

Analysis of Independent Director System with Game Theory

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Abstract:

In the past two decades since the introduction of the independent director system in China, it has not played the role originally envisaged. The construction and improvement of the independent director system requires a long-term process, and the development needs to be “affordable” in my country’s binary system. This paper uses game theory to analyze the reasons for the lack of full play of the role of independent directors and an effective way to motivate independent directors to act actively, so that they can play a more effective role in improving corporate governance structures and maintaining the rights of small and medium investors.

Keywords:

Independent Directors, Game Theory, System

1. Introduction

In November 2021, the dust settled on the Kangmei case, and the ruling resulted in five independent directors of Kangmei Pharmaceutical Company being found jointly and severally liable for damages amounting to \$369 million. The hundreds of millions of dollars in joint and several damages are saddening. The collective group of independent directors can be described as all for one and one for all. They are not only a community of responsibility, but also a community of interest. This incident set off a wave of resignations of independent directors of A-share listed companies. It triggered us to think deeply about how to make independent directors play their due roles, and at the same time, it is also a probe into the improvement of the independent director system.

At present, independent directors are widely criticised for “not doing their jobs in their positions”, for taking matters such as major connected transactions of the company at their own discretion, and for the common phenomenon of free-riding on major decisions. The collective independent directors, who are supposed to be united, are scattered.

Why is the basic role of independent directors not really fully utilised? What measures favour the collective unity of independent directors? This paper will focus on these two issues and analyse the behaviour of independent directors through game theory as a basis for providing suggestions on improving the independent director

system in China, so that it can play a more effective role in perfecting the corporate governance structure, improving the governance level of listed companies and safeguarding the rights of small and medium-sized investors.

2. Game Model Analysis Based on the Behaviour of Independent Directors

The emphasis in the research model of game theory is on individual rationality, that is, seeking to maximise utility given constraints. Therefore, this paper assumes that all independent directors are rational persons, and then conducts a game analysis of the behaviour of independent directors. In order to simplify the problem, this paper conducts a game analysis of the behaviour of only two independent directors and makes the following assumptions.

Hypothesis 1: The strategy space for independent director i ($i=1,2$) is (positive behaviour, negative behaviour). The voting and dissenting of independent directors on important matters of the company can reflect the performance of their duties from the side, which is regarded as positive behaviour. Negative behaviours of independent directors include abstention, failure to raise objections and other inactive negative oversight situations, and are not a matter of competence.

Hypothesis 2: Independent directors receive a normal remuneration allowance of w in the company in which they serve.

Hypothesis 3: At present, the situation of “one share dominance” is widespread among listed companies. Since China has the institutional arrangement of shareholder nomination system in the selection and appointment of independent directors, the major shareholders of the company will certainly give priority to the selection and appointment of independent directors who have close relationship with them from the point of view of self-interest, and the major shareholders are more inclined to “obedient” independent directors. Such independent directors, then, are likely to become subservient to the major shareholders in the performance of their duties, complicit with them and able to obtain additional benefits m . Serving as an independent director requires a certain amount of time and effort. Independent directors need to have a comprehensive understanding of the company, not only reviewing written materials and documents, etc., but also necessary to visit the site for an in-depth understanding. We denote as c the cost of conflict faced by independent directors and the cost of effort to perform their duties.

Hypothesis 4: Positive behaviour of a single independent director earns reputational value r . Negative behaviour by independent directors will receive penalties from the SEC, with fines recorded as f .

Based on the above assumptions, a matrix of benefits between independent directors is derived.

Table 1. The payoff matrix.

