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Analysis of ESG Factors in Financial Environment Risk and Investment Decision

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Abstract: The purpose of this paper is to deeply analyze the relationship between financial environment risk and ESG (Environment, Society and Governance) factors in investment decision-making, and to explore the role of ESG in reducing risks, improving long-term performance and promoting the sustainable development of financial markets. Through literature review and empirical analysis, we reveal the influence of ESG factor on enterprises and its importance in investment decision. This paper elaborates the essence of financial environmental risks, including market instability, political and economic changes and climate-related risks. Subsequently, we introduced three elements of ESG, namely environment, society and governance, and emphasized the comprehensive role of these factors in evaluating enterprise performance and risk. Furthermore, the influence of ESG factors on investment decision is studied. By integrating ESG factors, investors can understand the potential risks and long-term returns of enterprises more comprehensively. Empirical research shows that the investment strategy that pays attention to ESG factors can achieve better returns in the long run, which highlights the positive effects of ESG in building a sustainable investment portfolio. This paper provides an in-depth theoretical and empirical study on the relationship between ESG factors and investment decisions, and emphasizes the positive role of ESG factors in promoting the sustainable development of financial markets. This is of guiding significance for investors, enterprises and regulators to formulate more comprehensive and sustainable strategies in the face of changing financial environment.

1. Introduction

With the continuous development of the global financial market and the increasingly close connection of the international economy, the relationship between financial environmental risks and investment decisions is becoming more and more obvious. In the past few decades, with the continuous evolution of the financial system and the trend of globalization, investors must seriously consider many factors when facing the complex and changeable market environment in order to formulate a sustainable investment strategy [1]. Under this background, ESG (Environment, Society and Governance) factor, as a key factor to evaluate the sustainability of enterprises and portfolios, has been paid more and more attention by investors and financial institutions.

Financial environmental risk refers to the potential threats to financial markets and investment portfolios caused by various factors, such as market instability, political and economic changes and natural disasters. In this complex environment, ESG factors provide investors with more comprehensive information by considering the environmental friendliness, social responsibility and effective governance of enterprises, which is helpful to reduce the potential risks faced by the portfolio [2-3].

The purpose of this paper is to deeply discuss the relationship between financial environment risk and ESG factor in investment decision. By combing the existing research and empirical analysis, we will try to answer the following questions: How does ESG affect the performance of portfolio? In the face of uncertainty and risk, how can investors better integrate ESG factors to formulate more sustainable investment strategies? Through in-depth study of these issues, we are expected to provide investors and financial institutions with a clearer investment decision-making framework, so as to better balance risks and returns and promote the development of financial markets in a more sustainable and stable direction.

2. Basic concept and function of ESG factor

The risk of financial environment and ESG factor in investment decision-making have become a hot topic in the financial and investment fields. With the global society paying more and more attention to sustainability and corporate social responsibility, investors increasingly realize that ESG factors are very important for evaluating the risks and returns of enterprises and portfolios. This trend reflects that investors not only pay attention to financial performance, but also pay attention to the performance of enterprises in environment, society and governance, so as to achieve more comprehensive value creation [4].

Firstly, environmental factors play an important role in ESG framework. Global climate change, resource scarcity and the intensification of energy consumption have caused widespread concern about the environmental impact of enterprises. Investors can evaluate the impact on climate and ecosystem by investigating the environmental policies, carbon footprint and renewable energy use of enterprises, so as to reduce environmental-related risks.

Secondly, social factors involve the positive contribution of enterprises to society. This includes employee welfare, community participation, human rights protection and the elimination of injustice. Investors are increasingly aware that corporate social responsibility is not only crucial to brand image and public reputation, but also closely related to the long-term stable development of enterprises [5-6].

Finally, the governance factors focus on the internal structure of the enterprise, the effectiveness and transparency of the board of directors, and anti-corruption and honesty. A sound governance structure helps to prevent internal risks and improper management, enhance the long-term sustainability of enterprises and enhance investors' trust in the company.

