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## Corporate Governance and Insider Trading Regulation Efficiency

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**Abstract** This paper aims to measure insider trading probability and the corresponding regulation efficiency in China. Based on an identification of influencing factors of corporate governance, the author explores the relationship among insider trading, corporate governance, and corporate value. The author also uses, based on high-frequency financial data, the probability of insider trading to measure the degree of insider trading in China's security market. Results reveal that China's security market has failed to punish and prohibit illegal insider trading effectively. However, the security market does exert certain constraints on insider-trading-ridden listed companies. The conclusion of this article is that by improving corporate governance, we can enhance the efficiency of insider trading regulation. Practical implications are also discussed.

**Keywords** insider trading, regulation efficiency, corporate governance, corporate value

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### 1 Introduction

Although controversies over the necessity of insider trading regulation have never ceased, insider trading is considered illegal and banned by law in many countries to maintain fairness of information access by market participants as well as to prevent insiders from profiting at the expense of outsiders.

Can insider trading regulation effectively prohibit illegal trading based on private information? With regard to the practice in the U.S., although remarkable improvement has been made in insider trading regulation, it fails to prevent

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Translated and revised from *Jingjixue Jikan* 经济学(季刊) (China Economic Quarterly), 2008, 8(1): 271–288

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insider trading from happening completely. Instead, the past several decades have witnessed an increase in insider trading. Strict disclosure of important events and regulation on trading, in particular, lead to remarkable changes in insider trading patterns. In recent years, there has been a trend that illegal trading inside companies is decreasing and illegal trading outside companies is increasing—a shift from insider trading to “outer insider trading.” Though China introduced the Securities Act in 1999 and related administrative rules and regulations to define and regulate insider trading as well as information disclosure, there have been no specialized laws concerning insider trading such as the *Insider Trading Sanction Act* of 1984 and *Insider Trading and Securities Fraud Enforcement Act* of 1988 in the U.S., which strengthen punishment on insider trading. These rules and regulations contain civil and criminal punishment. The imperfect legal system, immature corporate governance, and loose regulation on listed companies in China give rise to a great deal of insider trading, which disturbs the order in China’s stock markets, preventing these markets from fulfilling their functions.

Insider trading is closely related to corporate value and corporate governance, including principal and agent problems, information disclosure, and other issues of corporate governance as discussed below. Firstly, does insider trading make the relationship between managers and shareholders better or worse? In other words, will managers get private benefits at the cost of shareholders’ welfare? Secondly, insider trading also creates a conflict between inner shareholders and outer shareholders. When controlling shareholders are not able to transfer assets by means of affiliated transaction, they will make up for the loss with insider trading by taking advantage of their information advantage. Different models of corporate governance, especially share structures, disclosure systems and investor protection systems, cause diversity in the trend of insider trading. What about the efficiency of insider trading regulation in China? Can we improve the efficiency of China’s insider trading regulation by making use of the factors relating to corporate governance?

This paper aims to evaluate insider trading probability in China through EKOP model and to analyze factors affecting regulation efficiency in the light of corporate governance so as to put forward suggestions on improving regulation efficiency. In Section 2, we briefly review the related literature on the efficiency of insider trading regulation and measurement of insider trading based on private information. Also in this section, by citing examples of important events, we probe into the micro factors influencing regulation efficiency, and explore the relationship between corporate value and insider trading. In Section 3, we analyze the situation of insider trading. Suggestions on improving regulation efficiency are offered in Section 4.

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## 2 Literature Review

### 2.1 Efficiency of Insider Trading Regulation

There are three research streams on insider trading regulation efficiency. One is about the overall efficiency of insider trading regulation laws. Seyhun's (1992) empirical study on ITSA (*Insider Trading Sanctions Act* of 1984) showed that the extra benefits from insider trading increased by 3.5% after related laws took effect. Moreover, annual data in the period showed that regulatory laws did not have a significantly effect on the frequency or amount of extra benefit, nor do they change the number of insider trading cases. Meubroek's (1992) case study on American insider trading verified that the illegal cases only accounted for a small percentage compared with those that have not been discovered. Furthermore, 41% of the illegal cases were unveiled by informants instead of by normal regulation. Aiming to smooth information transfer by strengthening information disclosure, America launched the Regulation Fair Disclosure in October 2000. However, Straser (2002) and Irani (2002) found that policies in Regulation Fair Disclosure had a negative effect on the quality and quantity of information disclosed. It decreased insider traders, but the number of trading based on private information rose, showing that insider trading regulation hinders information spreading. Furthermore, a large number of empirical studies have testified that insider trading regulation could promote market liquidity and lower the cost of capital (e.g., Glosten, 1989; Bhattacharya and Spiege, 1991).

