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## Game theory analysis on distortion of accounting information

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### ABSTRACT

Nowadays, accounting distortion has become an urgent problem awaiting solutions not only in China but also all around the world. Accounting distortion will deteriorate social integrity and will also reduce the efficiency of economic development. This article aims at finding out ways to reduce accounting distortion and improve accounting integrity by studying the game theory among different sides in accounting distortion. The method mainly involves game theory.

### KEYWORDS

Accounting distortion; Game theory; Measures.



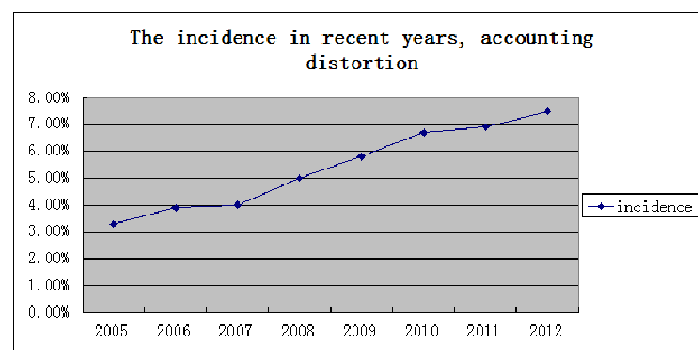
## INTRODUCTION

Accounting information is the financial condition and business performance of certain accounting entities revealed by those entities to investors and creditors. It is usually revealed in the form of financial statements, financial reports or footnotes. The authenticity of accounting information is an important standard in evaluating accounting system's working quality and credibility. Accounting distortion refers to the situation where the information input is not in accordance with the output and causes fake information. In other words, under such circumstances, what is shown in financial reports is different from original voucher (including further work according to the original voucher). Accounting distortion is always shown in different forms which can mainly be classified into two types. Horizontally, it's fake direction of information flow. Longitudinally, it's fake amount of flow.

Accounting distortion also means the form and provision of accounting information go against the principle of objective authenticity. It fails to reflect the real financial condition and business performance of accounting entities. It can also be divided into two types--- intentional distortion and unintentional distortion.

Intentional distortion refers to deliberate financial fraud which is also called accounting cheating. Driven by personal interests, staff who take charge of the basic accounting information may intentionally altered, forged, fabricated related accounting vouchers, misrepresent, omit, or conceal the relevant accounting data, neglecting the interests of their clients. This will lead to deviation between what is reported and the real situation. Cheating emphasizes the behavior which intentionally gives fake feedback. It has some similar forms with unintentional distortion, but the essence is totally different. Fraud or cheating is shady, and cannot be exposed to the public. It needs to be accompanied by some form of camouflage and hide, through virtual columns to create fake information or conceal the reality. It is usually hard to be discovered. The deliberate behavior of accountants or the decision-makers is the direct cause of accounting distortion. The behavior will lead to the unconformity between account and account, account and form, account and reality. Among the three ones, the unconformity between account and reality is the most covert one, but is also the most harmful one. In a lot of this kind of cases, staff always have a fluke mind assuming their behavior will not be discovered or investigated because of it's very hard to find evidence.

Unintentional distortion refers to the unintentional mistakes which are made while calculating. Accountants may possibly make all kinds of mistakes in accounting calculation. Unintentional distortion is the unconformity between what is reported and the real information, which is caused by the misunderstanding of relevant policies and law, the misuse of relevant clauses. Therefore, unintentional distortion also belongs to accounting distortion. The most evident feature of it is "unintentional". This is radically different from those who create fake information on purpose. However, both of these two types of distortion lead to serious outcomes. The rates of both intentional and unintentional distortion are very high in recent years (see Figure 1).



**Figure 1 : Accounting distortion from 2005 to 2012**

This article will further elaborate what our country or we can do to deal with this serious situation.

## **ANALYSIS OF GAME THEORY AND ACCOUNTING DISTORTION**

The direct causes of accounting distortion are cheating and mistakes in calculation. The mistakes are made usually because accountants' carelessness or their limited capability. Yet such kind of mistakes is supposed to be decreased as time goes by. Accounting cheating is one type of accounting distortion, and is caused by accountants' intentional behavior. Driven by personal interests, accountants may go against some rules and law creating some fake information when the regulations or rules are relatively vague. They make it by slipping through law's fingers through internal collusion.

It is always the case that when accounting distortion happens, people always aim at accountants, assuming that they are the ones to blame because they don't follow the professional ethics in accounting. This is based on the assumption that accountants have such kind of natural professional ethics. As a matter of fact, such is human nature that people change as the environment around them changes. Unavoidably, accountants also have the tendency to compromise. But who can make accountants to compromise? Obviously, the answer lies on those who can control the loss and gains of accountants. The loss and gains mainly involve economic gains and loss. Specifically speaking, it contains the hiring and dismiss of accountants by employers, the honorary appraise or criticism, rewards or punishment from government departments and the moral abuse from the supervision of public opinion.

