

Principles of Corporate Governance and Financial and Non-Financial Risk Forecast

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ABSTRACT

This study investigates corporate governance principles and the accuracy of financial and non-financial risk prediction. Therefore, based on the analysis data of previous people, this study analysed and draw conclusion on how to improve the accuracy of risk prediction of CG varieties. In the short term, corporates need to combine financial and non-financial features to predict risks, while in the long run, corporates should focus on risk prediction of financial features.

Keywords: corporate governance, principles, financial risk, non-financial risk, risk forecast

1. INTRODUCTION

As information digitisation and skills change, the way people work is also changing most fundamentally. For example, artificial intelligence (AI) has successfully replaced part of human labour. As a result, corporate governance (CG) has become a very important topic as working changes worldwide and CG needs to balance technology and people.

CG is part of the economic environment in which a company operates, including macroeconomic policies and competition in product and factor markets [1]. CG refers to the set of policies, practices, processes and procedures that guide and control any organization[2]. In Australia, CG is an essential control mechanism that links the direction of an organization with its economy, society and environment. Its purpose is to separate the powers and responsibilities of shareholders, boards and committees. To achieve a smooth and efficient business operation, the interests of different stakeholders within the organization are balanced (including shareholders, investors, suppliers, and government). This paper will analyse the principles of CG, as well as financial and non-financial risk forecasting.

Therefore, in order to enable Australian corporates to develop smoothly, efficiently, and with balanced interests, this article will discuss the government's principles on corporate CG. And specific analysis of the risk forecast in the principles. Using data to analyze how financial and non-financial features affect forecast results and give corporates appropriate recommendations.

Because of the reduced risk, the company can operate for a longer time and maximize profits.

2. OVERVIEW OF CG

2.1. The role of CG

Effective CG is of great benefit to Australian companies. Effective CG enables organizations to improve their performance, and some investors regard CG as an essential reference factor. Therefore, based on the Tricker model, the performance and purpose are discussed [3].

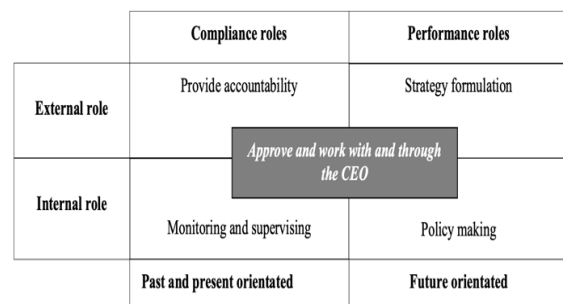


Figure 1 Tricker’s model of corporate governance [3]

As you can see from Figure 1, the performance of an organization is to ensure that the strategies it has developed is implemented correctly. The board delegates day-to-day operations to management, but the board still oversees and manages the organization and controls performance in order to be accountable to its members and shareholders. System procedures developed and

implemented in the organization must comply with industry obligations such as laws and regulations and ensure appropriate risk management to avoid risks.

However, organizational performance and compliance are two distinct areas that bring conflict for the board, so the board must have an appropriate CG to balance the conflict [4].

2.2. The framework of CG

In Australia, CG is primarily governed by legislation, accounting standards binding under law, the Australian ASX Listing Rules, and voluntary self-regulatory codes. A CG framework can be defined as the rules, relationships, systems and processes for exercising rights. To assess whether an organization has a good CG framework, we need to consider its specifications, geographic distribution, skills and experience of personnel, business model, nature of operations, mechanisms for avoiding risks, etc [4].