		Independent Director2	
		Positive behaviour	Negative behaviour
Independent Director1	Positive behaviour	$w-c, w-c$	$w-c+r, w+m-f$
	Negative behaviour	$w+m-f, w-c+r$	$w-f, w-f$

When $(w-c) > (w+m-f)$, $(w-c+r) > (w-f)$ i.e. $c < (f-m)$, $c < (f+r)$, at this point, $(f-m)$ is clearly smaller than $(f+r)$, so the game has a Nash equilibrium (positive behaviour,

active behaviour) when $c < (f-m)$. This is because, when independent director 1 chooses to carry out positive behaviour, independent director 2's benefit $w-c$ from choosing positive behaviour is greater than the benefit $(w+m-f)$ from negative behaviour; When independent director 1 chooses negative behaviour, independent director 2's payoff $(w-c+r)$ from choosing positive behaviour is still greater than the payoff $(w-f)$ from negative behaviour, so independent director 2 has the only dominant strategy-positive behaviour. Independent director 1 faces the same choice as independent director 2, so the best strategy for independent director 1 is also to engage in positive behaviour. The outcome of this game is the optimal state, which is in line with the original purpose of introducing the independent director system and fulfils the proper role of independent directors.

When $(w-c) < (w+m-f)$, $(w-c+r) < (w-f)$ i.e. $c > (f-m)$, $c > (f+r)$, at this point, $(f+r)$ is clearly greater than $f-m$, so the equilibrium choice of the two independent directors is (negative behaviour, negative behaviour) when $c > (f+r)$. Regardless of whether Independent Director 1 chooses positive or negative behaviour, Independent Director 2's dominant strategy is negative behaviour. Independent Director 1 is facing the same situation as Independent Director 2, so negative behaviour is also his preferred strategy. This outcome is something that the SFC, as well as small and medium investors, do not want to see. The reasons for this result are the more difficult process of performing the duties, the greater cost of performing the duties, and the lack of a reputational incentive system.

When $(w-c) < (w+m-f)$, $(w-c+r) > (w-f)$ i.e. $(f-m) < c < (f+r)$, because when independent director 1 chooses positive behaviour, independent director 2's gain $(w+m-f)$ from choosing negative behaviour is greater than the gain $(w-c)$ from positive behaviour; When independent director 1 chooses negative behaviour, independent director 2's gain $(w-c+r)$ from choosing positive behaviour is greater than the gain $w-f$ from negative behaviour. Independent director 1 faces the same choices as independent director 2, so by the underlining method, the game has two Nash equilibria (positive behaviour, negative behaviour) and (negative behaviour, positive behaviour). Denote by α ($0 < \alpha < 1$) the probability of positive behaviour of independent director 1 and β ($0 < \beta < 1$) the probability of positive behaviour of independent director 2. Expected return $E1 = (w-c)*\beta + (w-c+r)*(1-\beta)$ for independent director 1 choosing positive behaviour and $E2 = (w+m-f)*\beta + (w-f)*(1-\beta)$ for independent director 1 choosing negative behaviour; Expected return $E3 = (w-c)*\alpha + (w-c+r)*(1-\alpha)$ for independent director 2 choosing positive behaviour and $E4 = (w+m-f)*\alpha + (w-f)*(1-\alpha)$ for independent director 2 choosing negative behaviour. Both Independent Director 1 and Independent Director 2 have to make each other believe that their chosen strategies will not influence their choices, i.e., that the expected returns of each of their respective strategies are equal.

Therefore, $E1=E2$, $E3=E4$, then $(w-c)*\beta + (w-c+r)*(1-\beta) = (w+m-f)*\beta + (w-f)*(1-\beta)$, and $(w-c)*\alpha + (w-c+r)*(1-\alpha) = (w+m-f)*\alpha + (w-f)*(1-\alpha)$. The solution is: $\alpha = \beta = (r-c+f)/(m+r)$. Therefore, there is a mixed strategy Nash equilibrium for this game, i.e. there is no difference between independent director 1 and independent director 2 in choosing positive and negative behaviour with probability $(r-c+f)/(m+r)$.

3. Proposals for An Independent Directorship

Through the above analysis, we find that independent directors can be effectively incentivised to produce positive behaviours when the conflict cost they face and the

effort cost of performing their duties, c , are low, the penalties imposed by the SEC, f , are appropriate and the reputational incentives, r , are high, and care is taken to discourage the situation where the major shareholders of the company collude with the independent directors. This leads to the following recommendations.