The application of ESG factors in investment decision-making can not only provide a more comprehensive enterprise performance evaluation, but also help to reduce various potential risks faced by the portfolio [7]. More and more studies show that investment strategies that focus on ESG factors can achieve better returns in the long run and help to create a more sustainable and stable investment portfolio. The risk of financial environment and ESG factors in investment decision not only reflect the evolution of global financial markets, but also provide investors with a more comprehensive information base, formulate investment strategies from a more comprehensive and long-term perspective, and promote the financial sector to develop in a more sustainable direction.

3. The influence of ESG factors on financial environmental risks

The stability and sustainability of financial markets are crucial to the healthy development of the global economic system. In this context, ESG factor has gradually become a key element that cannot be ignored in financial decision-making. As a part of ESG, environmental factors are directly related to the use of natural resources by enterprises and their impact on the environment [8]. The performance of enterprises in managing carbon emissions, resource use and waste disposal directly affects the environmental risks they face. By implementing environmental protection policies and sustainable development strategies, enterprises can reduce the regulatory risk, production interruption risk and social burden caused by environmental problems, thus improving their long-term stability.

Social factors involve the reputation and relationship of enterprises among employees, communities and the public. Respect for employees' rights and interests, community development and human rights not only helps to improve corporate image, but also helps to reduce social and political risks [9]. Positive social responsibility behavior helps to build strong social capital, thus forming an effective shield in the face of external challenges.

Effective corporate governance structure is the key to reduce internal risks of enterprises. A standardized governance system can ensure the transparency and fairness of decision-making within the company and reduce the possibility of corruption and misconduct within the company. By establishing a strong board of directors and board of supervisors and strengthening the transparency of financial reports, enterprises can improve investors' trust in the company and reduce the financial environment risks caused by internal problems of the company.

Integrating ESG factors into investment decisions will not only help reduce potential risks in environmental, social and governance, but also provide investors with a more comprehensive information base. More and more studies have proved that investment strategies that focus on ESG factors can achieve better returns in the long run. ESG integration is not only a risk management tool, but also the key to provide investors with a more sustainable and stable portfolio.

Under the background that the world is constantly facing environmental challenges and social changes, the influence of ESG factors on financial environmental risks is becoming more and more prominent. By paying attention to environmental, social and governance factors, enterprises and investors can understand the potential risks more comprehensively and take corresponding measures to ensure long-term sustainability. Bringing ESG factors into financial decision-making not only contributes to the healthy development of the financial system, but also provides strong support for the realization of global sustainable development goals.

4. Application of ESG integration in investment decision

4.1 Comprehensive evaluation of ESG factors

Under the background of increasing concern about sustainability and corporate social responsibility, ESG factor has become an indispensable consideration in investment decision-making. ESG integrates environmental, social and governance factors, and provides investors with a comprehensive enterprise performance evaluation. By comprehensively considering these aspects, investors can have a more comprehensive understanding of the risks and opportunities of enterprises. Investors pay more and more attention to the environmental performance of enterprises, including carbon footprint, energy use and waste management. Environment-friendly enterprises are often more innovative and adaptable, and have a longer-term competitive advantage. Investors not only pay attention to the financial performance of enterprises, but also pay attention to its impact on employees, communities and consumers. The active participation of enterprises in social responsibility activities is helpful to build a strong brand image, thus improving the long-term value of enterprises.

An effective corporate governance structure helps to reduce the risk of internal conflicts and misconduct. A standardized governance system can improve the transparency of enterprises, enhance investors' trust in enterprises, and thus improve the competitiveness of enterprises. Investors are increasingly inclined to integrate ESG factors into their investment strategies. This includes screening

ESG leaders, building an ESG portfolio and using ESG data for risk management. The research shows that the investment strategy of ESG integration can achieve a more stable return in the long run.