Another research stream on insider trading is concerned with the effect of important corporate events on insider trading. Even though insider trading regulation laws exert rigorous control over important corporate events disclosure, there still exist extra benefit from unpublicized information utilized by insiders. More insider trading is conducted by outer insiders who do not register in the company but are able to obtain information from registered insiders or other channels. An empirical study carried out by Arshadi and Eysell (1993) on 553 merger and acquisition cases from 1976 to 1990 showed that the number of insider trading cases declined while the number of abnormal benefit CAR increased sharply after the introduction of ITSA. Inspired by these findings, the two researchers distinguished outer insider trading from insider trading. Outer insider trading is realized by means of trading before corporate announcement, which prompts a sudden increase in share price. Examining the share price and changing rate before and after such important events as earnings increase and asset restructuring, He (2001), Zhu (2003) and Wang (2003) in China inferred that some people manipulate share price by taking advantage of insider information. As there is no registration system for insider trading in China, it can be deduced that a great deal of insider trading is conducted by non-registering

outer insiders. In this sense, China still has a long way to go in terms of insider trading regulation.

The third research stream is related to international horizontal comparison, including the comparison between insider trading regulation efficiency in different corporate operation models. Bris (2005) carried out an empirical study on merger and acquisition in different countries and found that insider trading laws decreased the frequency of insider trading while income from insider trading increased. Ackerman and Maug (2006) made a comparison of the increasing percentage before event disclosure among different countries. They found that countries having rigorous insider trading regulations tend to discourage share price rise. By comparing the share price changes before and after the introduction of insider trading regulation law, Fernandes and Ferreira (2006) believed that countries, particularly developing countries, where listing cost is higher, are less effective in insider trading regulation. After making a horizontal comparison between insider trading regulation effect among 21 countries, Durnev and Nain (2006) illustrated that countries with rigorous regulatory laws on insider trading tend to do a better job in reducing trading based on private information. Listed companies characterized by a high agency cost also tend to abuse insider trading. Nevertheless, strict insider trading regulation could make the disclosure of earnings in high-agency-cost companies more transparent. LLSV (2006) found that different law origins and market institutions exert different effects on investor protection and insider trading regulation efficiency. In their opinion, pro-regulations in stock market all over the world are doomed to be ineffective. With an empirical research on data of Canadian listing companies, Anand and Beny (2007) drew the following conclusions: companies listed in different stock exchanges at the same time tend to conduct insider trading; the larger the company is, and the more powerful the controlling shareholders are, the more likely the company is to commit insider trading. Among Chinese researchers, Chen (2005) argued that regulation efficiency, to a large extent, was affected by legal, political and financial institutions. Following this line, he analyzed the “power difference” between insiders and outsiders affecting regulation efficiency, explained the institutional distinction of insider trading regulation efficiency between countries adopted the Common Law System and those adopted the Civil Law System countries, and illustrated the reason why China did not regulate insider trading effectively.

As for the vertical comparison of insider trading regulation efficiency, scholars are likely to believe that although many insider trading regulations do not achieve expected goals, they help improve market liquidity. In the aspect of horizontal comparison, the stricter insider trading regulation is, the less insider

trading is. In addition, the better a company is governed, the less popular insider trading becomes. Overall, since insider trading regulation is relatively effective, it is necessary to implement and perfect insider trading regulation.

## 2.2 Measurement of Insider Trading

Many scholars have measured insider trading with private information through the index of information asymmetry, especially by bid-ask spread and its adverse selection as an indirect index. It is proved that a significantly positive correlation exists between information asymmetry and private information trading (e.g., Hasbrouck, 1991). Meulbroek (1992) measured information content in insider trading with event study. Llorente et al. (2001) proposed the LMSW method, which assists researchers to study trade based on private information with the high positive autocorrelation between stock prices and trading volume. The above-mentioned methods assessed probability of insider trading indirectly measured with the index of information asymmetry.

