In addition, there are no differences in Sharpe and Treynor ratios between ETFs and benchmarks. Rompotis (2022b) examines the relation between ETFs' ESG rating and performance expecting that an ETF with a high ESG rating should present high returns too. This expectation is not verified by the empirical results. Fiordelisi et al. (2023) focus on the performance and liquidity of a global sample of socially responsible ETFs vis-à-vis the performance and liquidity on non-socially responsible ETFs. The authors reveal that the socially responsible ETFs perform better than their non-responsible peers. They also are more liquid than them. However, this outperformance is concentrated in months of extreme climate activity, while the effect reverses during financial crises.

Tan et al. (2023) seek to answer applying ESG investing can "do well while doing good" using monthly data for firms from Australia, Mainland China, Hong Kong, Malaysia, and Singapore. From a methodological perspective, the authors combine positive screening and the smart beta approach to evaluate the performance of ESG-based and non-ESG-based equity portfolios. According to the empirical findings, the high-ESG-based portfolios do not offer superior risk-adjusted returns compared to the low-rated portfolios.

Bahadori et al. (2021) examine whether the financial performance of firms is related to their ESG scores. The authors use data of 600 firms from 24 leading emerging markets during the period 2014-2018 and assume a positive relationship between ESG scores and firm performance. After controlling for firm size and leverage, the results show that firms with higher ESG scores are more profitable than firms with lower ESG scores. In a similar context, Rodríguez-García et al. (2022) report a positive relationship between eco-efficiency with financial performance. Eco-efficiency is expressed by a lower CO2 emission-to-sales ratio, while performance is calculated as the Tobin's Q.

Chen and Yang (2020) focus on the Taiwanese market and examine how investors perceive information about the environmental, social, and governance aspects of their investments. The authors show that corporate ESG information is systematically exaggerated by investors. In particular, investors are very optimistic in response to good news about firms with higher ESG scores. The same investors are quite pessimistic when bad news about companies with lower ESG scores arrive. This tendency leads to ESG momentum effects in financial markets. In line with the overreaction hypothesis, the empirical results reveal that an ESG momentum strategy can lead to substantial short run profits, which however reverse in the long run.

With respect to ESG indexing, Li et al. (2022) acknowledge that uncertainty exists behind ESG data and propose a robust enhanced indexation model with real-life constraints. They use the ESG ratings awarded to the Chinese listed companies by three major local raters, namely SynTao Green Finance, China Alliance of Social Value Investment, and Sino-Securities Index Information Service over the period 2015-2020. The results show that embedding ESG in enhanced indexation leads to higher returns and lower risks. Moreover, such an indexing strategy reduces the share of assets with high ESG uncertainty and captures the upward returns of ESG investment.

In another context, Murata and Hamori (2021) investigate the relation between ESG disclosures and the stock price crash risk by using samples of major market indexes from Europe, the United States, and Japan. Static two-way fixed-effect models and dynamic Gaussian mixture models are estimated. In the static model, the coefficients of firm-level ESG disclosures are not found to be statistically significant. This is also the case about the dynamic model for the US sample. However, the coefficients of the dynamic model are significantly negative for the European

and the Japanese samples. Overall, these results suggest that ESG disclosures can lower future stock price crash risk; however, the magnitude of this effect and the predictive power of ESG disclosures are not common among regions.

Finally, the recent COVID-19 pandemic has triggered the conduction of several studies on how ESG ETFs behaved over the health and the, consequent, financial crisis. Folger-Laronde et al. (2022) analyze the relation between the financial return of ETFs in Canada and their Eco-fund ratings during the market crash resulted from the COVID-19 pandemic. The results show that higher levels of sustainability cannot safeguard ETFs from financial losses during severe market downturns. Similar inferences are drawn by Pavlova and de Boyrie (2022).

Similarly, Omura et al. (2021) investigate the returns, abnormal returns, and the Sharpe ratio of ESG ETFs against conventional investments during the COVID-19 health crisis. The results confirm the outperformance of responsible investments during the pandemic. Nguyen (2023) verifies the outperformance of ESG ETFs against the broad market over the COVID-19 stress. ElBannan (2023) also provides strong evidence on the resilience of sustainable ETFs during the COVID-19 market crash, with returns showing persistence during the market downturn. The outperformance of ESG ETFs during the COVID-19 crisis is verified by Albuquerque et al. 2020 too.

