

Enterprise Value Assessment Based on ESG Evaluation

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Abstract: This paper expounds the concept and evaluation indicators of ESG and discusses the impact of ESG evaluation indicators on the expected future cash flow and discount rate in the enterprise valuation model, which is helpful for asset evaluation professionals to conduct enterprise value evaluation more scientifically.

Keywords: Environmental, Social, Governance, Income approach, Business valuation.

1. ESG Concepts and Evaluation Indicators

With the rapid development of China's economy, ESG evaluation has become an important basis for investors, corporate managers and other market participants to measure the sustainability of enterprises, which has an important impact on the valuation of enterprises. Therefore, it is necessary for asset valuation professionals to consider the impact of ESG evaluation when valuing enterprises.

1.1. ESG Concepts

ESG is the abbreviation of Environmental, Social Responsibility and Corporate Governance. ESG investment refers to the investment philosophy and evaluation criteria in which investors incorporate ESG evaluation indicators into the investment decision-making process. On the basis of considering traditional financial information, non-financial indicators such as environment, social responsibility and corporate governance are also included in the decision-making basis. Specifically: E stands for Environment, which refers to indicators related to the quality of the natural environment and ecological cycles. S stands for Social Responsibility (Social), which refers to indicators related to the rights, benefits and interests of any society, reflected in external leadership, employees, customers, shareholders and communities. G stands for Governance, which refers to indicators related to corporate governance. The focus is on the corporate governance structure, market transactions, intellectual property and other corporate compliance management of project investment entities.

1.2. ESG Evaluation Indicators

As the ESG investment concept has received more and more attention from stakeholders, a succession of institutions have focused on the construction of ESG evaluation systems. In general, the evaluation of ESG mainly comes from two types of institutions: one is the rating system based on investment-related enterprises; the other is the evaluation system based on university research institutions [1].

Referring to the general practice of mainstream rating agencies at home and abroad, ESG evaluation indicators can be divided into three levels. The first level adopts an internationally accepted conceptual framework. The first level indicators are the three dimensions of environment, society and corporate governance. Secondary indicators are

categorised under environmental, social and corporate governance, such as environmental objectives, environmental management, negative environmental events, etc. for the environment. For social responsibility, secondary indicators are set for employee management, supply chain management, customer management and community management. For corporate governance, secondary indicators are set for business ethics, management capability and so on. Tertiary indicators are indicators covering specific matters, for example, environmental aspects may include water pollution, noise pollution, energy consumption, etc. Social responsibility aspects may include specific indicators such as labor policy, employee policy, supply chain responsibility management, etc. Corporate governance aspects include executive remuneration, ownership and control, accounting system, etc.

2. The Impact of ESG on Business Valuation

In business valuation, the income approach is a method of estimating the expected earnings of a business at a specific time in the future, selecting a suitable discount rate and reducing it to the current amount of capital or investment. The essence of enterprise valuation is to assess the profitability of an asset complex such as a business. The income approach is therefore the preferred method of enterprise value assessment. Under the income approach, the two key parameters for valuation are the expected future cash flows and the discount rate.

2.1. The Impact of ESG on Expected Future Cash Flows

When integrating ESG evaluation into financial forecasts in a discounted cash flow (DCF) model, a quantitative adjustment for financial impact is required to be consistent with other valuation drivers. A straightforward way to calculate the key ESG factors is by adjusting for free cash flow (FCF). The formula for calculating free cash flow is: $\text{Free Cash Flow} = \text{EBIT} - \text{Taxes} + \text{Depreciation and Amortization} - \text{Changes in Working Capital} - \text{Capital Expenditure}$. When applying ESG adjustments to cash flows, the significance of individual ESG evaluations will vary from industry to industry and company to company. Therefore, a specific analysis of specific items is required and an item-by-item assessment is carried out. A frequent problem in implementing ESG-related adjustments is the ambiguity of

determining future cash flows [2]. There is no single, uniformly applicable formula for adjusting ESG evaluations for cash flows. Identifying individual ESG factors and quantifying them on an item-by-item basis can avoid excessive cash flow adjustments.

