

The Effects of Taiwan's New *Statute for Upgrading Industries of 2000* on Share Structure of the Board and Corporate Dividend Policy*

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ABSTRACT: On December 31, 1999, Taiwan amended the 10-year old Statute for Upgrading Industries (SUI hereafter), which was implemented since January 1, 1991. The new SUI of 2000 was effective from January 1, 2000. The amendment in the new SUI of 2000 that affects shareholders the most is the rescission of the shareholders' option to defer taxation of stock dividends distributed from corporate earnings. This study examines the effects of the new SUI of 2000 on stock ownerships of directors and on corporate dividend policy. Empirical results show the following:

1. The stock ownership of individual directors and supervisors on the board decreases after the implementation of the new SUI of 2000.
2. The relationship between the implementation of the new SUI of 2000 and the stock ownerships of institutional investors is not significant.
3. The relationship between the implementation of the new SUI of 2000 and stock ownership of close relatives of directors is not significant.
4. The payout ratio of stock dividends decreases after the implementation of the new SUI of 2000.

Keywords: Deferring taxation on stock dividends, Stock ownerships for directors, Dividend policy

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I. INTRODUCTION

In order to encourage entrepreneurs to make investments in Taiwan, the Taiwan government enacted the *Encouraging Investment Act* (*EIA* hereafter) in 1960 and amended it every ten years. The act has proven to be a success after thirty years' implementation. From 1960 to 1990, Taiwan's DNP per capita rose from US\$2,000 to US\$12,000. The *EIA* expired on December 31, 1990. For the purposes of encouraging enterprises to upgrade their business, conducting research and development, attracting foreign investments, and balancing district development, the Taiwan government enacted the *Statute for Upgrading Industries* (*SUI* hereafter) on January 1, 1991 to replace the *EIA*. The ten-year duration of the old *SUI* ended on December 31, 1999. To keep on encouraging industries to upgrade their business and, at the same time, accommodate the tax reform of integrated tax system implemented on January 1, 1998, the Taiwan government amended the old *SUI* on December 31, 1999. The new *SUI* of 2000 was effective from January 1, 2000. The amendment to the old *SUI* that affects shareholders the most is the rescission of the benefit of deferring taxation for individual shareholders on stock dividends distributed from corporate earnings. The tax benefit on stock dividends was formulated in Article 16 of the old *SUI*:

Article 16: *If a corporation increases its contributed capital through undistributed earnings and such capital is used for the following purposes, the newly-issued and name-recorded stock dividends distributed to its shareholders may be excluded from the calculation of individual (or corporate) taxable income for the current year. When such stock is transferred, donated or distributed as estate, its face value shall be included in the taxable income in the year of transfer. However, if the market value of such stock is lower than the face value, the market value is used in the tax return:*

1. *Purchasing machinery, equipment or transport equipment for producing products, providing services, research and development, quality examination, pollution prevention, energy saving and upgrading industrial safety and hygiene standards;*
2. *Paying back loans or payables for purchasing machinery, equipment or transport equipment in the above clause; and*
3. *Investing in the important industries defined in Article 8.*

Although the lawmakers' reasons for deleting Article 16 of the old *SUI* of 1991 seem appropriate, one cannot ignore its impact on big shareholders (most of them are directors and/or high-level management) and the corporation itself because of rescinding the benefit of deferring taxation on stock dividends for individual shareholders. The amount of stock dividends distribution is generally huge for big shareholders. And, most of them reach the highest 40% marginal tax rates in Taiwan for their individual tax returns. Under the old *SUI* of 1991, they may enjoy the benefit of deferring taxation on stock dividends that are distributed from corporate earnings. However, under the new *SUI* of 2000, such benefit is rescinded from January 1, 2000. That is, shareholders have lost the

option to choose the timing to be taxed on stock dividends. Although big shareholders receive stock dividends distribution, they do not get real cash inflow. However, they have to pay individual income tax in cash for their stock dividends income (computed in the face value of stock) before March 31, 2001 when they file their tax returns. In response to the newly-amended *SUI of 2000* that rescinds the deferring taxation on the stock dividends, big shareholders may take two actions to solve their cash flow problem: First, they may sell part of their stock before the ex-dividend dates in 2000 when corporations distribute stock dividends of 1999 to them. In doing so, they can convert stock dividends to be distributed to them into cash in advance. Second, they may hold their stock passing ex-dividend dates to receive stock dividends distribution and then sell part of the stock for getting cash to pay tax when they file individual tax returns before March 31, 2001. No matter which action a big shareholder takes, both of them can lower their share holdings. Big shareholders selling their stock holdings not only affect the stability of the stock market, but may also send an unfavorable signal about the operation of their company to investors since big shareholder are generally directors and supervisors of the firms. They are insiders who are most familiar with the operation of the firm. Such unfavorable signal may cause difficulties in the operation of the company. This phenomenon deserves our attention.