As inferred by the review of several significant studies on responsible investing, research that will focus on the growing ETF market of Hong Kong and compare the performance of different ETF groups based on their attitude towards incorporating ESG factors in investment strategies is still missing. Such a study could answer whether choosing ESG ETFs from the Hong Kong can contribute to the promotion of favorable practices from an environmental, social, and governance perspective, but can also be financially beneficial. Our study seeks to offer such answers with empirical data from the ETF market of Hong Kong.

3. Data and Methodology

3.1. Data and Statistics

In our analysis, we need passively managed ESG and non-ESG ETFs that are written on the same indexes. We do so in order to enhance the comparative validity of our results. During the sampling process, four (out of the fifteen equity) ESG ETFs listed in Hong Kong and three comparative non-ESG ETFs that are written on the Hang Seng Index were identified, while no matches of comparative ESG and non-ESG ETFs written on other indexes were detected.

Furthermore, in order to conduct consistent comparisons among ETFs, we decided to use the lengthiest possible common time interval among ETFs. This means that the selected ESG and non-ESG ETFs do not share common launch dates. Thus, should we consider data since the inception date of each ETF in the sample, that would mean that ETFs be compared to each other among different time intervals. To our view, such a comparison would not be that efficient. Bottom line, this decision about using a common study period for all ETFs in the sample resulted in a study period which spans from 1/12/2022 to 29/2/2024.

The profiles of the examined ETFs are provided in Table 1. The type, i.e., ESG or non-ESG fund, and the name, benchmark, inception date, and Morningstar's Corporate Sustainability Score and Carbon Risk Score of each ETF are presented in the table.[5]

The ESG ETFs are relatively new in the Hong Kong market, as the oldest fund of the sample was launched in February 2022. The oldest conventional ETF in the sample dates back to November 1999. The average management

[5] Morningstar's Corporate Sustainability Score reflects how much an ETFs' value is affected by ESG factors. The greater the ESG risks of an ETF, the more negative is the effect on ETFs' sustainability score. On the other hand, the Carbon Risk Score is the asset-weighted carbon-risk score of an ETF that indicates the degree to which an ETFs' investments are aligned with the transition to a low-carbon economy.

fee of ESG ETFs is equal to 0.18%. The respective average fee of the non-ESG ETFs is lower at 0.09%, indicating that the traditional ETFs are less expensive than their ESG peers. Finally, when it comes to the ESG risk scores, as expected, the data in Table 1 accentuate an advantage of ESG ETFs over their non-ESG counterparts in sustainability terms.

Table 1. Sample.

Type	Name	Benchmark	Inception Date	Management Fee	Corporate Sustainability Score	Carbon Risk Score
ESG	Global X Hang Seng ESG ETF	HSI ESG Enhanced Index	18 March 2022	0.29%	18.77	5.85
ESG	E Fund (HK) HSI ESG Enhanced Index ETF	HSI ESG Enhanced Index	10 October 2022	0.20%	N/A	N/A
ESG	HSI ESG Enhanced Select Index ETF	HSI ESG Enhanced Select Index	24 February 2022	0.08%	18.73	6.12
ESG	ChinaAMC HSI ESG ETF	HSI ESG Enhanced Index	10 November 2022	0.15%	N/A	N/A
Average				**0.18%**	**18.75**	**5.99**
Non-ESG	iShares Core Hang Seng Index ETF	Hang Seng Index	18 November 2016	0.09%	24.13	10.64
Non-ESG	CSOP Hang Seng Index ETF	Hang Seng Index	06 May 2021	0.10%	24.11	10.62
Non-ESG	Tracker Fund of Hong Kong	Hang Seng Index	11 Nov 1999	0.08%	23.57	9.76
Average				**0.09%**	**23.94**	**10.34**

Notes: This table presents the profiles of ETFs, which include their type, i.e., ESG or Non-ESG, name, benchmark's name, inception date, management fee, and Morningstar's Corporate Sustainability Score and Carbon Risk Score.