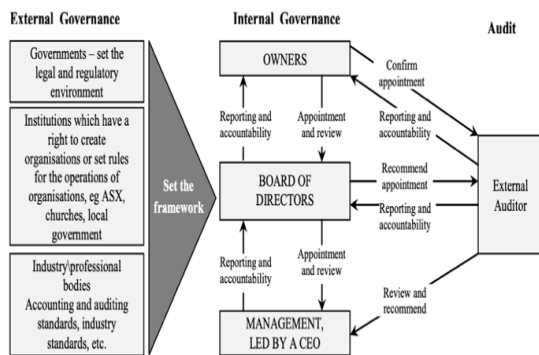


Figure 2 Corporate governance framework in the 21st century [5]

Figure 2 shows that the CG framework in the 21st century consists of external governance, internal governance, and audit. External governance consists of governments, institutions, and industry/professional bodies, which develop frameworks and require compliance with an organization's internal governance. Internal governance has three actors who must work together for mutual benefit: shareholders, management (led by the CEO), and the board [6]. Moreover, the three parties involved in internal governance are required to provide appointments, reports, reviews, and recommendations for external audits.

3. THE PRINCIPLES OF CG

For corporate governance, the most important thing is to align self-interest with organizational interests to achieve collective goals. Australian companies need to comply with the ASX. Which was introduced by Australia in 1995, requiring listed companies to include a statement on the implementation of corporate governance in their annual reports[7]. Since 2003, four

ASX Principles and Recommendations editions have been published. The eight guidelines and recommendations for the latest version are discussed below.

3.1.Principle 1: Lay solid foundations for management and oversight.

Since the board plays a vital role in the company's operation as they need to formulate and guide the business and strategic direction of the company, each board member and management must have a clear role and positioning. Their performance is regularly reviewed to make the most effective and profitable decisions. The board of directors should demonstrate leadership and set the strategy for the company. The roles and responsibilities of board members should be clearly defined in the company's internal directors' charter, and board members should possess professional skills, experience, and independence. Senior management is responsible for implementing the strategy established by the board and adding value to the product within the established values, code of conduct, budget, and risk [8]. As the company grows, the division of functions between the board and management needs to be periodically reviewed by the committee according to ASX requirements. Before selecting directors or senior executives or nominating a person to be chosen as a director, firms must conduct necessary checks and provide security holders with all vital information relevant to selecting whether to elect or re-elect directors [8].

3.2.Principle 2: Structure the board of directors to be effectively and add value.

The board should be appropriately sized and members should have industry knowledge and skills to carry out their responsibilities effectively and add value [8]. The board of directors public companies must establish a nominating committee of at least three members and be chaired by an independent director. The nominating committee aims to balance the expertise, experience, independence and diversity of board members so that the entire board can effectively discharge its responsibilities. Independent directors have different interests from the management and owners of the company and can help the company's beneficiaries realise the company's best interests. At the same time, transparency in the board appointment process can increase investor confidence, positively correlated with company performance. Listed companies also need to disclose the board skills matrix, listing the skill set that the board currently possesses or hopes to achieve in its members. Only the capability matrix can provide investors with effective information, and the board's responsibilities will increase accordingly.

3.3.Principle 3: Instil a culture of acting lawfully, ethically, and responsibly.

Listed companies are required to undertake corporate social responsibility (CSR) and have legal compliance and ethics. CSR is the self-discipline of enterprise aiming at social responsibility, which consumers, investors, and employees prioritize in today's society. Therefore, the public's perception of a company plays a crucial role in its success, and companies need to project a positive corporate social responsibility image. Boards and top management require developing and implementing social responsibility strategies. They also need ethics connected with formulaic thinking, which is more helpful for the company's development. As society evolves, people need to pursue profits and do good deeds, so stakeholders need to take acceptable and reasonable actions when formulating strategies and implementing decisions. For example, there is growing resistance to products tested on pets, and more companies are not using them for humanitarian reasons. At the same time, the board of directors should establish values in accordance with laws, regulations and the company's articles of association when making and implementing decisions and strategies.

3.4.Principles 4: Safeguard the integrity in corporate reporting.