One of the key elements that lets an enterprise survive and develop is the endeavor and commitment of its directors, supervisors and high-level management. (Most of them are big shareholders.) This is especially true when the directors and supervisors of the company are investors and policy makers. According to article 197 of Taiwan's *Law of Corporation*, "(a)fter a director is elected, a corporation shall report to the administrative authority about the director's shareholdings in the corporation on the day he/she is elected. Within his/her tenure, a director cannot transfer more than one half of his/her original shareholdings. Otherwise, his/her directorship will be discharged automatically." A supervisor is subjected to the same rule according to article 227 of the *Law of Corporation*. In addition, the Taiwan's *Law of Securities Exchange* also requires "total named shareholdings of all directors and supervisors must maintain a minimum percentage¹ of shares outstanding for any corporation publicly raising capital or issuing stock" (Article 26, clause 1). The lawmakers' purpose of Taiwan's *Law of Corporation* and *Law of Securities Exchange* is to coordinate various stakeholders of corporations, to protect bona-fide investors, and to develop national economy. Under the current laws, the trading and the holding of the shares for directors and supervisors are highly restricted in Taiwan. The newly amended *SUI of 2000* annuls the shareholder's option to defer the taxation of stock dividends. Such a change in law can have several impacts on an enterprise. First, the shareholdings of directors and supervisors on the board will decrease.

¹ Minimum share holdings on the board of Directors for Corporation issuing stock to public (revised and promulgated by Taiwan's Minister of Finance on May 13, 1997.)

(1 US\$ \approx 35 NTD)

Capital collected	Directors as a whole	Supervisors as a whole (1/10 of Directors)
Less than 30 million NTD	15.0%	1.50%
30 million ~ 1 billion NTD	10.0%	1.00%
1 billion ~2 billion NTD	7.5%	0.75%
More than 2 billion NTD	5.0%	0.50%

Needing large amounts of cash to pay income taxes for stock dividends, big shareholders may be forced to sell their shareholdings and thus lower their stock ownerships. Moreover, the amendment to the new *SUI of 2000* makes timing to levy stock dividends tax fixed to the date when they are distributed. The opportunity of tax planning on the date stock dividends be levied (when they are sold) under the old *SUI* is removed. Therefore, shareholders' intention to hold their shares may descend. And, total stock ownership of all directors and supervisors on the board of directors may decline. Although Taiwan's Securities and Future Exchange Commission of the Minister of Finance sets minimum shareholding percentages for the board of directors as a whole, directors and supervisors still can adjust their share holdings under the new *SUI of 2000*. Those having not reached the minimum shareholding limit can sell their stock. Those having reached the minimum limit can also adjust their share holdings between each other and change the share structure on the board of directors. Since the board of directors is the policy and/or operation center for a corporation, the change in its share structure and/or reduction of shareholdings may reduce big shareholders' commitment to the corporation. The performance of the firm may also be affected. The impact of amendment of *SUI of 2000* on corporate governance is an important issue to legislators.

Second, after the new *SUI of 2000*, shareholders no longer have the option to defer taxation on stock dividends. As explained above, such a change will give big shareholders a burden to sell stock for paying stock dividends taxes. However, big shareholders usually serve as the directors and supervisors of the company. They have absolute influence on the firm's dividend policy. Therefore, directors and supervisors would rather receive cash dividends rather than stock dividends after the new *SUI of 2000*. Their intention to receive stock dividends may become comparatively lower and thus reduce the stock dividend / cash dividend ratio. This study will also examine firms distributed stock dividends before and after 2000 to investigate the impact of the new *SUI of 2000* on the payout ratio of stock dividends.

In the next section, we review studies in share structure on the board of directors and studies in dividend policy. Section 3 explains hypotheses, sampling and statistical models used in this research. Empirical results are analyzed in the section 4. Section 5 presents the conclusions and suggestions of this study.

II. LITERATURE REVIEW

Most studies on share structure of board of directors and studies on dividend policy focus on internal factors within an enterprise. (For example, Gales and Kesner 1994; Denis and Sarin 1999; Chiu and Zhang 1990; Liu 1993; Yu and Zhou 1994; Su 2000, etc.) Studies on the effect of external changes in law on the share structure and dividend policy of an enterprise are rarely seen. Guo (1996) examines the effect of article 16 in Taiwan's old *SUI of 1991* on capital accumulation for business enterprises. Krole and Lehn (1997) investigate the effect of deregulation in the United States aviation industry on share structure of board of directors. Few, if any, studies examine the effect of Taiwan's *SUI of 2000*, which rescinds the benefit of deferring taxation on stock dividends, on the share structure and dividend policy of business enterprise. Empirical study in this area is not yet seen in the literature.

Empirical studies in share structure, composition of board of directors and

financial performance for firms in Taiwan are Chiu and Zhang (1990) and Yu and Zhou (1994). Results of Chiu and Zhang (1990) indicate that the higher the stock ownership of board of directors and that of institutional investors are, the better the financial performance of the enterprise will be. There exist positive relationships between financial performance and ownership percentages of the board of directors, and ownership percentage of the external directors. However, there is no significant relationship between financial performance and stock ownership of key managers. And, the larger the business enterprise is, the higher ownership percentage of the board of directors will be. Nevertheless, whether the raising of financial performance is due to scale economy or higher ownership percentage on the board of directors is not answered in their study. Yu and Zhou (1994) classify corporate governing persons into seven categories: managers, directors, supervisors, related persons, directors and concurrently supervisors, directors and concurrently managers, and big shareholders not concurrently managers, directors or supervisors. Their study examines the effect of stock ownerships of these seven corporate governing persons on business performance. They discover that the share ownerships of the directors, supervisors, and big shareholders have the most significant effects on business performance. External investors may use share ownerships of the directors, supervisors, and big shareholders as the indicator to forecast business performance.