Table 2 presents the descriptive statistics of returns for ETFs and the tracking index. The returns of ETFs have been calculated with daily close trade prices. Index returns have been computed with daily close prices too. All close prices have been found on yahoo.finance. The average daily return of ESG ETFs is negative at -5.8 basis points (bps). The corresponding average return of non-ESG ETFs is equal to -3.3 bps, being quite close to the average daily return of the market index, which amounts to -3.1 bps. The average risk estimate of ESG ETFs is equal to 1.572, whereas the average risk of conventional ETFs is equal to 1.490, also being closer to the risk of the Hang Seng Index, which amounts to 1.471. At the cumulative level, the average total return of ESG ETFs amounts to -19.22%, while the average total return of the non-ESG ETFs is negative too, but quite better than that of the ESG ETFs at -12.41%. Index's total return is equal to -11.88%.

Table 2. Descriptive Statistics of Returns.

Type	Average	Median	Stdev	Min	Max	Total
ESG	-0.056	0.000	1.488	-3.406	4.915	-18.477
ESG	-0.041	-0.064	1.625	-4.542	7.512	-15.096
ESG	-0.073	-0.167	1.580	-4.372	4.464	-22.708
ESG	-0.064	0.000	1.597	-4.289	4.952	-20.616
Average	**-0.058**	**-0.058**	**1.572**	**-4.152**	**5.461**	**-19.224**
Non-ESG	-0.036	-0.059	1.494	-3.801	4.479	-13.248
Non-ESG	-0.031	-0.098	1.500	-3.865	4.380	-11.867
Non-ESG	-0.032	-0.113	1.478	-3.750	4.262	-12.104
Average	**-0.033**	**-0.090**	**1.490**	**-3.805**	**4.374**	**-12.406**
Index	-0.031	-0.095	1.471	-3.712	4.514	-11.875

Notes: This table presents the descriptive statistics of ETFs' returns over the period 1/12/2022 to 29/2/2024. Descriptive statistics include average and median daily return, standard deviation of returns, extreme scores, i.e., minimum and maximum returns, and total (cumulative) returns over the entire study period. The corresponding statistics of the market index, i.e., Hang Seng Index, are presented too.

Overall, the analysis of raw return and risk indicates that the ESG ETFs underperform the market, as well as their non-ESG ETF peers during the period under study, while they are also riskier than them. Underperformance, over-riskiness, and the cost disadvantage of ESG ETFs revealed above reflects a rather unfavorable situation from a financial perspective for investors choosing Hong Kong-listed ESG ETFs.

The descriptive statistics of ETFs' tracking error, that is, the difference in returns between ETFs and the market index, are reported in Table 3. Average, median, minimum, maximum, and total tracking errors are presented, as well as the standard deviation in return differences. On a daily basis, the average tracking error of ESG ETFs amounts to -2.7 bps, while the corresponding tracking error of the non-ESG ETFs approximates zero, being equal to -0.2 bps. At the cumulative level, the average tracking error of ESG and non-ESG ETFs amounts to -7.35% and -0.53%, respectively. The standard deviation in tracking errors is equal to 0.483, in the case of ESG ETFs, and 0.276, in the case of non-ESG ETFs.

Table 3. Descriptive Statistics of Tracking Error.

Type	Average	Median	Stdev	Min	Max	Total
ESG	-0.025	-0.015	0.408	-1.351	1.144	-6.601
ESG	-0.010	-0.007	0.388	-1.448	2.999	-3.220
ESG	-0.042	-0.054	0.405	-2.057	1.346	-10.833
ESG	-0.033	-0.031	0.733	-4.105	4.625	-8.741
Average	**-0.027**	**-0.027**	**0.483**	**-2.240**	**2.529**	**-7.349**
Non-ESG	-0.005	0.005	0.311	-2.576	0.999	-1.373
Non-ESG	0.000	0.010	0.282	-3.036	1.342	0.008
Non-ESG	-0.001	0.020	0.234	-3.086	0.710	-0.228
Average	**-0.002**	**0.012**	**0.276**	**-2.899**	**1.017**	**-0.531**

Notes: This table presents the descriptive statistics of ETFs' tracking error against the market index, i.e., the Hang Seng Index, over the period 1/12/2022 to 29/2/2024. Descriptive statistics include average and median daily tracking error, standard deviation of tracking error, extreme scores, i.e., minimum and maximum tracking errors, and total (cumulative) tracking errors over the entire study period.