Listed entities should have formal and rigorous processes to verify and protect the integrity of corporate reporting[8]. All public reports are included in the protected organizations' reports, such as a director's report or an annual report. The internal and external audits of the company and the statements of the CEO and CFO must all be included in the report [9]. Internal controls exist to ensure that the company's reporting is thorough and accurate. as internal control ensures that the organization follows a formal and strict policies. The report is published and authorized by the board of directors, management, and committees to ensure that the company's financial reports are legal, truthful, accurate, straightforward, and easy to grasp in order to attract investors.

3.5.Principle 5: Make timely and balanced disclosure.

When the boards and senior management implement the rules and regulations, their influencers (investors, shareholders) have free and direct access to information. The board and senior management can provide sufficient, truthful, and understandable information, even though effective information disclosure is significant to the market, because shareholders and other stakeholders are generally unaware of the company's true financial performance and management. Fake information may lead investors to wrong or inappropriate investment stock

prices. Incomplete and timely disclosure of information may lead to fraudulent practices by directors or senior managers to \ benefit themselves at the expense of shareholders [10]. The ASX requires companies to develop written policies and procedures to ensure compliance with the disclosure requirements of the ASX Listing Rules and to ensure that senior management is accountable for compliance. But at the same time, disclosure regulations are too flexible to be easily circumvented, which may benefit some company directors or senior managers [8]. Although some companies are still unavoidable for scandals for personal gain, investors can make reasonable judgments and discover possible problems through the disclosure rules required by ASX.

3.6.Principle 6: respect the rights of security holders.

Companies must disclose relevant information to security holders to properly establish their rights[8]. In today's society, investors need to be able to access company information freely, conveniently, and at any time on the Internet to have an intuitive understanding of the company's financial performance, strategic direction, structure and internal composition (such as board members). Companies need to communicate openly with investors, facilitate them, and actively encourage and facilitate their participation in company meetings [8] The company also needs to make appropriate plans according to the investment groups (e.g., institutional investors, agency advisors) to communicate effectively with investors. The purpose of the program is to give investors a better understanding of the company's current situation.

3.7.Principle 7: recognise and manage risk.

All business involved in an organization are subject to uncontrollable or uncertain factors. Therefore, an organization needs to have adequate internal control and supervision system to avoid risks and reduce losses caused by risks. The failure of a corporate risk management can lead to serious financial problems, such as accounting fraud, bribery, etc, caused by poor corporate governance. The board of directors or senior management is unaware of the company's risks, does not engage in reasonable risk aversion, or does not have a sound risk management system.

3.8.Principle 8: remunerate fairly and responsibly.

Companies need to pay attractive packages to directors and senior management so that they do not harm stakeholders. Companies can have the right incentives in place to motivate the board and senior management to pursue the company's success. To pay remuneration fairly and responsibly, companies need to

set up remuneration committees, clearly distinguish the structure of remuneration for non-executive directors and senior management to ensure that remuneration is paid on an equity basis. The above policy prevents companies from paying high fees and links performance to pay [11], while the remuneration of directors and senior management should also be publicly disclosed and transparently reported [12].

4. FINANCIAL AND NON-FINANCIAL RISKS OF CG

For a company, risk prediction and avoidance are an important part of whether a company can operate profitably in the long time. After the financial crisis, companies have emphasized risk prediction. So that problems can be identified before the company encounters financial difficulties or crises, and the board of directors or senior management can formulate effective response policies promptly. Predictions of general business crises is based on risk models in the past. The risks faced by companies can be divided into two categories, financial risk (FR), and non-financial risk.

4.1. Financial risk

There are many reasons for financial risk, and it can be loss due to failure to achieve the financial goals set by the company. When a company is exposed to financial risk, it may lose earnings, returns, and value. Generally, a company's financial risk is divided into the following categories: market risk, model risk, credit risk, liquidity risk, operational risk, and disclosure risk. Market risk arises from unexpected market prices, such as changes in stock prices and commodity prices [13]. Model risk uses the wrong estimated model when quantifying risk, investing, or pricing [14]. Credit risk refers to the inability of the company to repay the relevant funds [15]. Liquidity risk refers to the problem of advanced interests between the company and the bank, unable to receive cash in time, affecting the company's next step strategy. When the company's internal operations is not perfect, and problems occur, operational risk is operational. When there is a problem with the report disclosed by the company, it may endanger the investors who read the report, and there will be disclosure risks [16].