2.1.1. Environmental

Environmental protection requires companies to maximise

the interests of shareholders with due regard to the carrying capacity of the natural environment, which means that companies need to balance the relationship between profitability, growth and environmental standards. Activities undertaken by companies considering environmental assessment may have some impact on the forecast of future free cash flows (see Table 1).

Table 1. Impact of environment on free cash flows

Cash flow items	Impact
EBIT	<p>1. Environmental regulations may increase corporate cash inflows. For example, enterprises over-abate and sell the remaining carbon emission allowances or abatement credits they have earned to enterprises with high abatement costs through trading[3], increasing corporate cash inflows.</p> <p>2. Environmental protection measures lead to higher costs and increase corporate cash outflows. For example, the addition of dust removal and desulphurisation equipment will increase the cost of environmental protection for electricity enterprises.</p>
Taxes	<p>1. The purchase of environmental protection equipment may result in a reduction in tax. For example, if enterprises purchase and use state-mandated environmental protection and water conservation equipment, 10% of the investment may be deducted from the taxable amount for that year.</p> <p>2. Tax breaks for environmental protection enterprises may result in a reduction in tax. For example, in 2019, four departments, namely the Ministry of Finance, the General Administration of Taxation, the National Development and Reform Commission and the Ministry of Ecology and Environment, jointly issued the Announcement on the Income Tax Policy of Third Party Enterprises Engaged in Pollution Prevention and Control, which imposes a reduced corporate income tax rate of 15% on eligible third party enterprises engaged in pollution prevention and control.</p>
Changes in Working Capital	A company's environmental performance may affect its working capital, driven by supply chain compulsion. For example, raw material suppliers may impose carbon compliance requirements on companies, increasing the price of raw materials for non-compliant companies.
Capital Expenditure	New technologies and equipment may lead to increased capital expenditure by companies. For example, companies invest in and implement carbon sequestration technologies to reduce carbon emissions.

2.1.2. Social

Social responsibility emphasises the need for companies to maximise profits while also taking responsibility for their stakeholders such as consumers, employees, shareholders and

communities. The activities carried out by a company may have some impact on the forecast of future free cash flows when considering social responsibility evaluation (see Table 2).

Table 2. Impact of social responsibility on free cash flow

Cash flow items	Impact
EBIT	<p>1. There is a link between a company's social responsibility performance and product sales. For example, consumers are more likely to buy products from companies with a strong sense of social responsibility, while negative news often has a damaging effect on product sales leading to slow sales and a significant drop in corporate profits.</p> <p>2. A company's concern for its employees may have a positive effect on profits. For example, companies that respect their employees and are concerned about their well-being usually achieve higher employee productivity, which is essential for improving productivity, achieving revenue growth and increasing profits.</p>
Taxes	The purchase of safety equipment by a business may result in a reduction in tax. For example, 10% of the investment in specialised safety equipment can be credited against the tax payable.
Changes in Working Capital	The measures taken by companies to be more socially responsible can increase working capital. For example, in order to reduce the risk of workplace injuries and fatalities, companies provide more training to their employees and install more safety measures and inspections in the workplace, which increases operating costs.

2.1.3. Governance

Corporate governance requires that in order to achieve the purpose of maximising economic and social benefits, enterprises should improve the level of corporate governance

in their daily operation and management process, improve their governance structure, pay attention to whether the internal control system is operating effectively and coordinate the relationship between the company and all stakeholders, so

as to ensure scientific and efficient decision-making and improve the company's sustainable development. The level of

corporate governance of a company may have an impact on the forecast of future free cash flows (see Table 3).