In a study on changes of board of directors, Gales and Kesner (1994) argue that firms try to obtain trust of external members (external investors, creditors, etc.) through the ordination of the directors. Therefore, a firm usually establishes a bigger board of directors that includes external directors with important outside resources. Using 127 bankrupt companies and 127 matching non-bankrupt firms, Gales and Kesner (1994) discover that bankrupt firms suffer from the reduction in outside directors and downsizing on the board of directors during the process of bankruptcy. When compared with non-bankrupt firms, bankrupted companies also suffer from significant changes in the components of the board of directors. Denis and Sarin (1999) examine factors affecting the change in stock ownerships and components of boards of directors for 583 U. S. public firms from 1983 to 1992. Their empirical results indicate that stock ownerships and components of boards of directors change during this period. The change of stock ownership and change in composition of board of directors have a positive relationship. However, such changes will not be reversed in subsequent years. Changes in stock ownerships and composition of board of directors significantly affect the turnover rate of high-level executives. Stock price fluctuation in prior periods is weakly related with the threat on corporate control. Large-scale changes in stock ownerships usually take place before the economic pound, and after the assets restructure.

To examine the dividend policy of an enterprise, Liu (1993) studied the motivation for distributing new shares to shareholders without considerations for firms listed in the Taiwan Stock Exchange. He concluded that (A) a company distributes stock dividends from retained earnings in order to keep cash in the firm to be used as working capital, to buy fixed assets, to pay debts, and to make future investments. Distributing stock dividends also signals good news to investors about the firm's future prospect. In addition, if stock dividend qualifies the deferring taxation treatment allowed in *SUI*, it also makes a tax benefit to shareholders. In such cases, a company will be apt to distribute stock dividends instead of cash. (B) Distributing stock dividends from additional paid-in

capitals, if any, gradually becomes a corporate policy in Taiwan due to the fact that such stock dividends are tax-free when acquired, sold and transferred. Shareholders generally prefer this kind of stock dividends. In addition, to keep stock prices within a reasonable range and to signal the positive message about the business operations, a firm may also like to distribute such stock dividends. Su (2000) conducted a survey study to investigate the motivation of distributing stock dividends by a company. His results indicated that a firm's motivation to issue stock dividends is to attract investors and to adjust stock prices in an optimal range. In addition, his study also supports the hypothesis that a firm issues stock dividends to convey the message to investors on its future earning power and ability to pay dividends. Furthermore, a company distributing stock dividends may also intend to maintain the firm's tradition on dividend policy. As to the effect of change in tax laws on dividend policy, Guo (1996) investigated the effect of article 16 of the old *SUI of 1991* (the defer taxation on stock dividends) on a firm's capital accumulation. His results show that the stock dividends payout ratio increases insignificantly in the long run for firms applying deferring taxation treatment on stock dividends. Compared with firms not applying deferring taxation treatment on stock dividends, firms applying such tax benefit insignificantly have higher stock dividends payout ratios. There is a significant association between stock dividends payout ratios and stock prices for firms not applying deferring taxation treatment on stock dividends. However, this association is insignificant for firms applying deferring taxation treatment.

The effects of external law changes on shares structure, board composition and dividend policy are rarely seen in literature. Kole and Lehn (1997, 1999) examine the effects of deregulation of U. S. airline industry in 1978 on the share structure, board composition, executive compensation. They discovered that, after the deregulation of airline industry, the ownerships of shares are more concentrated, the boards of directors become smaller, the compensations of CEO are higher, and stock options are granted more. Although the best size of board of directors does not exist in theory, the size of the board decreases after the deregulation. A smaller board can reduce the number of directors taking a free ride and increase the efficiency of decision making on the board. The efficiency of decision making is especially important after the airline deregulation. In addition, their results also indicated that the percentage of outside directors on the board increased and they also played a more important role after the airline deregulation.

III. RESEARCH METHODOLOGY

Hypotheses

The Taiwan's new *SUI of 2000* rescinded the tax benefit of allowing deferring taxation on stock dividends from earnings for individual income tax. This change will make shareholders receiving stock dividends include such "paper" dividends in their individual income tax returns (in the "lower of par value and selling price" basis) in the subsequent year, no matter whether a shareholder sells the acquired stock dividends or not. Big shareholders are distributed large amounts of stock dividends. Nevertheless, stock dividends are not cash. Shareholders have to pay taxes in cash when they receive stock dividends. Cash flow problems might occur to them and thus affect their willingness to hold the shares. This study examines the effects of this law change on an enterprise, that

is, (1) its effect on directors' and supervisors' shareholdings and (2) its effect on corporate dividend policy.