4.2. Non-financial risk

Non-financial risk directly and indirectly affects the company's financial performance. Non-financial risks fall into the following categories: environmental risks, social risks, compliance risks, and health and safety risks. Environmental risk refers to the environmental impact of a company's current strategy or products. For example, due to natural disasters, the production of raw materials required by food companies is reduced, which affects the number of products affected and indirectly leads to the

loss of corporate profits. Social risks arise from negative external perceptions of the organization, causing damage to the external community, such as environmental pollution and unintentional damage to human beings [17]. Compliance risk refers to the company failure to comply with the government policies or relevant regulations and face legal penalties such as fines. When an employee may cause injury, illness, or death in the workplace. Therefore, there are health and safety risks in the workplace.

4.3. Prediction models and experiment

Stepwise regression analysis, genetic algorithms and multivariate statistical techniques, and support vector machines (SVM) can be used to predict financial and non-financial risks. This paper will describe the application of SVM in risk prediction in detail.

4.3.1. SVM model

Bostor, Guyon, and Vapnik developed SVM, and its principle is to automatically extract data and build different models to interpret data set [18]. SVM achieves structural risk minimization by constructing an optimal separating hyperplane: $w \cdot x + b = 0$. And the pursuit of the minimum generalization error on the line, rather than the minimum error [18].

$$\min_{i=1, \dots, n} |(w, x) + b| = 1$$

And according to the Lagrange multipliers, the decision function is constructed:

$$Q(\alpha) = \sum_{i=1}^l \alpha_i - \frac{1}{2} \sum_{ij=1}^l \alpha_i \alpha_j y_i y_j K(x_i, x_j)$$

subject to $0 \leq \alpha_i \leq C$,

$$\sum_{i=1}^l \alpha_i y_i = 0$$

with the decision function $f(x) = \text{sign} \left(\sum_{i=1}^l y_i \alpha_i k(x, x_i) + b \right)$

C: the trade-off between the minimization of fitting error and the minimization of model complexity [18]

And use the following radial basic function (RBF) to optimize the plan: [18]

$$\text{(RBF): } K(x, y) = e^{-\|x-y\|^2 / 2\sigma^2}$$

4.3.2. Experiment

The prediction of financial and non-financial risks in this paper is based on Lin, Liang and Chu [19]. Through a sample survey, 54 companies are randomly selected from 108 companies that had experienced financial crises,

and 312 observations were collected from their three-year annual reports. There are ten variables in total, among which four are financial variables, and the other six are non-financial variables.

a) *Financial features*

- F1: Debt ratio
- F2: Account receivable turnover ration
- F3: Asset turnover
- F4: Operating Income Capital

b) *Non-financial features*

- N1: Shareholding of board members
- N2: Ratio of pledged shares of board members
- N3: Shareholding of board members
- N4: Necessary controlling shares
- N5: Other investment assets
- N6: Board member bonus to pre-tax income

c) Type I errors: Predicting that the company is healthy but is in trouble.

d) Type II errors: Predicting that the company is in trouble but is healthy.

Table 1 Financial and non-financial model comparison with SVM [19]

Evaluation criterion	Financial (Model 1)	Non-financial (Model 2)	Hybrid (Model 3)
Type I error	0.1296	0.0556	0.0556
Type II error	0.0926	0.1852	0.0556
Brier Score (BS)	0.1111	0.1204	0.0556
Average accuracy	0.8889	0.8796	0.9444
Feature selected	[F1], [F2], [F3], [F4]	[N1], [N2], [N4], [N5], [N6]	[F1], [F2], [F4], [N1], [N2], [N5], [N6]