Table 3. Impact of corporate governance on free cash flow

Cash flow items	Impact
EBIT	<p>1. A high level of corporate governance and a more perfect governance structure are conducive to increasing profits. For example, through the corresponding incentive policy, the interests of management and corporate profits are linked together to maintain the consistency of the interests of shareholders and management, prompting management to be more responsible in their daily operations to improve corporate profits through scientific management strategies.</p> <p>2. A sound internal control system plays an important role in reducing the business risks and saving costs of the enterprise [4]. The existence of loopholes in internal controls may increase product costs and lead to lower corporate profits. For example, the material procurement department has the practice of misrepresenting inflated raw material prices, which makes the company's raw material purchase prices higher than the actual purchase prices, resulting in increased costs.</p>
Taxes	<p>1. Enterprises do not carry out reasonable tax planning, resulting in an increase in taxes.</p> <p>2. Enterprises are fined for violating laws and regulations or for mismanagement resulting in incidents of corruption resulting in additional taxes, leading to an increase in taxes.</p>
Capital Expenditure	Management's incompetence and poor decision-making may result in the enterprise incurring unnecessary capital expenditure.

2.2. Impact of ESG on Discount Rate

In addition to adjusting for free cash flows in an income approach valuation, asset valuers should also include ESG-related risks in the discount rate.

2.2.1. ESG Performance Can Influence the Discount Rate Through the Level of Risk

In the income approach, the weighted average cost of capital (WAAC) model is generally adopted to calculate the cost of capital for enterprise value. Based on the theory of risk-return equilibrium, high risk is generally associated with high return so in a sense WAAC can reflect the level of risk faced by a company. When a company's ESG score performs poorly, adding the risk premium due to ESG factors to the discount rate reduces the firm's valuation. The opposite is true for companies with good ESG performance.

2.2.2. ESG Performance Can Influence the Discount Rate by Changing the Capital Structure

The capital structure of companies with different ESG performance may vary. According to $WACC = (E/V) \times Re + (D/V) \times Rd \times (1 - Tc)$, the value of WAAC will be affected by the capital structure, where E/V refers to equity as a percentage of total financing, D/V refers to debt as a percentage of total financing, Re is the cost of equity, Rd is the cost of debt and Tc is the corporate tax rate. Companies with good ESG performance may prefer debt financing over equity financing, reducing the cost of capital for the firm.

A company's good ESG performance facilitates the issuance of green bonds. As an example, the Hong Kong government has launched the Government Green Bond Program (GGBP) since 2018 to fund green bond issuance to support the development of companies with good ESG performance. Green bonds are issued to enable green enterprises to broaden their access to finance and reduce their financing costs. The funds raised by issuing green bonds can better serve the green industry. Therefore, the coupon rate of green bonds is relatively low compared to ordinary bonds [5].

2.2.3. Avoid Double Measurement

If an appraiser has already taken ESG risk into account when forecasting a company's cash flows, then the discount rate calculation needs to avoid double-measurement and

relevant factors that are already reflected in the value of the business can be disregarded [6].

For example, if a company is in an industry that would normally be affected by ESG, such as the automotive industry, the Beta (a measure of risk) component of the industry can be considered to already include ESG risk due to the entry of hybrid and electric vehicle competitors. In this case, as the environmental impact is already reflected in the industry Beta, the asset valuation professional should combine industry and company specific characteristics with ESG adjustments in expected future free cash flows and carefully consider adding an additional premium or discount to the discount rate.

3. Conclusions

3.1. Establishing an ESG Information Disclosure System and Improving the Quality of ESG Information Disclosure

Although China's ESG information disclosure framework has been initially formed, the quantity and quality of ESG information disclosure of listed companies need to be further improved. The lack of an ESG indicator system will lead to differences in the information disclosed by listed companies, thus increasing the difficulty and inaccuracy of enterprise valuation by asset appraisers. An operable and widely applicable disclosure guideline can reduce the cost of disclosure and improve the comparability of information disclosed by listed companies. Therefore, it is necessary for China to construct a comprehensive ESG information disclosure system to guide and regulate ESG information disclosure and improve the quality of corporate ESG information disclosure.

3.2. Enhance the Capacity of Asset Valuation Professionals and Actively Explore New Developments in Enterprise Valuation

At present, major economies around the world have put forward sustainable development strategies, which are highly compatible with ESG concepts. Asset valuation professionals should actively explore and practice the integration of ESG valuation into the enterprise value assessment process, strive

to enhance their professional capabilities and build a comprehensive and complete ESG valuation system and valuation guidelines, so as to better provide objective and fair value assessment services.

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