The EKOP model, developed by Easley, Kiefer, O'hara and Papeman (1996, 1997a), estimates directly information asymmetry in a stock market and analyzes the insider trading probability (ITP). According to the trading volume and direction, Easley et al., calculated ITP caused by private information with financial microstructure data. White and Ready (2004) measured the ITP of top 3000 companies in market value in NYSE and NASDAQ between 1995 and 2000, and concluded that ITP was significantly and positively related to relative difference between buying price and selling price among the sample companies. The conclusion was then confirmed by empirical studies conducted by Dennis, Weston (2001), and Vega (2004). Brown, Finn and Hillegeist (2001) explored the significantly negative relationship between trading volume and ITP in 230 NYSE enterprises, with a further agreement that ITP is negative correlated with AIMR. Cruces and Kawamura (2005) conducted a comprehensive empirical study on insider trading in Latin American enterprises under the existing corporate governance with ITP. It is verified that the higher the liquidity, the smaller the ITP, and the smaller the probability of insider trading. In addition, the better the business operation investor protection in a firm, the less likely insider trading to occur.

Research on insider trading in China, mainly employing the method of event study, focuses on whether there is insider trading and how it can be identified. For example, Wang (2002) studied insider information and measured it in China. On the basis of Wang's (2002) research, Shi and Jiang (2003) assessed private information trading in China's insider trading cases by combining the LMSW (Llorente et al., 2001) method with the event study method.

### 3 Empirical Studies

In this section, according to the EKOP model developed by Easley, Kiefer, O'hara and Papeman (1996, 1997a), we estimate insider trading in stock market and analyze the probability of private information trading.

#### 3.1 The Private Information Trading Model

In accordance with Easley and O'hara's (1987, 1992) structural sequential trading model that divides each trading day into many separate time zones, the probability of private information trading can be calculated. It is proved that the sudden changes in selling and buying orders have something to do with activate participation of informed traders. As a result, other non-informed traders would follow suit, resulting in big fluctuations in stock price. Easley et al. pointed out that market trading was caused by either good news or bad news. According to trading direction and volume, we can estimate the probability of information-based trading at the level of financial microstructure by using the following equation:

$$L(\theta / B, S) = (1 - \alpha) e^{-\varepsilon_b} \frac{\varepsilon_b^B}{B!} e^{-\varepsilon_s} \frac{\varepsilon_s^S}{S!} + \alpha \delta e^{-\varepsilon_b} \frac{\varepsilon_b^B}{B!} e^{-(\mu + \varepsilon_s)} \frac{(\mu + \varepsilon_s)^S}{S!} \\ + \alpha (1 - \delta) e^{-(\mu + \varepsilon_b)} \frac{(\mu + \varepsilon_b)^B}{B!} e^{-\varepsilon_s} \frac{\varepsilon_s^S}{S!}.$$

$B$  and  $S$  being known, we estimate the numerical value of  $\theta = (\alpha, \mu, \delta, \varepsilon_b, \varepsilon_s)$  by maximum likelihood method.  $B$  stands for the number of active buying deals in a trading day, while  $S$  the number of active selling deals in a trading day. Following Ellis, Michaely and O'hara's method in 2000, all the deals completed at the selling price are regarded as buying, and all the deals completed at the buying price are considered as selling. The probability that an information event occurs is denoted as  $\alpha$ . If the information event occurs, it can be bad news with the probability  $\delta$  or good news with the probability  $(1 - \delta)$ . Non-informed traders who are not aware of the new information submit buy orders at the daily arrival rate  $\varepsilon_b$  and sell orders at the daily arrival rate  $\varepsilon_s$ . Trading begins after the event occurs in accordance with Poisson process throughout the day  $\mu$ .

Weighted from the probability of occurrence, the likelihood function is the probability distribution of the number of trading, including probability of good news day  $\alpha(1 - \delta)$ , probability of bad news day  $\alpha\delta$ , probability of no news day  $(1 - \alpha)$ .

Supposing that every trading day is an independent event, we can give the likelihood function of a day as follows:

$$V = L(\theta/M) = \prod_{i=1}^I L(\theta/B_i, S_i),$$

$$i = 1, \dots, I.$$

First, take logarithm at both sides, and then use maximum likelihood method. On the basis of historic trading volume  $B$  and  $S$ , we can calculate the undetermined coefficient  $\theta = (\alpha, \mu, \delta, \varepsilon_b, \varepsilon_s)$ .

As for the parameters of ITP in the maximum likelihood function, we adopt the Newton Raphson method, which was perfected by Yu and Shao (2006) on the basis of Ellis' study:

$$ITP = \frac{\alpha\mu}{\alpha\mu + \varepsilon_b + \varepsilon_s}.$$

Therefore, we can employ the ITP to estimate the extent of covert insider trading. In other words, we use it as a direct index of private information trading.

### 3.2 Analysis of Overall Insider Trading Regulation Efficiency

#### 3.2.1 Samples and Descriptive Statistics

Sample firms studied in this research are those listed in China before 2005. Non-financial listed companies with incomplete data or negative income were excluded. The final sample included 503 listed companies. All of the data, including high-frequency financial data, were collected from the WIND database.