As the size of a public firm increases, its shares will be gradually scattered about among shareholders. Therefore, the average shareholdings of the board of directors will be lowered too. We examine the monthly average shareholding percentages on board for firms listed the Taiwan Stock Exchange from the beginning of 1998 to the end of 2000 and discover a declining trend. (See Figure 1.) However, the trends for the constituents of the board (individual directors and supervisors, institutional directors and supervisors, related person etc.) are not obvious. In order to examine the effects of the amendment of *SUI of 2000*, this study employs the change approach (e.g., the difference in average shareholdings between two years) in the model, rather than the level approach (e.g. the average shareholding *per se*).

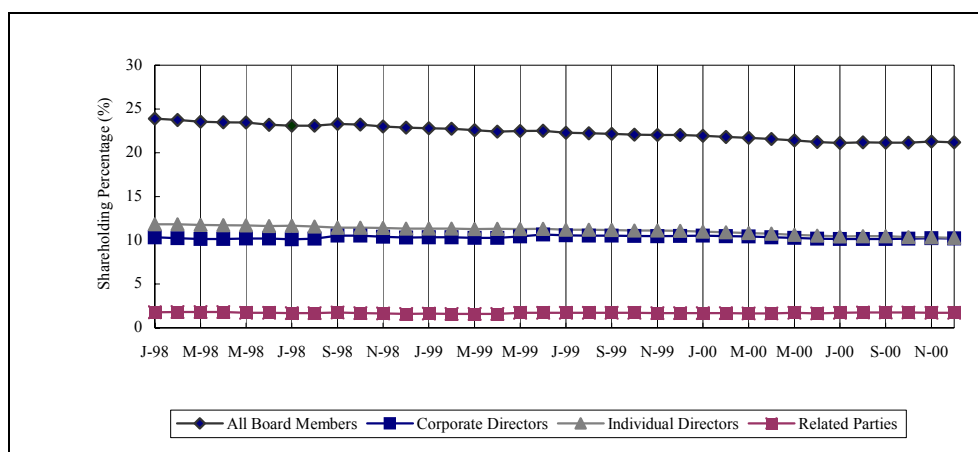


Figure 1: Average monthly shareholdings of boards from 1998 to 2000.

Four testable hypotheses are proposed in this study. Hypotheses one through three are for share structure. Hypothesis four is for dividend policy.

Hypothesis 1: *Ceteris paribus*, after Taiwan's new SUI of 2000 rescinds the option to defer taxation on qualified stock dividends, the decrease in average shareholding percentage of individual directors and supervisors on the board after 2000 will be more than that before 2000.

Unlike the U. S. *Internal Revenue Code*, Taiwan's *Income Tax Law* requires levying income tax on stock dividends to shareholders (and stock bonus to employees) at lower of face value or market price when investors (and employees) receive them. However, according to article 16 (and 17) of the old *SUI of 1991*, shareholders (and employees) may defer the taxation on stock dividends (and stock bonus) until they are sold or

transferred if stock dividends are distributed from retained earnings (rather than from additional paid-in capital) and funds are used for purchasing, renewing equipments or investing in qualified industries. Such stock dividends (and stock bonus) will be taxed at the lower of face value or market price in the year they are sold or transferred. Therefore, under the old *SUI of 1991*, an investor (and employee) could make tax planning on such stock dividends (and stock bonus) because of the deferring taxation option. He/she could choose the year such stock dividend (and stock bonus) to be taxed. After the implementation of the integrated income tax system in Taiwan in 1998, tax credits originated from corporate income taxes are distributed to shareholders, along with dividends, to offset their individual income tax. Since this dividend tax credit is granted in the year stock dividend is distributed, there is no reason to defer taxation on stock dividends to later years. However, after the integrated income tax system went into effect in 1998 and before the new *SUI of 2000* became effective (1998 and 1999), shareholders still could take the tax benefit of deferring taxation. Big shareholders generally reach the highest 40% marginal tax rate in their individual tax returns, which is higher than the top dividend tax credits rate of 25% (corporate income tax rate). Therefore, they still have to pay extra taxes even under the old *SUI of 1991*. Shareholders (generally acting as directors and supervisors on the board) are better off to defer taxation on stock dividends by considering the time value of money.

After Taiwan's new *SUI of 2000* went into effect on January 1, 2000, the option to defer taxation on stock dividends for individual shareholders was rescinded. Directors and supervisors on the board cannot choose the timing to sell stock dividends as part of their tax planning. In addition, they have to pay dividend tax in cash although they only receive the "paper" stock dividends. If they determine to keep stock dividends for maintaining the ownership percentage, they will be subject to stock dividends tax to be paid in cash. The amount of stock dividend tax for directors and supervisors may be huge due to their large shareholdings. The pressure of cash flow may make them sell part of their shares in order to obtain cash to pay such tax. Therefore, their shareholdings after the implementation of the new *SUI of 2000* may be thus decreased.