Overall, the analysis of ETFs' relative raw performance, i.e., returns against the market benchmark, reveals once again an advantage of the conventional ETFs over their ESG peers given that they manage to perform quite close to the market, also having comparable risk to the market. On the other hand, the ESG ETFs clearly underperform the market, at least during the period under study, whereas they carry more risk.

3.2. Research Methods

First, we examine the performance of ETFs in Hong Kong with the following single-factor regression model:

$$R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + \varepsilon_i \quad (1)$$

where R_i denotes the daily return of the ith ETF, R_m represents the return of the Hang Seng Index and R_f is the risk-free rate.[6] Alpha represents the above-market return that can be achieved by an ETF. Beta measures the part of risk that cannot be mitigated by diversification techniques and indicates the systematic risk of ETFs. The model is applied for each single ETF in the sample with the Least Squares method and, when it is necessary, adjustments are made for autocorrelation and heteroskedasticity.

After the estimation of model (1), we compute four alternative types of risk-adjusted returns. The first one is the Sharpe ratio shown in formula (2):

[6] Daily data of the yield on the 10-year Hong Kong bond are used as the risk-free rate in model (1).

$$SR_i = \frac{R_i - R_f}{\sigma_i} \quad (2)$$

where R_i and R_f are defined as above. σ_i is the standard deviation of ETFs' excess return, i.e., ETF return minus the risk-free rate. The Sharpe ratio is estimated by the division of excess return by risk and is used to determine how well an ETF compensates its investors for the per unit risk they take. The higher the Sharpe ratio, the better the performance of an ETF.

The second risk-adjusted return measure used is the Treyor ratio shown in formula (3):

$$TR_i = \frac{R_i - R_f}{\beta_i} \quad (3)$$

where R_i and R_f are defined as above. β_i is the systematic risk of ETFs deriving from the performance regression model (1). The Treynor ratio is computed by dividing ETFs' excess return by systematic risk and is used to determine how well an ETF compensates its investors for the per unit systematic risk they take. The higher the Treynor ratio, the better the performance of an ETF.

The next risk-adjusted return measure employed is the Modigliani-Modigliani (MM) ratio, which measures the risk-adjusted return of a portfolio by multiplying the Sharpe ratio with the standard deviation of the market index (i.e., Hang Seng Index) and adding the risk-free return thereafter to it. The MM ratio is shown in formula (4):

$$MM_i = SR_i * \sigma_m + R_f \quad (4)$$

where SR_i is the Sharpe ratio of the ith ETF and σ_m is the standard deviation (risk) in market return. R_f is defined as above. Similar to the Sharpe ratio, the higher the MM ratio, the better the performance of an ETF.

The last risk-adjusted return measure used concerns the Information Ratio (IR) shown in formula (5):

$$IR_i = \frac{R_i - R_m}{TE_i} \quad (5)$$

where R_i and R_m are defined as above and TE is the tracking error of the ith ETF, that is the standard deviation of the differences between ETFs and market returns, i.e. the return of the Hang Seng index. The IR identifies how much the return of an ETF exceeds the return of the market and, thus, the higher the information ratio of an ETF, the better.

4. Empirical Results

The results of the single-factor performance regression analysis are provided in Table 4. The table includes the alpha and beta estimates, R-squared values and the standard errors of regressions. The latter is a measure of ETFs' tracking error, which should be quite close to the tracking error that has been computed as the standard deviation in return differences between ETFs and the market index. These standard deviations are reported in Table 3.

As shown in Table 4, with just one exception, alphas are negative but statistically insignificant. Only one significantly negative alpha is obtained from model (1), which is located in the group of ESG ETFs. Based on these results, no significant excess-market return is provided by the ETF examined. This finding is not surprising given the passive nature of the sample's ETFs. Given these results, it is obvious that the selected ETFs that trade on the stock exchange of Hong Kong are not suitable for alpha seeking investors. These ETFs, and the non-ESG ETFs in particular, are more suitable to investors who want to go with the flow, that is, investors who feel safer by investing in assets whose return will be quite comparable to market returns.

Table 4. Performance Regression Results.