3.1. Establishment of the Lead Independent Director System

The establishment of a system of Lead Independent Directors, whereby a Lead Director leads this small collective and expresses opinions on behalf of the collective, realising a consensus and collective action on helping the company to flourish, safeguarding the rights and interests of small and medium-sized shareholders as well as their own interests, just like shareholders acting in concert. The selection of this lead director should take into account his or her social capital such as reputation, competence and social status. Kim (2005) found that the social capital of independent directors is positively related to their independence. [1] Thus, the higher the social capital of the lead director, the more independent he or she is, and the more likely he or she is to be at the centre of a group of independent directors, as well as to be able to monitor managers effectively. The other members of the independent director class are selected by the Lead Director. The heterogeneity of members' backgrounds can provide multiple professional perspectives that can contribute to the development of the business. [2] Therefore, the Lead Director needs to pay attention to the professional background when selecting members.

3.2. Establishment of a hierarchical assessment system for independent directors

First of all, there should be an independent directors' association which is not influenced by any listed company and which can evaluate the performance of independent directors in a fair and impartial manner, standardise the criteria for the payment of remuneration and allowances to independent directors of listed companies, and safeguard the powers and functions of independent directors, so that they can have something to fall back on in the performance of their duties. When evaluating the performance of independent directors, the independent directors' association must have a systematic and fair basis for evaluation, and should establish a reasonable assessment system and implement a hierarchical model. A hierarchical model would better reflect differentiation and curb opportunistic behaviour of free-riding. As it is difficult to quantify the effectiveness of the work of independent directors, outsiders can only evaluate the effectiveness of independent directors' performance of duties and their diligence and conscientiousness based on the number of times independent directors have given advice, attended meetings, or even linked the effectiveness of independent directors' work to the company's operating results, which is too one-sided. Therefore, when establishing the assessment system, a combination of quantitative and qualitative indicators can be used for comprehensive evaluation. Quantitative indicators include assessment indicators that can be measured precisely, such as the number of meetings attended by independent directors and the number of opinions and recommendations made. Qualitative indicators include the professionalism of independent directors, their academic qualifications, their ability to innovate, their learning and growth in the organisation, and their ability to predict the long-term development of the company. These indicators were ranked to assign different levels to independent directors. The assessment results, such as evaluation indicators, reflecting the performance of independent directors, are then entered into the database. The combined trade-offs ultimately summarised will affect the

allowances, reputation, etc. of the independent directors. Yermack (2004) found that job opportunities for independent directors are closely related to their performance in previous positions. [3] Therefore, the establishment of such a system is conducive to the proper performance of duties by independent directors, promotes the gradual development of the profession of independent directors into a market-oriented trajectory, and gradually implements the profession into a state of free competition, and also has a certain incentive effect on independent directors.

3.3. Rationalising selective incentives: positively oriented and negatively oriented

Selective incentives help to get out of the collective action dilemma and shape the dynamics of collective action. Positive incentives are used to stimulate the enthusiasm and vitality of independent directors, while negative incentives are used to regulate and discipline independent directors. However, negative incentives must not be excessive, or else they will dampen the enthusiasm and motivation of independent directors.

It is difficult to judge the level of due diligence and differentiate responsibilities when assessing the level of responsibility of independent directors with different backgrounds and expertise. [4] Since independent directors and directors have different work nature and performance of duties, but the same punishment mechanism is adopted, which makes the independent directors have less authority and more responsibility. Japan, the United Kingdom and the United States have provisions on the liability regime of independent directors whereby the board of directors exempts the directors from liability, with Japan also stipulating the range of indemnities to be borne. This has dispelled the worries of independent directors in discharging their duties and reduced the number of cases in which independent directors were afraid to make recommendations for fear of being held liable. The relevant experience of foreign countries can be learnt to supplement the lack of accountability mechanism for independent directors, so as to achieve the consistency of power and responsibility. Through selective incentives, group members are guided to put in efforts to achieve common goals or interests, transforming self-interested individual motives into the glue for achieving the collective good.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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