However, according to the *Rules for Implementing and Examining Directors' and Supervisors' Shares Holdings for Publicly-Issued Companies* regulated by the Taiwan's Securities and Futures Commission (SCF hereafter) under the authorization of the 26th clause of Taiwan's *Law of Securities Exchange*, the percentage of named stock held by all the directors and supervisors of a public firm is subject to a lower limit. Consequently, after the enforcement of Taiwan's new *SUI of 2000* that rescinds the option to defer taxation on stock dividends, the desire to hold shares for individual shareholders may be lower. There are two alternatives for maintaining the required minimum shareholding percentage on the board: increasing the number of directors on the board, or increasing the shareholdings of the corporative directors and supervisors. (See Hypothesis Two.) Both alternatives will lower the average shareholding percentage of individual directors and supervisors on the board. Therefore, this study hypothesizes that, after Taiwan's new *SUI of 2000* was implemented, the average shareholding percentage of individual directors and supervisors on the board will be lower. As such percentage decreases with the growth in firm size, the decrease in average shareholding percentage of individual directors and supervisors in 2000 should be deeper than that in 1999.

Hypothesis 2: *Ceteris paribus*, after Taiwan's new SUI of 2000 rescinds the option to defer taxation on qualified stock dividends, the decrease in average shareholding percentage of institutional directors and supervisors on the board after 2000 will be less than that before 2000.

In hypothesis one, we assume that since the option to defer taxation on qualified stock dividends for individual shareholders is rescinded after the new *SUI of 2000* went into effect, individual directors and supervisors on the board will sell part of their stock dividends. Hence, the average shareholding percentage of individual directors and supervisors on the board will be lower than before. In order to keep the controlling power over the company and maintain the minimum shareholding percentage for all directors and supervisors on the board required by law, individual directors and supervisors may transfer their shareholdings to the board's institutional directors/supervisors controlled by them. With representatives of the institutional directors/supervisors, the original individual directors and supervisors can still maintain their continuing control. Moreover, after the integrated tax system became effective in 1998, this possibility will increase since the investment revenue of a institutional investor is exempted from corporate tax (Article 42 of Taiwan's *Income Tax Law*). Therefore, this study hypothesizes that after Taiwan's new *SUI of 2000* went into effect, the shareholding percentage of the institutional directors and supervisors on the board will increase. As such percentage decreases with the growth in firm size, the decrease in average shareholding percentage of institutional directors and supervisors in 2000 should be less than that in 1999.

Hypothesis 3: *Ceteris paribus*, after Taiwan's new SUI of 2000 rescinds the option to defer taxation on qualified stock dividends, the decrease in average shareholding percentage of related parties of directors and supervisors on the board after 2000 will be less than that before 2000.

The "related parties" of this study refer to those persons (spouse, nonage sons and daughters) that are related to individual directors and supervisors and are required to report their shareholdings to the Taiwan's SFC according to the SFC's *Reporting Rules for Firms Publicly Soliciting Funds and/or Issuing Marketable Securities*. After Taiwan's new *SUI of 2000* went into effect, the option to defer taxation on qualified stock dividends for individual shareholders was rescinded. The Taiwan-habitant directors and supervisors may thus transfer his/her shareholdings to related parties who are in lower income tax brackets. Especially, Taiwan's *Estate and Gift Tax Law* allows tax-free transfer of properties between spouses and each parent may give each child up to NT\$ 1,000,000 tax-exempted each year. Related parties may not be members of the board. Nevertheless, through distributing shareholdings to related parties, directors and supervisors themselves can lighten the tax burden from stock dividends, and at the same time, control the firm. Therefore, this study hypothesizes that after Taiwan's new *SUI of 2000* became effective, the average shareholding percentage of related parties of directors and supervisors will be higher than before. As such percentage decreases with the growth in firm size, the decrease in average shareholding percentage of institutional directors and

supervisors in 2000 should be less than that in 1999.

Hypothesis 4: *Ceteris paribus*, after Taiwan's new SUI of 2000 rescinds the option to defer taxation on qualified stock dividends, the stock dividend payout ratio from retained earnings after 2000 will be smaller than that before 2000.

Miller and Modigliani (1961) proposed the famous "dividend irrelevance theory" that argues dividend policy does not influence the value of the firm and the cost of capital in perfect market. MM theory is under the no tax environment. However, most investors will be taxed in the real world and tax rates are different among them. Investors will have different preferences on types and amounts of dividends due to the differences in their tax brackets. This phenomenon is called the "dividend clientele effect". Before the emendation of *SUI of 2000*, Liu (1993) pointed out that firms in Taiwan tended to increase capital through issuing stock dividends from retained earnings because of the option of deferring taxation. Rankine and Stice (1997) studied the listed firms in the NYSE and discovered that firms issuing 100% stock dividends had excess returns up to 13.02%. This implies that firms issuing stock dividends had better market performance. A company may signal a prosperous future by issuing stock dividends.