We then made an overall measurement of private information trading in China's stock market. The index series used consist of three types, namely share structure, information disclosure, and corporate characteristic. Specifically, share structure contains controlling shareholder, constraint shareholder, independent director, circulating share, and state-owned share. Information disclosure includes earnings management, honesty of disclosure, and trading depth. Corporate characteristic includes corporate growth, expected performance, and corporate scale. The index series and descriptive statistics are shown in Table 1.

Comparison of classified *ITP*. First, we divide the trading volume into five equal levels (as shown Table 2). It can be seen that the first level with the largest trading volume has a higher *ITP* (23.18%). The last level with the lowest *ITP* of only 18.39%, show that the higher the liquidity, the lower the *ITP*. Next, we compare *ITP* by different industries. The result show that *ITP* is the highest in the mining and oil industry, which might has something to do with the fact that growth in this industry is related to resource monopoly. Information technology,

**Table 1** Variable, Definition and Descriptive Statistics

Variable	Function	Definition	Mean	S.D.
<i>ITP</i>	Measure the extent of private information trading and concealing insider trading	EKOP Model	21.175 9%	0.073 2
<i>Depth</i>	The extent of differences between traders' private information	$(Vol_a + Vol_b)/2$ <i>Vol<sub>a</sub></i> stands for the amount of active buying, and <i>Vol<sub>b</sub></i> stands for the amount of active selling	6 537.91	9 854.80
<i>Control</i>	Measure the extent of controlling shareholders' governance	The percentage of the first largest shareholder's shares to the total amount of shares in a listed company	39.550 8%	0.163 4
<i>Constrain</i>	Measure the extent of other shareholders' restriction	The gap between the percentage of the top ten shareholders' shares in the total and that of the first largest shareholder's share	20.586 0%	0.140 3
<i>Asset</i>	To get rid of the size effect	Total asset of a sample firm in 2005	294 918.30	972 577.40
<i>Grow</i>	Expected growth	The average annual profit growth rate from 2003 to 2005	46.171%	2.928 8
<i>ROE</i>	Expected performance	Average return on net assets from 2003 to 2005	3.143%	0.145 9
<i> DA </i>	Indirectly measure the extent of regulation and transparency of information disclosure of corporate management	The mean of earnings management between 2003 and 2005 (using the revised Jones Model)	0.072 7	0.070 6
<i>Outsider</i>	The extent of outsiders' constraint on insiders	The percentage of independent directors in the board	34.816%	0.056 7
<i>Liq</i>	The extent of outside shareholders' constraint on big shareholders	The percentage of circulating shares to the total amount of shares in a listed company	38.79%	0.142 0

(To be continued)



(Continued)

Variable	Function	Definition	Mean	S.D.
<i>State</i>	State-owned shareholders' regulation on corporate management	The percentage of state-owned shares to the total amount of shares in a listed company	31.94%	0.2576
<i>Inforeputation</i>	Honesty of corporate information disclosure	Dummy variable, 1 stands for companies which have been punished by supervising department because of illegal information disclosure; 0 for other companies.	—	—

following the mining and oil industry, ranks the second in the list, as the industry is concerned with technology monopoly and innovation. Steady growth and weak technological innovation lead to low *ITP* in construction section, agriculture, and forestry. Table 3 illustrates the differences in *ITP* by industry.

**Table 2** Descriptive Statistics of *ITP* by Trading Volume

Trading volume levels	Mean	S.D.	Max	Min
First (lowest)	23.18%	7.35%	57.10%	13.21%
Second	21.29%	6.05%	45.55%	12.92%
Third	20.67%	7.23%	51.14%	13.12%
Fourth	20.01%	7.69%	52.80%	0.00%
Fifth (highest)	18.39%	6.14%	44.55%	11.77%

### 3.2.2 ITP and Corporate Governance

In order to identify the influencing factors of *ITP*, we conduct an empirical research on *ITP* from the perspective of corporate governance. The multiple regression Model 1 is formulated as follows:

$$\begin{aligned}
 ITP = & \text{intercept} + \alpha_1 \times LnDepth + \alpha_2 \times Growth + \alpha_3 \times Roe + \alpha_4 \times Control \\
 & + \alpha_5 \times Constrain + \alpha_6 \times Lnasset + \alpha_7 \times |DA| + \alpha_8 \times Outsider \\
 & + \alpha_9 \times Liq + \alpha_{10} \times State + \alpha_{11} \times Inforeputation .
 \end{aligned}$$

The stepwise regression Model 2 is an improved edition of Model 1. Regression

results of both Model 1 and 2 are listed in Table 4.