ESG data not only provides the performance of enterprises in environmental, social and governance aspects, but also provides investors with a better risk assessment tool. By identifying potential ESG risks, investors can better adjust their portfolios and reduce potential uncertainties. Industry standards and sustainability certification provide investors with an objective evaluation method to help them identify enterprises that meet ESG standards. This helps investors find opportunities that meet their investment goals more quickly and accurately.

The application of ESG factors in investment decision-making not only provides investors with more comprehensive information, but also helps to urge enterprises to pay more attention to sustainability. By integrating ESG factors, investors can not only reduce potential risks, but also better achieve long-term investment goals. This comprehensive consideration is not only conducive to the stable development of financial markets, but also helps to push the global economy towards a more sustainable and responsible direction.

4.2 Application in investment decision-making

There are many stakeholders in an enterprise, including not only shareholders, management, employees and customers, but also suppliers, distributors, communities and governments. Enterprises should not only pay attention to the interests of shareholders, but also pay attention to the realization of the interests of other stakeholders when making business decisions. Investing the human and financial resources that should be used for the business development of enterprises in the ESG field, which can not be directly rewarded in the short term, takes up the resources that can be used to enhance the core competitiveness of enterprises and reduces the amount of funds that directly create income for enterprises, thus indirectly increasing the credit risk of bonds.

ESG performance has both weakening and aggravating effects on the credit risk of corporate bonds, so this paper puts forward the competitive hypothesis:

H1: Good ESG performance reduces the credit risk of corporate bonds.

H2: Good ESG performance increases the credit risk of corporate bonds.

In this paper, the Logistic model is used to construct the following early warning model of corporate bond credit risk with ESG factors:

$$E(def_i) = P(def = 1|x) = \frac{1}{1 + \exp\left[-\left(\alpha + \beta_1 ESG + \sum_{i=2}^{n} \beta_i x_i\right)\right]} \quad (1)$$

P is the predicted default probability, and the explained variable def indicates whether there is a credit risk event in corporate bonds. Credit risk events include the default or credit degradation of bonds, with a value of 1 and no value of 0.

In this paper, the ESG rating data is quantified, and the above nine ratings are assigned 9-1 respectively. The higher the score, the better the ESG performance of the enterprise. If ESG reduces the probability of corporate bond credit risk events, the corresponding β1 value should be significantly negative. Among them, GDP growth rate is the growth of the total value of all the final products and services produced by a country in a certain period of time, and it is one of the most intuitive and important indicators to measure the economic situation. This paper chooses GDP growth rate as the proxy variable of macro-economic development.

The samples used for model estimation in this paper include the default samples, including 25 bonds that defaulted for the first time in the China bond market from the fourth quarter of 2020 to the fourth quarter of 2022. In order to expand the number of samples, this paper adds 65 bonds that have been downgraded in the same period. 90 first default events and debt downgrade events of corporate bonds together constitute the sample database of bond credit events in this paper.

Figure 1 reports the heat map of correlation coefficient among variables, and the absolute value of correlation coefficient among explanatory variables is mostly below 0.2, so it can be considered that the multicollinearity problem in the model is not serious, so it is suitable for the next regression analysis.

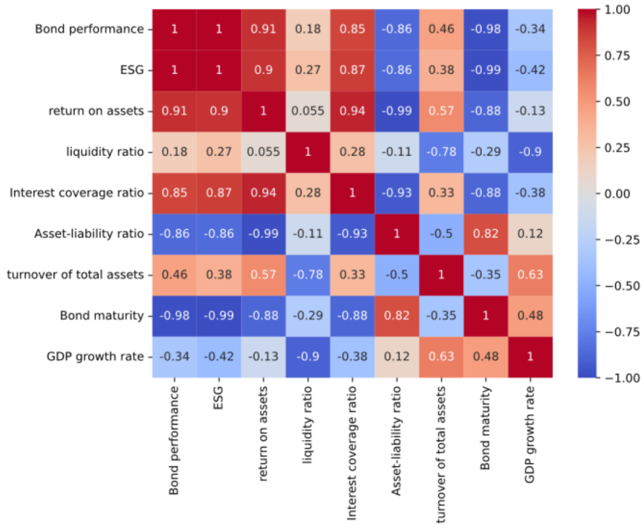

Figure 1: Thermal map of correlation coefficient between variables

It is worth noting that the correlation coefficient between bond credit risk events and enterprise ESG performance is significantly negative, which indicates that the better the enterprise ESG performance is, the less likely the bond will default or its rating will drop.

