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ESG Integration and Long-Term Portfolio Performance: Evidence from International Markets

Jiale Cai*

School of Finance, Shandong Technology and Business University, Yantai, Shandong, 264005, China

Corresponding author: Jiale Cai, 663917068@qq.com

Abstract: In the macro context of the deep transformation of the global economy to a sustainable development model, environmental, social and corporate governance (ESG) factors are increasingly established in the core position of asset pricing and portfolio construction in the international capital market. This article explores the core mechanism of ESG integration on long-term portfolio performance and international market performance. The study shows that ESG integration is not a simple moral constraint, but significantly improves the long-term risk-adjusted returns of the portfolio by avoiding tail risks and optimizing the cost of capital of enterprises. However, due to the differences in market development stages, the excess returns of ESG investment show significant heterogeneity between developed and emerging markets, and face empirical challenges such as divergent rating standards and "greenwashing". Clarifying the above complex mapping mechanism provides a solid theoretical basis for institutional investors to optimize the cross-cycle asset allocation framework and regulatory authorities to improve the information disclosure system.

Keywords: ESG Integration; Portfolio Performance; Long-Term Gains; Excess Returns; Risk Management

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1. Introduction

In the macro context of the global economy's deep transformation towards sustainable development, environmental, social and corporate governance (ESG) factors are profoundly reshaping the asset pricing logic of the international capital market. Traditional investment frameworks with a single financial indicator as the core are no longer able to effectively address systemic risks caused by climate change, supply chain restructuring, and corporate governance deficiencies. While mainstream institutions have embraced ESG concepts at a strategic level, controversy persists over whether they can generate robust excess returns for portfolios over the long term. While traditional investment theories worry that non-financial constraints will sacrifice diversified returns, the empirical evidence from a long-term perspective emphasizes that companies with high ESG performance tend to have lower financing costs, a more forward-looking strategic vision, and a stronger resilience to risks [1]. Therefore, relying on a large number of samples in the international market and deeply deconstructing the internal correlation between ESG integration and long-term portfolio performance, it is not only the frontier of the expansion of modern asset pricing theory, but also the key proposition to guide the green transformation of global capital.

2. The Mechanism of ESG Integration on Long-Term Portfolio Performance

To explore the underlying drivers of ESG integration on long-term portfolio performance, we must penetrate the surface

phenomenon and explore the bridge it builds between micro corporate financial characteristics and macro market pricing. ESG factors are not only a scale to measure corporate externalities, but also an internal engine that drives long-term capital appreciation.

2.1 Tail Risk Management based on the Perspective of Risk Mitigation

In today's uncertain business environment, risk management capabilities are a decisive factor in determining the long-term survival and prosperity of a portfolio. The primary mechanism of ESG integration at the portfolio level is reflected in the effective avoidance of "asymmetric downside risk". From a mechanical point of view, seamlessly embedding the ESG assessment system into the investment due diligence process can greatly broaden the breadth and depth of information acquisition, and help investors identify and accurately eliminate "black swan" candidates with fatal hidden dangers in environmental compliance, labor rights protection or corporate governance structure in advance. When the macroeconomy suffers a severe shock or an industry suddenly crisis breaks out, companies with high ESG ratings often show stronger resilience [2]. For example, in the face of increasingly stringent global carbon emission quota constraints and environmental penalties, enterprises that have made forward-looking layouts in the fields of green technology research and development and energy conservation and emission reduction in the early stage can calmly avoid huge compliance costs and the risk of production shutdown and rectification, and maintain the stability of free cash flow. This strong immunity to tail risk significantly reduces the volatility and maximum drawdown of the portfolio during the long-term investment cycle, thus maintaining the bottom line of long-term profitability for investors under the calculation rule of "compound interest magic".

2.2 Cost of Capital Optimization based on a Value-Driven Perspective

In addition to passive risk defense, ESG integration has an active value creation function, and its core transmission path is to significantly optimize the capital cost structure of enterprises. In the debt financing market, commercial banks and fixed income investors are increasingly inclined to include corporate ESG risk exposure in credit default probability measurement models. Companies that actively practice ESG concepts and have high transparency in information disclosure are often seen as having more stable operating expectations and stronger debt solvencies, allowing them to issue green bonds or obtain sustainability-linked loans at lower coupon rates. At the level of equity financing, excellent ESG performance not only sends a positive signal to the market that management is focused on long-term and stable operation, but also effectively reduces agency costs and information asymmetry between insiders and external investors. With the explosive growth of passive funds and actively managed funds that follow ESG investment principles around the world, companies with high ESG ratings can often enjoy significant "liquidity premiums" and higher valuation centers. This systematic reduction in the weighted average cost of capital (WACC) directly increases the net present value of the company's future discounted cash flow, which in turn drives the long-term stable growth of the intrinsic value of the portfolio.