**Table 3** Descriptive Statistics of ITP Difference by Industries

Industry	Mean	S.D.	Max	Min
Agriculture, forestry, husbandry, and fishery	18.87%	5.18%	32.14%	14.18%
Mining and oil	24.06%	13.26%	46.95%	12.92%
Manufacture	21.01%	7.08%	57.10%	11.80%
Electricity, gas and water	18.07%	4.89%	33.17%	13.21%
Construction	17.84%	7.04%	38.23%	11.77%
Transportation and storage	19.70%	5.19%	32.37%	14.88%
Information technology	22.40%	6.80%	43.74%	14.36%
Wholesale and retail	20.48%	8.25%	51.14%	0.00%
Real estate	19.59%	5.03%	36.19%	13.14%
Social service	19.41%	5.06%	32.39%	14.01%
Communication and cultural industry	18.06%	2.79%	20.85%	14.96%
Comprehensive industry	22.31%	9.92%	45.55%	12.21%

**Table 4** ITP and the Result of Corporate Governance Multiple Regression

Variable	Model 1			Model 2 (Stepwise regression)		
	Parameter estimate	<i>t</i> Value	<i>Pr</i> >   <i>t</i>	Parameter estimate	<i>F</i> Value	<i>Pr</i> > <i>F</i>
Intercept	0.442 73	8.49	<0.000 1	0.442 92	119.75	<0.0001
<i>ln(depth)</i>	-0.010 28	-2.28	0.022 8	-0.010 83	6.04	0.014 2
<i>Growth</i>	0.002 16	2.20	0.028 1	0.002 58	7.47	0.006 4
<i>ROE</i>	0.004 14	1.47	0.140 8	–	–	–
<i>Control</i>	-0.006 83	-0.21	0.837 0	–	–	–
<i>Constrain</i>	-0.047 27	-1.42	0.156 9	-0.042 09	3.65	0.056 6
<i>ln(asset)</i>	-0.008 61	-2.69	0.007 3	-0.008 69	8.19	0.004 3
<i>DA</i>	0.071 38	1.52	0.129 6	–	–	–
<i>Outsider</i>	-0.013 87	-0.28	0.780 5	–	–	–
<i>Liq</i>	-0.061 83	-2.20	0.028 0	-0.057 63	6.34	0.012
<i>State</i>	-0.033 07	-2.47	0.013 9	-0.03 43	7.53	0.006 2
<i>Inforeputation</i>	0.015 47	2.25	0.024 8	0.016 27	5.84	0.015 9
<i>R</i> <sup>2</sup>		0.084 5			0.079 4	

As shown in Table 4, ITP has a significantly negative relationship with circulating shares and state-owned shares at the 0.05 significance level. Thus, the

higher the percentage of circulating shares and state-owned shares in a company, the less likely insider trading is to occur. Nevertheless, since they can not supervise the managerial team efficiently, small and medium shareholders tend to sell their shares when they find themselves cannot hold back senior managers from taking advantage of insider information to gain abnormal benefits. Accordingly, a higher percentage of non-circulating shares lead to higher ITP, while a higher percentage of state-owned shares can lower ITP, showing that state shareholders start to pay more attention to corporate governance. We also find that ITP does not have a significantly negative relationship with such factors as *Control*, *Constraint*, and *Outsider*. We can thus deduce that there is no significant relationship between ITP and big shareholders' control. In addition, the above results also show that the higher the degree of constraint from other shareholders, the lower the ITP. We also find that there is no significant correlation between independent directors and ITP.

ITP is significantly and positively related to *Grow* and *Asset* at the 0.05 level. However, its correlation with corporate performance expectation is not significantly positive. Possible explanations might be that informed traders are likely to have access to the confidential information about performance and growth of a listed company. Therefore, good-performed companies are prone to have a higher ITP. It is difficult for a large company with sound disclosure policy and lots of exposure to potential investors and media to conduct insider trading, and vice versa.

The significantly positive relationship between ITP and disclosure and *Inforeputation* demonstrates that enterprises with damaged *Inforeputation* are more likely to commit insider trading. ITP is found insignificantly related to  $|DA|$ , implying that the higher the degree of earnings management, the more likely a listed company to commit insider trading. In reality, to gain recognition from institutional investors or gain short-term personnel benefits, some managers might be tempted to conduct high-level earnings management. ITP has a significantly negative relationship with trading depth at the 0.01 level, indicating that the larger the turnover of a listed company, the faster information is integrated with its share price, and the lower the ITP. Indirectly, such a result shows that regulatory authority can low ITP by means of improving liquidity of listed companies.