Before the emendation of the *SUI of 2000*, individual shareholders had the option to defer taxation on qualified stock dividends distributed from retained earnings. However, after the new *SUI of 2000* went into effect on January 1, 2000, this option was rescinded. Therefore, if a stockholder determines to keep stock dividends, he/she has to pay individual income tax on stock dividends in cash although what he/she received are only "paper" stock dividends. Compared to cash dividends, stock dividends can easily cause liquidity problems for individual shareholders. On the other hand, if a shareholder determines to sell stock dividends in a bear market and the market price of the stock is lower than its face value, he/she not only suffer getting proceeds lower than the claimed dividend at stock's face value, but also being taxed on the market price. This is very disadvantageous to a shareholder. According to Taiwan's *Law of Corporation* (Article 28), the proposal of dividends distribution shall be drawn up by the board of directors after the year end and reviewed by the supervisors, and then put into the agenda of the shareholders meeting to vote. After the proposal is passed in the shareholders meeting, dividends then can be distributed to shareholders. After Taiwan's new *SUI of 2000* became effective, directors and supervisors on the board will tend to distribute cash dividends when considering their personal liquidity problems and the bear market as they introduce the proposal of dividends distribution. Therefore, this study hypothesizes that after the new *SUI of 2000* goes into effect, the stock dividend payout ratio (distributed from retained earnings) in 2000 will be smaller than that in 1999.

Tested Models and Variables Definitions

The purpose of this study is to examine the effects of the new amended *SUI of 2000* on the share structure of the board of directors and corporate dividend policy. We use research methodology suggested by Koe and Lehn (1999). Dependent variables of this study have been explained in Hypotheses one through five in the pervious section. The main independent variable is the yearly dummy variable $DMY_{i,j}$, ($DMY_{i,j} = 0$ before 2000;

$DMY_{i,j} = 1$ after 2000). However, the effect of the *SUI* of 2000 on share structure of the board of directors and dividend policy may differ for different industries. High-tech industries² usually invest more in R&D and personnel training. They also renew and buy more advanced machinery equipment. Their stock dividends distributed from earnings may more qualify for the preferred treatment of *SUI* of 1991 granting the option to defer taxation on stock dividends. The effects of implementing *SUI of 2000* on dependent variables of this study for high-tech industries are expected to be higher than that for non high-tech industries. Therefore, this study also includes an industry dummy variable, $DMI_{i,j}$, ($DMI_{i,j} = 0$ for a non high-tech firm; $DMY_{i,j} = 1$ for a high-tech firm) in our tested models. Furthermore, after the new *SUI of 2000* was implemented, if a firm belongs to a high-tech industry, its changes in the share structure of the board of directors and dividend policy are obviously larger than before. Also such changes are larger than that of a firm belonging to a non high-tech industry. Hence, this study also includes the product of $DMY_{i,j}$ and $DMI_{i,j}$ as another independent variable to examine the interaction effect. ($DMY_{i,j} \times DMI_{i,j} = 1$ for a firm after 2000 and in a high-tech industry; otherwise = 0).

The share structure regression model and dividend policy regression model of this study are as followings:

The share structure regression model

$$\Delta PDS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

$$\Delta LDS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

$$\Delta RPS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

where, the definitions of dependent variables are:

$\Delta PDS_{i,j}$: The decrease of average monthly share holdings ratio of individual directors and supervisors for firm i in year j
 $= (\text{Average share holdings ratio of individual directors and supervisors})_{i,j}$
 $- (\text{Average share holdings ratio of individual directors and supervisors})_{i,j-1}$

$\Delta LDS_{i,j}$: The decrease of average monthly shareholding percentage of institutional directors and supervisors for firm i in year j
 $= (\text{Average shareholding percentage of institutional directors and supervisors})_{i,j}$
 $- (\text{Average shareholding percentage of institutional directors and supervisors})_{i,j-1}$

$\Delta RPS_{i,j}$: The decrease of average monthly share holdings ratio of related parties of directors and supervisors for firm i in year j
 $= (\text{Average share holdings ratio of related parties})_{i,j}$
 $- (\text{Average share holdings ratio of related parties})_{i,j-1}$

² High-tech industries are defined as electronics, electric machineries, chemicals and automobiles (Chen, Xue and Wu 1991).

The definitions of independent variables are:

$DMY_{i,j}$: Yearly dummy variable for firm i in year j .
(after 2000 = 1; before 2000 = 0)

$DMI_{i,j}$: Industry dummy variable for firm i in year j .
(High-tech industry = 1; Non high-tech industry = 0)

In addition, according to Denis and Sarin (1999), the change in share structure of board of directors is significantly correlated with corporate stock prices in the previous period. The lower the stock price or the higher the fluctuation in stock prices is, the more the changes in share structure of board of directors will be. Therefore, this study employs the average monthly stock returns for the previous period (EROI) and its variation (VROI) as control variables in the share structure regression model.

The definitions of control variables are:

$$EROI_{i,j} = \frac{\sum_{k=1}^{12} (r_{i,j,k})}{12} = \text{Average monthly stock returns in the previous period.}$$

$$VROI_{i,j} = \frac{\sum_{k=1}^{12} (r_{i,j,k} - EROI_{i,j})^2}{12} = \text{Variation of monthly stock returns in the previous period.}$$

The dividend policy regression model

$$SDR_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + EPR_{i,j} + \varepsilon_{i,j}$$

The definitions of dependent variables are:

$$SDR_{i,j} = \left(\frac{ESD_{i,j}}{EPS_{i,j-1}} \right) = \text{The stock dividend payout ratio for firm } i \text{ in year } j.$$

$ESD_{i,j}$ = Declared and distributed stock dividend from retained earnings for firm i
in year j .