Type	Alpha	T-stat	Beta	T-stat	R^2	SE
ESG	-0.026	-1.123	0.973[c]	-1.669	0.925	0.407
ESG	-0.008	-0.355	1.075[a]	5.178	0.948	0.372
ESG	-0.040[c]	-1.751	1.039[b]	2.479	0.936	0.401
ESG	-0.034	-0.799	0.965	-1.211	0.791	0.732
Average	**-0.027**	**-1.007**	**1.013**	**1.194**	**0.900**	**0.478**
Non-ESG	-0.005	-0.281	0.994	-0.527	0.957	0.311
Non-ESG	0.001	0.032	1.002	0.145	0.965	0.282
Non-ESG	-0.001	-0.074	0.992	-0.877	0.975	0.235
Average	**-0.002**	**-0.108**	**0.996**	**-0.420**	**0.965**	**0.276**

[a] Statistically significant at 1%; [b] Statistically significant at 5%; [c] Statistically significant at 10%

Notes: This table presents the results of a single-factor performance regression model via which the daily excess return, i.e., return minus the risk-free rate, of each ETF is regressed on the corresponding return of the Hang Seng Index. Alpha reflects the above market return that can be achieved by an ETF. Beta counts for the systematic risk of ETFs. The study period spans from 1/12/2022 to 29/2/2024. T-test on alphas examine the difference of estimates from zero. T-test on betas assess the difference of estimates from unity.

The average beta estimate of ESG ETFs equals 1.01, indicating a full exposure to the market index. However, three out of four single betas are significantly different from unity. The average systematic risk of the non-ESG ETFs approximates unity, while no beta estimate in this group differs significantly from unity. Overall, the beta estimates indicate that the conventional ETFs are actually more aligned with the market index than their ESG competitors. This fact possibly explains the lower tracking errors of the non-ESG ETFs discussed in the previous section in comparison to the tracking errors of ESG ETFs. The latter is also evidenced by the regressions' standard errors reported in Table 4, which are quite close to the standard deviations in return differences between ETFs and the market index in Table 3.

Frequently, betas are used as a measure of conservativeness on behalf of ETFs, mutual funds, index fuds, etc. Beta estimates which are lower than unity indicate that the corresponding funds are more conservative than the market index. Conservativeness usually entails that funds are safer than the market when market prices go down, but funds make less profits when prices go up. Betas that are higher than unity imply that the respective funds are more aggressive than the market index. In this case, funds loose more than the market during recessions, while aggressive funds are more profitable than the market during bull markets.

In our sample, the non-ESG ETFs are quite aligned with the market benchmark, displaying no aggressiveness, nor conservativeness at all. This means that expected gains of losses of the investments in non-ESG ETFs are quite close to the returns of the market benchmark. On the other hand, the beta of one ESG ETF is significantly lower than unity, two betas are significantly higher than unity. These results show that the selected ESG ETFs do not share a common stance against the market index. Overall, indexers who wish to be placed in the Hang Seng Index as closely as possible should resort to non-ESG ETFs to do so.

The measures of the four types of risk-adjusted returns are presented in Table 5. The average Sharpe ratios of the ESG and the conventional ETFs are negative at -4.4 and -2.9 bps, respectively, while all the single Sharpe ratios are negative too. Similar trends are observed in the rest risk-adjusted return measures, where all average and most of the single ratios are negative. Regardless of the risk-adjusted return measure considered, ESG ETFs fall short when they are compared to their non-ESG counterparts. This finding verifies our conclusion about ESG ETFs underperforming their traditional peers, which was reached via analyzing raw returns and tracking errors.

Overall, the results on the risk-adjusted return measures reveal a performance disadvantage of ESG ETFs in Hong Kong relative to their non-ESG peers. These results are in line with those studies in the literature that support that responsible investing via funds that consider ESG factors when forming their investing strategies comes with a cost in terms of lost financial performance. In our case, while written on the same index, the non-ESG ETFs present

considerably worse risk-adjusted measures than those of the non-ESG ETFs. This finding is somehow surprising, given the passive nature of the funds examined, but it may be explained by the fact that the ESG ETFs are not fully aligned with the market benchmark, as shown above via the significantly different from unity betas of these ETFs.

Table 5. Risk-Adjusted Return.