As shown in Table 1, in model 1 (financial), we use F1, F2, F3, and F4 features for experiments. The average accuracy rate in the risk test in the next year is 88.89%, in which means type I error is significantly higher than type II error (12.96% > 9.26%). In model 2 (non-financial), we use N1, N2, N3, N4, N5, N6, N7 features as experimental objects. The average accuracy in the risk test in the coming year is 87.96%. In contrast to model 1, type II error is much higher than type I error (18.52% > 5.56%). If a company considers only non-financial characteristics, the chances of being manipulated by board members for their gain increase. Model 3 is validated with features other than F3, N3, and N4. Its average accuracy (94.44%) is better than the other two models. At the same time, the type I error and type II error of the three models are better than those of the first two models, and the error rate of the two models is 5.56%. Companies using Model 3 had a much lower error rate than companies using only financial or non-financial features. Therefore, when predicting risks, companies should consider both financial and non-financial characteristics, reducing the company's prediction errors.

Table 2: Z-core model [19]

Financial Models		Non-financial Models		Hybrid Models	
Z ₁ (%)	M ₁ (%)	Z ₂ (%)	M ₂ (%)	Z ₃ (%)	M ₃ (%)
85.18	88.89	81.48	87.96	90.74	94.44

The accuracy of the three models was tested when using the Z-score model. As shown in Table 2, the average accuracy of z-score of financial models is 85.18%, that of non-financial models is 81.48%, and that of hybrid models is 90.74%. The accuracy of the hybrid model is highest under the Z-core model, and both financial and non-financial characteristics must be considered to reduce errors and risks.

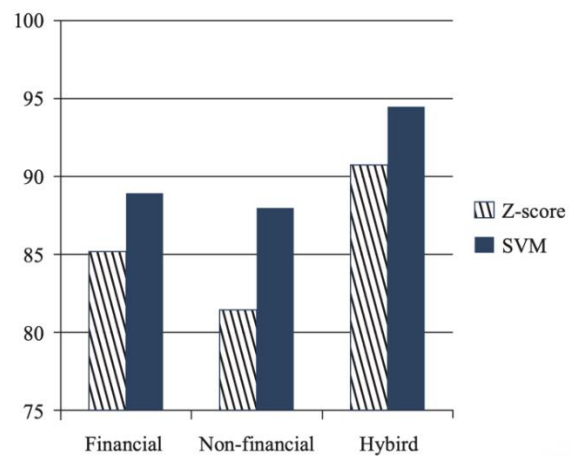


Figure 3 Comparison of Z-core model and SVM model [19]

As shown in Figure 3, the accuracy of the mixed model is higher than that of the model focusing only on financial features or non-financial features. In all three models, the accuracy of Z-Score is lower than that of the SVM model, so we can conclude that the accuracy is lowest if we focus only on the non-financial model. The incidence of personal gain or fraud by directors or senior managers is highest. Therefore, companies should use hybrid models to predict risks, minimising both financial and non-financial risks.

Table 3 Long term forecasts [19]

	Model 1	Model 2	Model 3
1-year-ahead forecast	88.89%	87.96%	94.44%
2-year-ahead forecast	78.70%	70.37%	75.93%
3-year-ahead forecast	75.92%	71.29%	74.07%

The above data only predicts the company's risk test for one year. To observe the long-term impact of the three models, it is necessary to indicate the degree of risk prevention over the next three years. The above data is only a one-year risk test forecast for the company. To observe the long-term impact of the three models, it is necessary to indicate the degree of risk prevention in the next three years. Table 3 shows three-year risk accuracy predictions for the three SVM models. In the third year, the accuracies of model 1, 2, and 3 are 75.92%, 71.29%,

and 74.07%, respectively. Therefore, focusing only on financial characteristics is most accurate in the long run. However, since Model 3(financial and non-financial characteristics) is most accurate in the first year, it is important to pay attention to the non-financial characteristics of board members when using Model 1 to predict long-term risks.