In order to further test the influencing factors of corporate bond credit risk, this paper constructs a Logistic model for empirical analysis, and Figure 2 shows the regression effect of different variables added to the early warning model.

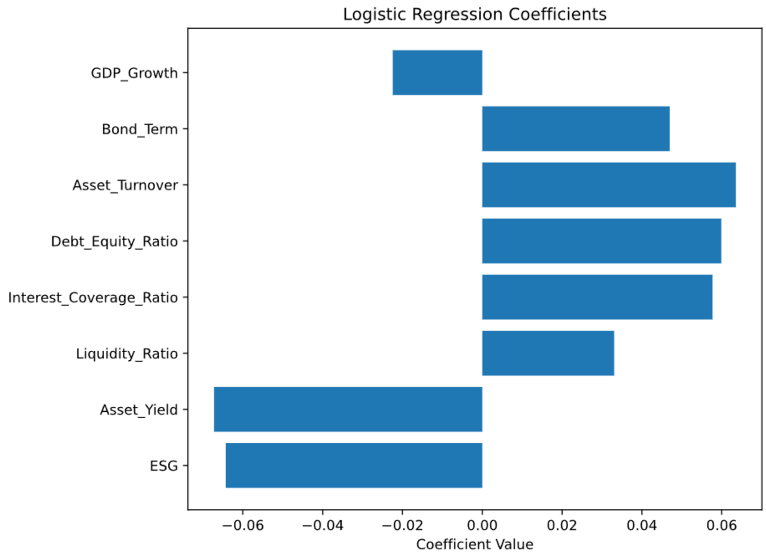

Figure 2: Regression effect of Logistic

When there are no other control variables, the ESG coefficient is significantly negative at the level of 1%, which verifies the inference that the better the ESG performance of enterprises, the less credit risk events will occur in bonds. Adding ESG and all control variables into the model, the regression results show that ESG is significantly negative at the level of 1%, indicating that ESG will significantly reduce the possibility of corporate bond credit risk events.

The ESG performance of an enterprise transmits the signal of the enterprise's sustainable development ability, which reduces the information asymmetry between the enterprise and the outside world to a certain extent, helps stakeholders to understand the enterprise's operating conditions more comprehensively, and enhances their trust in the enterprise, thus easing the financing constraints and reducing the financing cost [10]. Finally, the ESG of the enterprise conveys the "responsible and positive" business attitude of the enterprise and adds color to the moral quality of the enterprise.

5. Conclusions

ESG plays an important role in risk management of financial environment. The introduction of environmental factors makes investors pay more attention to the sustainability and environmental performance of enterprises, which helps to reduce the risks related to climate change and resource utilization. The influence of ESG factors on investment decisions is not only on the risk management level, but also on the long-term performance of portfolio. The integration of ESG factors not only provides a more comprehensive perspective for investment decisions, but also helps to build a more sustainable and stable financial environment. This comprehensive consideration not only meets the expectations of contemporary society for corporate social responsibility, but also is a key step to lead the financial market to develop in a more sustainable and responsible direction. However, we also realize that ESG integration still faces some challenges in financial environment risk management and investment decision. These include the standardization of ESG data, the improvement of credibility, and some investors' insufficient understanding of the relationship between ESG factors and financial performance. In the future research and practice, we suggest to further deepen the evaluation method of ESG factors, promote the unification of global ESG standards, and strengthen the communication between investors and enterprises, so as to better play the positive role of ESG factors in the financial environment.

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