Type	Sharpe	Treynor	M&M	Info Ratio
ESG	-0.045	-0.068	-0.056	-0.062
ESG	-0.031	-0.047	-0.036	-0.026
ESG	-0.052	-0.079	-0.067	-0.103
ESG	-0.046	-0.076	-0.058	-0.044
Average	**-0.044**	**-0.068**	**-0.054**	**-0.059**
Non-ESG	-0.031	-0.046	-0.035	-0.016
Non-ESG	-0.027	-0.040	-0.030	0.002
Non-ESG	-0.028	-0.042	-0.032	-0.003
Average	**-0.029**	**-0.043**	**-0.032**	**-0.006**

Notes: This table presents four types of ETFs' risk-adjusted return, i.e., the Sharpe Ratio, the Treynor Ratio, the Modigliani-Modigliani (MM) Ratio, and the Information Ratio over the period 1/12/2022 to 29/2/2024.

5. Conclusion

This study examines the performance of ESG ETFs in Hong Kong in comparison to the performance of competitive non-ESG ETFs over the period 1/12/2022 to 29/2/2024. The sample includes four ESG and three conventional ETFs, which all track the Hang and Seng Index. Raw return and tracking error analysis is applied, along with performance regression and risk-adjusted return analysis.

The empirical results of our study reveal a clear performance disadvantage of ESG ETFs relative to their non-ESG peers. This disadvantage is verified by all the kinds of performance assessment applied. More specifically, at daily frequency, the average return of ESG ETFs amounts to -5.8 bps. The corresponding return of the non-ESG ETFs is higher than that of ESG ETFs being equal to -3.3 bps. In cumulative terms, the corresponding average return of ESG and non-ESG ETFs is equal to -19.22% and -12.41%, respectively. Moreover, the average risk-adjusted return of ESG ETFs (deriving as the average term of the four risk-adjusted measures used in our analysis) is equal to -0.056, whereas the corresponding average of non-ESG ETFs is equal to -0.026.

Furthermore, the traditional ETFs are better aligned with the market index than the ESG ETFs. In particular, the betas of the three non-ESG ETFs considered in our analysis do not differ significantly from unity, while three out of four betas of ESG ETFs do differ significantly from unity. Nevertheless, both ESG and non-ESG ETFs do not achieve any material above market return, as evidenced by the lack of any significantly positive alpha among the examined ETFs.

Moreover, ESG ETFs carry more risk for investors, both in raw and systematic risk terms. The raw risk measures for the ESG and non-ESG ETF groups are equal to 1.490% and 1.572%, respectively. The average systematic risk (beta) of ESG ETFs is equal to 1.013, while the average beta of non-ESG ETFs amounts to 0.996. Finaly, the ESG ETFs have higher management fees than those charged by the conventional ETFs, i.e., 0.18% and 0.09%, respectively.

Overall, the combination of underperformance with higher risk and cost rather implies that the ESG ETFs in Hong Kong is not a wise choice for investors seeking to maximize their financial gains from their investments in ETF products. It seems that ESG ETFs from the stock market of Hong Kong are more suitable to investors who can tolerate financial losses in order to fulfill their ethical goals or make an impact through their investments choices.

Yet, if ESG-concerned investors do wish to make some financial gains too, they may do so by choosing profitable ESG ETFs from other capital markets in the United States, Europe or elsewhere. Investing internationally would be a plausible choice providing that the costs, taxation and convenience of trading of such an international placement

are comparable to those implied for investors who choose ESG ETFs from the market of Hong Kong. The existence of free trading platforms in the US and other developed markets could help ESG investors from Hong Kong turn to ESG ETFs from other markets.

Though being the first to focus on the ESG niche of the ETF market in Hong Kong, our study faces some significant limitations. The most significant of them is the relatively short period under study, i.e., 15 months of data are used. Another limitation is that our study only uses ETFs that track the Hang Seng Index, excluding other equity ESG ETFs that are currently traded on the Hong Kong Exchange. A future study should expand the period covered and the number of ETFs examined. Should such an expansion be made, more robust results on the performance of ESG ETFs in Hong Kong will be obtained.

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Conflict of interest

All the authors claim that the manuscript is completely original. The authors also declare no conflict of interest.

Author contributions

This article has been solely written in its entirety by the author.

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