5. CONCLUSION

Starting from corporate governance and risk prediction principles, this paper discusses the impact of financial and non-financial risks on risk. It turns out that non-financial characteristics should be examined in addition to predicting risk, which will provide greater accuracy for risk management in corporate CG. Using the same data, SVM and Z-cores were used to calculate the accuracy rate, and it can be seen from the results show that SVM is more accurate than Z-cores. However, this paper has limitations because the companies surveyed are not Australian companies and the three-year forecast cannot accurately summarize the longer forecast.

REFERENCES

- [1] T. H. Trinh, T. T. Duyen and N. T. Thao, " The impact of corporate governance on financial risk in Vietnamese commercial banks," *International Journal of Economics and Finance*, vol. 7(7), p. 123, 2015.
- [2] O. OECD, "The OECD principles of corporate governance," *Contaduría y Administración*, p. 216, 2004.
- [3] R. L. Tricker, *International corporate governance*, Sydney: Australia: Prentice Hall, 1995.
- [4] A. i. o. c. directors, "Role of the board," 2016. [Online]. Available: https://aicd.companydirectors.com.au/-/media/cd2/resources/director-resources/director-tools/pdf/05446-3-11-mem-director-gr-role-of-board_a4-v3.ashx. [Accessed 2022].
- [5] G. Kiel, G. Nicholson and J. Tunny, "Directors at work: A practical guide for boards," Thomson Reuters, 2012.
- [6] R. A. G. Monks and N. Minow, " *Corporate governance*," Oxford: Blackwell, 2004.
- [7] K. Henry, J. Harmer, J. Piggott, H. Ridout and G. Smith, "Australia's Future Tax System Review," 2010.
- [8] A. C. G. Council, "Corporate Governance Principles and Recommendations 4th Edition," ASX Corporate Governance Council, Australia , 2019.
- [9] A. government, "WSA Co Ltd annual report 2018-19," 2019. [Online]. Available: <https://www.transparency.gov.au/annual-reports/wsa-co-ltd/reporting-year/2018-2019-41>.
- [10] P. Alex, "Strengthening corporate governance regulations," *Journal of investment compliance*, vol. 6, no. 4, p. 78, 2005.
- [11] R. Greenbury, "Directors' Remuneration: Report of a study group chaired by Sir Richard Greenbury," Gee Publishing, London, 1995.
- [12] D. Ablen, "Remunerating'fairly and responsibly': the'Principles of Good Corporate Governance and Best Practice Recommendations' of the ASX Corporate Governance Council.," *Sydney Law Review*, vol. 25(4), pp. 556-566, 2003.
- [13] G. Schroeck, *Risk management and value creation in financial institutions*, John Wiley & Sons., 2002.
- [14] V. S. W. M. Jokhadze, "Measuring model risk in financial risk management and pricing," *International Journal of Theoretical and Applied Finance*, vol. 23(02), no. 2050012, 2020.
- [15] B. M. R. E. Putri A, "Financial risk disclosure and corporate governance: Empirical evidence on banking companies in Indonesian Stock Exchange," *Advances in Economics. Business and Management Research*, vol. 161, pp. 32-39, 2021.
- [16] P. M. S. P. J. Linsley, "Risk reporting: A study of risk disclosures in the annual reports of UK companies," *The British Accounting Review*, vol. 38(4), pp. 387-404, 2006.
- [17] T. J. B. K. B. Bekefi, "Social risk as strategic risk," *Corporate social responsibility initiative*, vol. Working Paper 30, 2006.
- [18] B. E. G. I. M. V. V. N. Boser, "A training algorithm for optimal margin classifiers.," in *In Proceedings of the fifth annual workshop on Computational learning theory*, 1992, pp. 144-152.
- [19] F. L. D. C. W. S. Lin, "he role of non-financial features related to corporate governance in business crisis prediction," *Journal of Marine Science and Technology*, vol. 18(4), p. 4, 2010.