2.3 Long-term Dynamic Integration of Financial and Non-Financial Performance

The improvement of long-term portfolio performance is not achieved overnight, but is the result of the dynamic integration of financial and non-financial elements over a long period of time. Traditional financial indicators are often lagging "rearview mirrors" that can only reflect the past operating performance of enterprises, while ESG indicators are strongly forward-looking and are the "telescope" for predicting the sustainable profitability of enterprises in the future. Empirical research has found that ESG factors have a unique "risk premium" characteristic, and this premium is more significant in the long-term perspective [3]. In addition, the widespread "ESG momentum effect" in the capital market provides a rich ground for actively managed portfolios to obtain excess returns. Static high-ESG rating companies may have been fully priced by the market and lack room for excess returns. However, those "in transition" companies that are in a period of ESG governance structure reshaping and whose indicators are showing a marginal improvement trend are often accompanied by huge dividends from fundamental revaluation. By prospectively capturing this non-financial marginal improvement at the micro level, institutional investors can lay out in advance and share the long-term growth dividends released by enterprises from "low expectations" to "high quality", so as to achieve deep resonance between financial performance and non-financial performance [4].

3. Heterogeneity and Strategic Evolution of ESG Investment Performance in the International Market

The international capital market is not a single homogeneous whole, and its internal differences in institutional soil, legal tradition and market effectiveness have shaped the profound heterogeneity of ESG integration effects and continue to promote the iterative upgrading of investment strategies.

3.1 Differences in Performance between Developed and Emerging Markets

Developed capital markets represented by Europe and North America are the source and mature testing ground of ESG investment concepts. In particular, the European market has built the world's most stringent and complete ESG information disclosure and evaluation infrastructure under the pressure of strong regulations such as the Sustainable Finance Disclosure Regulation (SFDR). In such a highly effective and crowded market environment, ESG information has been quickly reflected in asset prices by massive quantitative models and high-frequency trading funds, and it is exponentially more difficult to build a portfolio to obtain alpha returns solely based on public static ESG rating data. Investors' excess returns in developed markets increasingly rely on in-depth mining of unstructured data and the construction of complex nonlinear models. In stark contrast to the vast number of emerging markets, which are often accompanied by lagging disclosure systems, weak investor protection mechanisms, and pervasive corporate governance deficiencies. However, it is this data vacuum and market failure that provides a vast blue ocean for long-term funds that deeply practice ESG integration to obtain amazing excess returns. In emerging markets, the weight and influence of the "G" (corporate governance) factor often show an overwhelming advantage. By focusing on screening those companies with reasonable equity structure, norms of conduct of major shareholders, and transparent related party transactions, investors can avoid wealth plunder caused by agent moral hazard to the greatest extent. At the same time, with the restructuring of global supply chains, the harsh ESG access standards put forward by multinational giants for suppliers in emerging markets are forcing these companies to accelerate their transformation, thus giving birth to rich "ESG momentum" investment targets.

3.2 The Evolution of Investment Strategy from Negative Elimination to Comprehensive Integration

With the deepening of the market's understanding of the internal logic of sustainable development, the ESG strategies of international institutional investors have undergone a profound transformation from simple and crude to refined and deep. Early socially responsible investing mainly adopted a single "negative exclusion method", that is, based on specific religious beliefs or moral standards, mechanically excluding industries involved in the military, tobacco, gaming, or highly polluting fossil energy from the investable domain. Although this strategy is the most direct in terms of value expression and has low compliance costs, it comes at the expense of the diversification advantage of Markowitz's effective frontier, which can easily lead to huge industry allocation bias in the portfolio under specific macro cycles. With the integration of quantitative finance and modern asset management technology, the "positive screening" and "best-in-class" strategies have gradually emerged, and their core concept is no longer to exclude certain industries, but to select leading companies with the highest ESG performance within each industry. Today, top international institutions have fully entered the era of "deep ESG integration". At this stage, ESG factors are no longer isolated filter labels, but are completely deconstructed and embedded in every quantitative module of the company's future cash flow forecast, discount rate adjustment, scenario stress test and macro cycle judgment. This round-the-clock integration method maximizes the flexibility and breadth of the investment portfolio, and achieves perfect self-consistency between financial logic and sustainable logic.

3.3 The Role of Active Ownership in Long-Term Value Creation

The evolution of ESG investment strategies is not only reflected in the upgrade of asset screening technology, but also in the fundamental change in the role of investors. Large international asset managers are increasingly not satisfied with just being passive asset allocators, but actively become catalysts and creators of intrinsic value through the implementation of "active ownership" strategies. The core of this strategy is that investors use their own capital discourse power to directly intervene and guide the ESG strategic transformation of investee companies by exercising proxy voting rights, proposing shareholder resolutions, and engaging in closed-door in-depth dialogues with the company's top management and board of directors. For example, global investor alliances such as Climate Action 100+ have successfully pushed global energy giants to develop binding net-zero timelines and overhaul executive compensation systems. This in-depth shareholder participation mechanism not only breaks the short-sighted tendency of management from the inside, promotes the long-term improvement of the

company's substantive fundamentals, but also releases a strong positive signal in the capital market, thus achieving the Davis double click of "social influence" and "excess financial return" at the portfolio level.