Objective law of social development shows that any economic activity is based on the maximization of cost-effectiveness, including economic benefit and social benefit. It has become the basic norm. Therefore, accounting activity is to some extent a kind of economic activity which is driven by the law of input-output. The final outcome of accounting is accounting information which is the data foundation of distribution of interests, transfer of wealth and performance assessment. It owns the function of interests coordination. It is also this function that leads people to abide by or go against laws and regulations of finance and economics. Nevertheless, economic or political interests drive does not necessarily lead to accounting fraud.

In order to better discuss and analyze different parties behind accounting information by applying game theory, we assume that accountants are qualified enough in the work and will surely comply with the regulations without too much pressure. Besides, we also assume that they do not have special relations with relevant departments. Board of supervisors and board of directors represent the interests of the shareholders who hold the majority of the shares. Also, relevant government departments are independent from enterprises. Other stakeholders including creditors and potential investors, together forms four decision-making bodies which influence accountants.

### **External supervisors**

See from the set mission of external supervisors, at macro level, they should guarantee the healthy and regular development of national economy. At micro level, they should provide enterprises with legal and fair environment of market competition. Theoretically under the circumstance of sensible legal system and external supervisors abiding by the regulations, the accounting information given by enterprises should be credible. In fact, on the one hand, the administrative system is far from well-developed. As the saying goes "Officials create numbers and numbers stabilize officials' political status", officials always take advantage of the numbers. Economic indexes like GDP and financial revenues are really essential to government official's assessment, which provides enterprises with chances to create fake accounting information. On the other hand, the great disparity between the regulatory power and the numbers of entities which are regulated, the limited regulatory methods, great difficulty in overall supervision all make it possible for enterprises to create fake information.

### **Internal supervisors**

The goal of shareholders, board of directors, external investors is to secure the integrity and the value of capital. When the interest of enterprises is in accordance with national and social interest, accounting information must be credible. But when there is conflict among these interests or the market competition is unfair, external investors will tolerate accounting distortion because of the maximization of interests.

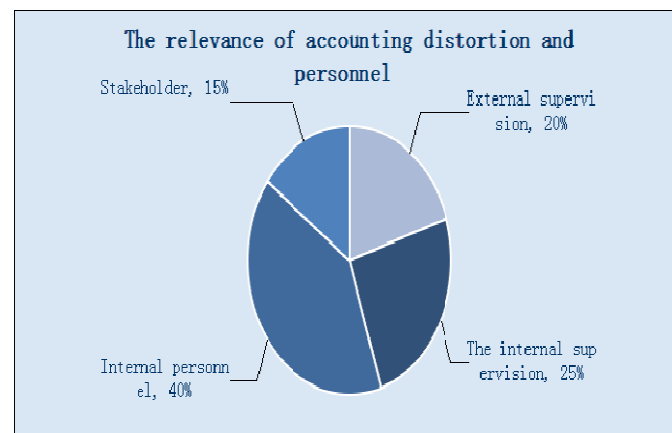
### Inner controllers

It refers to the group of people who are appointed or employed by board of directors or higher department to manage and regulate specific unit. These people include manager, vice manager, factory director, chief financial officer in enterprises; people who are in charge of main affairs and the managing people in government departments. Internal operators will offer real information when their interests are consistent with the interests of internal supervisors and the interests of internal supervisors are in accordance with that of the state and society. When there is conflict of interests, they are highly possible to create fake accounting information.

### Stakeholders

Most of the time, stakeholders usually require to get real accounting information from enterprises, but when the information is not in favor of debt recovery or minimization of investment cost, other stakeholders will also try to create fake information.

Accounting distortion is closely related with external supervisors, internal supervisors, inner controller and stakeholders (see Figure 2).



**Figure 2 : The relevance of accounting distortion and personnel**

According to the requirements of these four decision-making, we can divide their strategies into positive strategy and negative strategy. Positive strategy can have positive effects on accounting information while negative strategy only has negative effects. Meeting with the three elements (decision-making bodies, policy sets, and utility), there are four types of game theory relationship in accounting information of enterprises. 1) game theory between external supervisors and inner controllers; 2) game theory between external supervisors and internal supervisors; 3) game theory between inner controllers and internal supervisors; 4) game theory between internal supervisors and other stakeholders (mainly creditors). The previous two are non-cooperative game theory while the last two are cooperative game theory.

Therefore, we know that what on the operators' mind is that if the supervision of government is at low rate or low efficiency, they will choose negative strategy. On the contrary, they will randomly

choose negative strategy or all positive strategy. In real life, taking long-term benefits into consideration, operators will not go to extremes because of the existence of regulators, auditors and relevant laws and regulations. However, the negative strategies of enterprises will do great harm to society, creating serious loss of government's and

## **SOLUTIONS TO ACCOUNTING DISTORTION**

### **Establishing accounting regulations**

We should establish a set of accounting regulations according to accounting law and accounting standards. So as to set a unified standards for business dealing and accounting calculation, reducing the chances for internal supervisors and inner controllers to freely choose accounting policies with certain purposes. At the same time, we should also establish units of financial accounting system as well as the system of accounting method for files. When the newly established enterprises register put on record or the existing enterprises carry out annual inspection of the record, they should all go with the accounting law, industry accounting system and accounting standards, formulate the specific financial accounting system and accounting method. For registration and annual inspection, they should also hand in the relevant materials to the industrial and commercial corporate to manage. When there is change of the documents, the documents should be handed in again to the tax authorities for record. They should also complement and perfect the accounting laws and regulations, make sure the regulatory department and the enterprise as a legal person from the legal accountability, strengthen the power of regulation of accounting information, increase penalties for fake accounting information provider, and further improve the accountants employed threshold.