In Model 2, the results of stepwise regression show that, except *Control*, corporate performance,  $|DA|$ , and *Outsider*, other indexes all entered the regression model. Compared with Model 1, there is no change in the relationship between each variable and ITP. Furthermore, compared with Model 1, the significance levels of all independent variables in Model 2 have improved

dramatically. Particularly, *Constrain*, the variable indicating the degree of equity constraints becomes significant at 0.1 level, showing certain constraints from other organizations or legal person shareholders can effectively prevent insider trading from happening. To conclude, many factors in corporate governance do have significant impact on the efficiency of insider trading regulation.

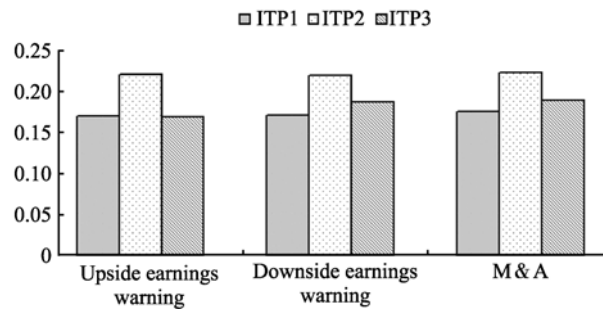
### 3.3 Significant Events Analysis

Here we select some significant events as an auxiliary empirical analysis to probe into insider trading from the level of corporate governance. In doing so, we make an empirical study on earnings predictions and merger & acquisition (M&A) cases in 2005, including 157 upside earnings warning cases, 125 downside earnings warning cases and 30 M&A cases. With the announcing day of the event as the starting point, we divide the event period into three stages: stage one (-60, -30) as a controlling period, stage two (-30, -1) as insider information changes before the announcing day, and stage three (+1, +30) as the stage after the announcing day. Table 5 and Fig. 1 presents the descriptive statistics of these selected events.

From the research on ITP at different stages of an event in Table 5 and Fig. 1, we see that all the selected events reach their climax at Stage Two. In other words, the probability of information leakage and private insider trading is very

**Table 5** Descriptive Statistics of ITP at Different Stages

Stages		(-60, -30) ITP1	(-30, -1) ITP2	(1, 30) ITP3
Upside earnings warning	Mean	0.165 0	0.214 3	0.164 1
	S.D.	0.085 0	0.097 8	0.087 6
	Max	0.474 0	0.580 6	0.605 9
	Min	0.000 0	0.000 0	0.064 5
	Median	0.148 5	0.193 0	0.144 7
Downside earnings warning	Mean	0.166 1	0.212 7	0.181 3
	S.D.	0.087 5	0.112 1	0.100 1
	Max	0.542 1	0.551 7	0.604 8
	Min	0.000 0	0.067 2	0.060 0
	Median	0.149 0	0.171 6	0.152 5
Merger and Acquisition	Mean	0.170 8	0.215 8	0.183 8
	S.D.	0.054 0	0.087 4	0.103 5
	Max	0.282 2	0.436 4	0.488 6
	Min	0.098 8	0.111 2	0.000 0
	Median	0.151 3	0.180 4	0.165 7



**Fig. 1** Comparison of ITP Changes for Selected Events at Different Stages

high before the announcing day. For example, ITP of Upside Earnings Warning Events is 0.165 at the first stage and 0.214 at the second stage, and then it decreases to 0.164 after the event is announced. As a result, it is the same with other events, which demonstrates that the probability of private information trading is high before the announcement of important events and the highest at the second stage, particularly for M&A events.

The results of Kruskal Wallis's test are presented in Table 6, ITP changes (ITP1 – ITP2) are significantly related to the first and second stages of earnings predictions at the 0.01 level and to M&A at 0.1 level. ITP changes (ITP2 – ITP3)

**Table 6** Tests on ITP Changes at Different Stages

	Difference	Lower CL mean	Mean	Upper CL mean	<i>t</i> Value	<i>Pr</i> >   <i>t</i>
Upside earnings warning	ITP1 – ITP2	0.036	0.0595	0.0831	5.02	<0.0001
	ITP2 – ITP3	-0.069	-0.043	-0.017	-3.33	0.0014
	ITP1 – ITP3	-0.016	0.0026	0.0209	0.29	0.7739
Downside earnings warning	ITP1 – ITP2	0.0119	0.0379	0.064	2.89	0.0046
	ITP2 – ITP3	-0.066	-0.04	-0.013	-2.95	0.0038
	ITP1 – ITP3	-0.034	-0.012	0.0092	-1.12	0.2631
Merger and acquisition	ITP1 – ITP2	0.000	0.0219	0.0443	1.93	0.0552
	ITP2 – ITP3	-0.038	-0.012	0.0141	-0.90	0.3691
	ITP1 – ITP3	-0.011	0.0111	0.0331	0.99	0.3215

are also significantly related to the second and third stages of earnings predictions at 0.01, but not to M&A. Changes in ITP1 – ITP3 are not significant in three samples, implying that insider trading exists before the public announcement of important information.