4. Empirical Challenges and Market Friction Faced by Performance Testing

Although ESG integration has shown impressive long-term value creation potential, this field still faces insurmountable micro-measurement challenges and macro-institutional frictions in the rigorous academic empirical test and brutal business practice, which seriously interfere with the objective evaluation of ESG real performance.

4.1 The Measurement Dilemma of Rating Differences and Endogenous Problems

The core technical bottleneck hindering ESG investment performance research is the huge "rating divergence" between the world's mainstream ESG rating systems. In contrast to the highly standardized credit rating market that has developed for more than a century, the ESG rating agencies (such as MSCI, S&P, Sustainalytics, etc.) currently operate independently in the underlying indicator selection logic, data interpolation algorithms, issue weight allocation, and industry adjustment benchmarks, and lack a unified objective yardstick. This fragmentation of rating frameworks has led to the irony of the fact that the same company can receive very different scores under different institutional evaluation systems. This confusion of basic data makes most empirical studies on ESG factor returns extremely fragile, and researchers only need to change a database, and the original significant positive return conclusions may disappear or even be reversed in an instant, greatly weakening the guidance of academic conclusions in practice. Even more difficult is the "endogenous bias" that is difficult to completely eradicate in econometric models. On the one hand, there is a serious "reverse causation", that is, the "redundant resource hypothesis" that is widely discussed in academia - it is often those large companies that already have strong profitability, abundant cash flow and market monopoly position, so that they have enough financial redundancy to invest heavily in expensive environmental equipment, improve employee benefits, and hire top PR teams to write beautiful sustainability reports. Therefore, in the observed statistical correlation between high ESG ratings and high financial returns, it may not be ESG driving financial growth, but financial success that contributes to high levels of ESG performance. In addition, the problem of missing variables also fade away, such as the ability of superior management to deliver exceptional financial performance and a forward-looking sustainable vision, and if this implicit variable is not perfectly controlled in the model, the actual alpha creation capacity of ESG integration will be greatly exaggerated.

4.2 The Risk of Greenwashing and the Fragmentation of the Global Regulatory System

In addition to the micro data dilemma, institutional friction at the macro level is also a Damocles sword hanging over ESG portfolios. Among them, the proliferation of "greenwashing" has become the deadliest poison that erodes the cornerstone of ESG ecological trust. Under the temptation of policy dividends, credit tilt support, and the fanatical pursuit of millennial investors, some companies that lack substantial transformation momentum are willing to take risks, deliberately dressing themselves up as "green and environmentally friendly" by selectively disclosing favorable data, using obscure public relations rhetoric to whitewash pollution facts, or transferring high-carbon emission assets off-balance sheet through complex related party transactions. This information fraud seriously distorts the pricing mechanism of the capital market. Once a storm of scrutiny from regulators or third-party NGOs unveil their falsehoods, the reputations of the companies involved will collapse in an instant, and their stock prices often face a cliff-like plunge, causing devastating net worth drawdowns for unsuspecting ESG-themed portfolios [5]. At the same time, the deep fragmentation of the global ESG regulatory system has further exacerbated the friction cost of the market. There is a gap between different sovereign countries in terms of the green finance taxonomy, climate risk scenario testing requirements, and the scope of mandatory information disclosure. This misalignment of regulatory rules not only provides a broad space for multinational enterprises to "rule arbitrage", resulting in assets being double-calculated or misallocated in different jurisdictions, but also greatly increases the compliance review costs and data cleaning difficulties of global asset managers, making building a perfect ESG portfolio across markets on a global scale a difficult task that is theoretically feasible but difficult in practice.

5. Conclusion

There is a deep and dynamic logical resonance between ESG integration and long-term portfolio performance. Deeply

integrating ESG factors into investment decisions can effectively build a tail risk firewall of the portfolio and keenly capture the momentum premium brought about by the marginal improvement of non-financial factors, thereby building a moat for capital across macroeconomic cycles. In the face of the ongoing fragmentation of rating systems, endogenous measurement bias and "greenwashing" in the current international market, investors must completely abandon mechanical labeling and turn to quantitative integration and active ownership intervention based on in-depth fundamental research. Looking ahead, with the gradual establishment of a global unified sustainability information disclosure benchmark, the pricing of ESG factors in the capital market will tend to be highly effective. Only by building an ESG evaluation system with independent core competitiveness and adhering to the origin of long-term value investment can institutional investors achieve stable value preservation and excellent appreciation of assets in the historical process of promoting the sustainable development of the real economy.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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