$EPS_{i,j}$ = EPS in the previous year

Stock dividends are generally distributed when stock price is relatively too high. By doing so, the enterprise can push down stock price, and at the same time, hope the stock price can rise to the level before issuing the stock dividend. However, the stock price is closely related with the corporate EPS in the current year. Since EPS may be zero, this study does not use price-to-earnings ratio (P/E Ratio) as the control variable in the dividend policy regression model. Instead, this study employs earnings-to-price ratio (E/P Ratio). The inverse of earnings-to-price ratio (E/P Ratio) also presents investors' view on the future of the enterprise.

The definition of control variable is:

$$ERP_{i,j} = \text{Earnings-to-price Ratio (E/P Ratio)} \\ = (\text{EPS for firm } i \text{ in year } j) / (\text{Average stock price in that year})$$

For the above annual numerical data, data for two years before 2000 (i.e., 1998 and 1999) are averaged as one observation and data for two years after 2000 (i.e., 2000 and 2001) are also averaged as another observation for each firm in regressions. In addition, regressions using one year before 2000 (i.e., 1999) and one year after 2000 (i.e., 2000) are conducted in our tests.

Sampling Procedures and Data Source

The sample of this study is from firms listed in the Taiwan Stock Exchange in 1997 (353 firms). First, if there are no individual directors and supervisors on the board of directors, the rescission of deferring taxation on stock dividends under the *SUI of 2000* will not affect the change in shareholding percentage of directors and supervisors. Therefore, this study excludes firms whose board of directors having no individual directors and supervisors in our sample (47 firms). Second, since financial industry is government controlled (by the National Central Bank and Ministry of Finance), its board structure is significantly affected by the government policy. Financial industry is also dropped from the sample (44 firms). Third, firms facing financial difficulties (to be classified as zero-margin trading stocks) are expelled from the sample (20 firms). After this selection process, we get 242 listed firms in the sample for empirical analysis (Table 1). According to the Standard Industry Code of Taiwan Stock Exchange, our sample firms cover 17 industries in total (Table 2).

In addition, the stock dividend model in this study uses data of annual stock dividend payout ratios before and after the year SUI of 2000 went into effect. However, if a firm did not distribute stock dividends from retained earnings in 1998, 1999, 2000 or 2001, the stock dividend payout ratio cannot be found. Therefore, firms used in the stock policy model in this study only include those that distributed stock dividends from retained earnings in these years in our sample, totaling 88 firms. We exclude 154 firms that did not distribute stock dividends in 1998, 1999, 2000 or 2001.

Financial data used in this study are from information disclosed in annual reports of listed firms. Shareholding percentage of directors and supervisors are from monthly reports to the SFC pursuant to article 25 of Taiwan's *Law of Securities Exchange*.³

Monthly average shareholding percentages of the directors and supervisors, average shareholding percentages of related parties, number of members on the board of directors, average stock price and average stockholders' equities are all retrieved from database of *Taiwan Economic Journal (TEJ)*. The control variables of the share structure model (the mean and variation of average monthly stock rate of return) are from *TEJ*'s stock price module database. Monthly returns data in 1997, 1998, 1999 and 2000 are used to compute the values of control variables.

³ According to Article 25 of Taiwan's *Law of Securities Exchange*, a public firm shall report to the SFC and disclose to the public on types, shares and face values of stock owned by the directors, supervisors, managers and big shareholders (more than 10% ownership) after the firm becomes a registrant. These shareholders shall report the changes in ownerships during the month to the firm before the fifth of next month. The firm shall report such changes to the SFC before fifteenth of that month.

Table 1: The process of sample selection

Sample Selection Process	Firm Codes deleted from sample	Number
Listed firms on 1/1/1997		353
Financial industry	2801、2802、2803、2804、2805、2806、2807、2808、 2809、2810、2811、2812、2813、2814、2815、2816、 2817、2818、2819、2820、2821、2822、2823、2824、 2825、2826、2827、2828、2829、2830、2831、2832、 2833、2834、2835、2836、2837、2838、2839、2840、 2842、2843、2844、2845	(44)
Financially distressed firms in 1997, 1998, 1999 and 2000, 2001 or delisted firms up to 3/31/2002.*	1203、1206、1209、1222、1225、1230、1317、1505、 1724、1808、2005、2011、2019、2202、2334、2339、 2519、2522、2529、2703	(20)
Firms having no individual directors or supervisors on the board in 1997 - 2001.	1204、1224、1305、1308、1309、1310、1312、1409、 1419、1420、1422、1423、1436、1442、1458、1513、 1523、1718、1722、1802、2002、2007、2014、2016、 2023、2029、2103、2201、2204、2301、2328、2505、 2512、2515、2525、2535、2540、2607、2609、2610、 2612、2613、2701、2702、2706、2901、2912	(47)
Sample firms		242

* Delisted firms up to 3/31/2002 are 1505、2011、2019、2202、2334、2339、2703.