From the above analysis, we find that the climax of ITP appears at the time before the announcement. Insiders get excess benefits with information advantage, which confirms some scholars' deduction about the occurrence of insider trading before important events in China. Apparently, many listed companies disobey the disclosure principles of "being fair, public and just". Imperfect corporate governance also gives rise to insider trading. All these evidences indicate the poor corporate governance in China.

### 3.4 Analysis of the Relationship between Corporate Value and ITP

In terms of regulation environment, differences in disclosure policies, and investor protection, can the stock market in China respond naturally to the illegal insider trading caused by information heterogeneity? Will the market be made up of by various investors who prefer corporate with good governance and disclosure, which in turn enhance the value of those "honest" companies? A further empirical research needs to be done to answer these questions.

Theoretically, corporate governance not only directly enhances corporate value, but also indirectly influences corporate value through ITP. We therefore suppose that the smaller the ITP, the higher the corporate value. Below, Tobin's  $Q$  is used to measure the value of a listed company:

$$\text{Tobin's } Q = \frac{MVCS + BVLTD + BVINV + BVCL - BVCA}{BVT A}$$

Where  $MVCS$  stands for market value of common stocks;  $MVLTD$  the book value of long-term debt;  $BVIN V$  the book value of inventory;  $BVCL$  the book value of current liability;  $BVCA$  the book value of current asset, and  $BVT A$  the book value of total asset.

To examine the relationship between ITP and corporate value, we construct Model 3 and 4 on the basis of the model proposed by Cruces and Kawamura (2005):

$$\begin{aligned} \text{Tobin's } Q &= \text{intercept} + \alpha_1 \times \text{ITP} + \alpha_2 \times \text{Growth} + \alpha_3 \times \text{Roe} \\ &\quad + \alpha_4 \times \text{Control} + \alpha_5 \times \ln(\text{asset}) + \alpha_6 \times |\text{DA}| + \alpha_7 \times \ln(\text{Depth}) \\ \Delta \text{Tobin's } Q &= \text{intercept} + \alpha_1 \times \text{ITP} + \alpha_2 \times \text{Growth} + \alpha_3 \times \text{Roe} \\ &\quad + \alpha_4 \times \text{Control} + \alpha_5 \times \ln(\text{asset}) + \alpha_6 \times |\text{DA}| + \alpha_7 \times \ln(\text{Depth}) \end{aligned}$$

Since corporate governance influences corporate value, it is chosen as a

control variable.  $\Delta$ Tobin's  $Q$  is the difference between the Tobin's  $Q$  of 2005 and Tobin's  $Q$  of 2004, indicating the change in corporate value in 2005. The relationship between changes in corporate value and ITP is shown in Table 7.

**Table 7** Relationship between Corporate Value and ITP

Corporate value (the explained variable)	Model 3			Model 4		
	Tobin's $Q$			$\Delta$ Tobin's $Q$		
Variable	Parameter estimate	$t$ Value	$Pr >  t $	Parameter estimate	$t$ Value	$Pr >  t $
Intercept	2.702 98	8.47	0<0.000 1	-0.370 35	-1.7	0.090 2
<i>ITP</i>	0.858 42	2.92	0.003 7	-0.136 78	-0.68	0.496 2
<i>Growth</i>	0.000 690 8	0.09	0.926	0.003 04	0.6	0.549 4
<i>ROE</i>	2.278 61	6.7	<.000 1	-0.342 76	-1.48	0.140 7
$\ln(\text{asset})$	-0.146 86	-5.35	<.000 1	0.105 67	5.63	<.000 1
<i>Control</i>	0.358 88	2.83	0.004 9	-0.069 05	-0.8	0.426 7
$ DA $	-0.361 04	-0.84	0.400 9	-0.585 64	-2	0.046 5
$\ln(\text{Depth})$	-0.052 25	-1.54	0.125 3	-0.121 77	-5.24	<.000 1
$R^2$	0.205 8			0.083 4		

The results of Model 3 show that Tobin's  $Q$  concerned with corporate value has a significantly negative relationship with corporate scale at the 0.01 level and a significant positive relationship with *Control* and *ROE* performance. Excluding corporate governance elements of company characteristic or share structure, ITP is significantly and positively related to corporate value at the 0.01 significance level. Contrary to our expectation, a company with a higher ITP possesses a higher value.