### **Perfecting the corporate governance structure**

To perfect the corporate governance structure, the company's internal supervision system should be improved by specific measures including: Setting up the audit committee, which consists of the non-executive director and the supervisors of the company, to be in charge of the audit supervision on the operation and financial activity of the company with the decision-making authority; establishing the contract-based principal-agent relation between the managers and the board of directors; establishing comprehensive shareholder representative action to protect the rights and interests of the minority-shareholders, etc. Besides, in the process of the game theory between the operator and the owner, the owner can take the measure to make the operator's remuneration equal to the total sum of a fixed minimum salary, a portion of the extra profits and the certain shares of the company, in order to reach the Nash equilibrium. In order to reach the balance of the creditors and the owners in the game theory, the former can make a contract that conforms the interests of both sides to limit the target payout rate and limit the company's investment on the high risk projects; make regulations on financing policy related to the company, borrowing of the payment with preferential terms should not be easily allowed; require the company to provide relevant information such as financial statements to the creditors on a regular basis to evaluate whether the company has a default.

### **Establishing the external restraint mechanism and fully performing the functions of the intermediary institution**

The accounting supervision system of our country consists of the state supervision, social supervision and internal supervision of the companies. The intermediary institutions should fully perform their supervisory function, and make the accounting firm and tax accountant firm the leading force in the external supervision of the small and medium-sized companies. Therefore, accounting firms in partnership should be greatly promoted. According to international practice, accounting firms as intermediary institutions, due to their low cost of running, and the considerable social essence of their the audit results, in order to effectively improve the cost-benefit principle, all international certified accounting firms assume unlimited liability for the use of the partnership. It is necessary for our country,

in the relevant laws and regulations, to advocate and support the firms to take the form of partnership and to explicitly stipulate that only firms in partnership is qualified for the audit of listed companies, in order to enhance the crisis and risk consciousness of the accounting firms, make income of registered accountants corresponds to the risks. Government departments in the future can gradually get away from direct supervision on companies' accounting information, through strengthening the management of the intermediary institutions, and then, in the way of purchasing service of entrusted supervision on the accounting information of companies. External supervision, of course, is also an important way and means to promote the authenticity and reliability of the accounting information of the small and medium-sized companies. At the same time, the institutional improvement of the companies also should not be neglected.

### Establishing a system of civil liabilities

Without a strict system of civil liabilities, the punishment on that illegal behavior will not be implemented rightly. In addition to the more severe legal responsibility from the legal norm, what is more important is that in the process of creating law and regulations, they should also be guaranteed to be carried out appropriately. The most urgent problem to be solved at present is the securities crime litigation mechanism, training of the burden of proof and legal trial. Only when we set up a set of strict legal procedures, can the people with illegal behavior or the people tend to do so be threatened.

Through four ways above, the problem of information distortion can be alleviated to some extent (see Figure 3).

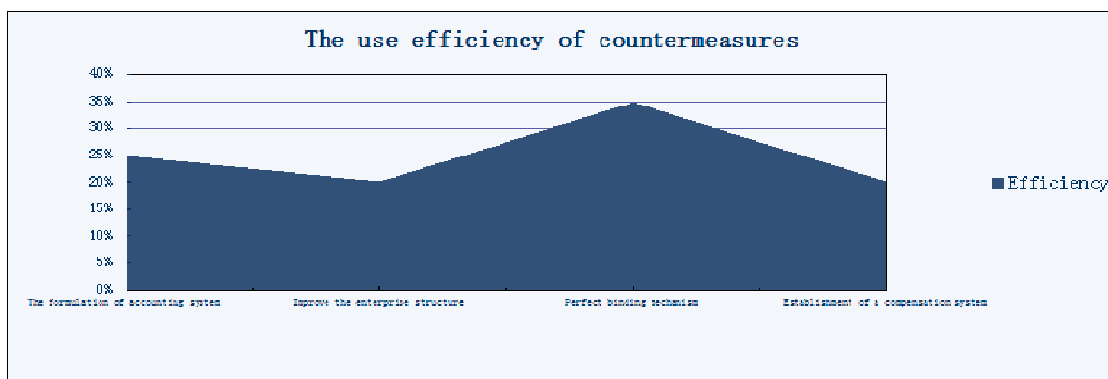


Figure 3 : The use efficiency of countermeasures

As relevant measures being carried out, the phenomenon of information distortion will hopefully decrease and the development of enterprises will gradually turn better.

## CONCLUSION

The progress of the time and the development of society lead to the fast development of economy in China. Yet the rapid development of economy also brings all kinds of problems. Information distortion is one of these problems. Facing this entire problem, the government should strengthen the power of supervision, reducing the phenomenon of information distortion.

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