Now let us take a look at Model 4. In terms of the relationship between corporate value changes,  $\Delta$ Tobin's  $Q$  and corporate governance, after excluding such factors as performance and scale, we find that, quite counter-instinctively, *ITP* does not have a significantly negative relationship with corporate value changes. This shows that China's capital market cannot punish effectively listed companies with poor corporate governance. Possible reasons might be that investors in China prefer so-called "insider information" in an attempt to obtain excessive interest. Consequently, the value of well-governed listed companies is less likely to embody in their share prices.

In Model 4,  $\Delta$ Tobin's  $Q$  and the indicators of corporate governance show that, after eliminating influencing factors such as performance and scale, there is an insignificant negative relationship between ITP and  $\Delta$ Tobin's  $Q$ , implying that capital market does not punish seriously those insider-trading-ridden listed companies. However, there is one thing worth mentioning, that is, at the

significance level of 0.01, there is a significant positive relationship between company size and changes in corporate value. Such a finding indicates that in blue-chip companies, there is a significantly positive relationship among corporate governance, the degree of insider trading, and corporate value. However, as a whole, domestic capital market cannot punish effectively the insider trading behavior of some listed companies.

The empirical results in Section 3 show that China's domestic market is unable to sort well-governed listed companies from poorly-governed ones. However, as the quality of corporate governance is significantly related to the regulation efficiency of insider trading, both regulatory bodies of stock market and the managerial team members of listed companies shall pay enough attention to the potential improvement effect of quality corporate governance on corporate value.

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## **4 Practical Suggestions**

### **4.1 Improve the Completeness and Consistency of Insider trading Regulation**

China needs to introduce special insider trading regulation rules, for example, rules similar to American Legislations on Insider Trading, to perfect the details of its illegal insider trading identification, procedures of insider trading regulation and punishment. Meanwhile, relevant government department shall pay attention to keep insider trading regulations consistent to avoid too rigorous supervision in a bull market and too flabby supervision in a bear market.

### **4.2 Further Improve Corporate Governance**

As many domestic listed companies do not have completely "separated ownership and control," we need to further improve the internal governance of domestic listed companies. For example, in terms of information disclosure, we need to forbid selective information disclosure, essential information leakage as well as delayed disclosure. In addition, we are supposed to make the board of directors more independent, strengthen the function of independent directors, and pass more laws to strengthen business ethics and honesty. It is also needed to emphasize the authenticity, accuracy, and completeness of financial reports of listed companies and take effective measures to punish financial cheating and illegal earnings management behaviors.

### **4.3 Strengthen Mechanism of Investment Protection**

Regulatory bodies shall strengthen their supervision over trading. Particularly,



they shall establish a supervisory system over abnormal price fluctuation, trading frequency, and trading volume to protect external investors. Moreover, regulatory bodies shall punish more severely insider trading and market manipulation. In order to better protect investors, especially those minor investors, regulatory bodies shall set up risk warning system and help potential investors gain a better understanding of security market.

#### 4.4 Enhance Regulation on Important Information Disclosure

Since the reform of “separation of ownership and control” and establishment of secondary market in China, large shareholders in listed companies and the actual controller will be able to take part in secondary market and pay more attention to stock price as well as controlling right, especially after the establishment of share incentive scheme. Under the background of full circulation of all shares of China’s listed companies, there will be more voluntary disclosure, which facilitates managerial personnel or manipulators for false or selective disclosure and insider trading. Therefore, we need to maintain and protect minor shareholders’ equal access to information. Overall, owing to the changes in behaviors of listed companies and security market participants, emphasis shall be laid on the information disclosure of stock incentive, merger & acquisition, earnings prediction, dividend transfer, etc.

#### 4.5 Establish a Fair Trading Market for Insiders and Information Disclosure System

In order to prevent insiders from taking advantages of “insider information,” it is necessary to set up a fair trading market to promptly disclose relevant information to outsiders. Meanwhile, to improve the efficiency of integration of information into stock price and to embody the incentive of stock options, insiders shall be allowed to actively participate in stock market activities on the ground of fairness and honesty. In doing so, to further perfect China’s present information disclosure system is compulsory.

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