Statistical Methods

The share structure regression model and the dividend policy regression model of this study use both dummy variables and quantity variables as independent variables. They aim to explore empirically the effects of the implementation of *SUI of 2000* on share structure on board of directors and corporate dividend policy. This study uses EXCEL to sort the data and then employs SAS to conduct statistical analysis.

To test whether a firm changes its attributes before and after an event, we can use statistical methods based on analysis of variance (e. g. the Chow test and the Fisher test) or a regression that includes the time dummy variable as independent variables (Gujarati, 2001). This study employs the latter to explore whether firm characteristics are change before and after the event by examining the significance of regression coefficients of dummy variables. Assume that a dependent variable, Y_i , is determined by both dummy variables and quantity variables as follows:

$$Y_i = f(D_{1i}, D_{2i}, \dots, D_{ji}; X_{1i}, X_{2i}, \dots, X_{ki})$$

Where, D_{ji} are dummy variables, X_{ki} are quantity variables.

Table 2: Industries in the Sample

Industry	Number of Firms	Number of Firms
Models	The share structure regression model	The dividend policy regression model
Cement	8	2
Foods	20	4
Plastics	13	4
Weaving and Fiber	36	7
Electrical Machinery	11	9
Appliance	10	3
Chemicals	17	8
Glass	4	1
Pulp	7	0
Steel	14	2
Rubber	7	4
Automobiles	1	34
Communication	55	2
Construction	22	6
Shipping	8	0
Travel	2	0
Department Stores	7	2
Total	242	88

During the analysis process, we may keep the effect of quantity variable X_{ki} on Y_i fixed (i.e., let the coefficients of X_{ki} be fixed) and allow the effect of dummy variable D_{ki} on Y_i to vary. That is to say, we recognize the additivity of the intercept to make the intercept like a variable. This is the main content of dummy variable analysis.

To examine the effect of two dummy variables (D_1 , D_2) on dependent variables at the same time, a model can include the product of two dummy variables ($D_1 \times D_2$) as the interaction variable to represent the interaction effect. Suppose that

$$Y_i = \alpha_0 + \alpha_1 D_{1i} + \alpha_2 D_{2i} + \alpha_3 (D_{1i} \times D_{2i}) + \beta X_i + u_i$$

If	Estimate value of dependent variable Y_i :
$D_{1i} = 1 ; D_{2i} = 1$	$\hat{Y}_i = \alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 + \hat{\beta} X_i$
$D_{1i} = 1 ; D_{2i} = 0$	$\hat{Y}_i = \alpha_0 + \alpha_1 + \hat{\beta} X_i$
$D_{1i} = 0 ; D_{2i} = 1$	$\hat{Y}_i = \alpha_0 + \alpha_2 + \hat{\beta} X_i$
$D_{1i} = 0 ; D_{2i} = 0$	$\hat{Y}_i = \alpha_0 + \hat{\beta} X_i$

The interaction dummy variable ($D_1 \times D_2$) may change the effect of two attributes (D_1 and D_2) on Y_i considered individually. To test whether the two dummy attributes have interaction effect or not, we can set null hypothesis as $H_0: \alpha_3 = 0$. The t-test can be used to examine the significance of the coefficient of interaction dummy variables. If the t-test is significant, then the coexistence of these two attributes will weaken (α_3 is negative) or strengthen (α_3 is positive) each attribute's individual effects. For this reason, if a model ignores a significant interaction item, specification bias will occur.

During the analysis processes, we first make the correlation test on variables. Next, we test the independence (Durbin-Watson Statistics test) and homogeneity (White test) on residuals in regression analysis. At the same time, the multi-collinearity on independent variables is also conducted (VIF test). T test (individually) and F test (as a whole) are employed to determine whether independent variables are significant from zeros or not.

IV. ANALYSES OF EMPIRICAL RESULTS

Descriptive Statistics and t-Tests

Table 3 demonstrates the descriptive statistics of variables in share structure. The average changes (current year minus prior year) in shareholdings percentages of *individual* and *institutional* directors and supervisors on the board are negative during study periods (from 1997 to 2001). That is, the average shareholding percentages of *individual* and *institutional* directors and supervisors descended during this period. And the change of the average shareholdings of board of *institutional investors* is -0.0377 only. However, the change in shareholding percentage of *related parties* is positive during the study period. The average stock rate of returns is negative during 1997 to 2001, showing a bear market in that period. Table 4 demonstrates correlation coefficients of variables. There exist significant relationships between the changes in shareholding percentages of *individual* directors and supervisors and year dummy, industry dummy, and stock returns. However, no significant relationship exists between independent variables and the changes in shareholding percentages of *institutional* directors and supervisors and shares held by *related parties*.

Empirical test on Hypothesis One (shareholding percentage of *individual* directors and supervisors): Proved

The regression results of Hypothesis One about individual directors and supervisors' shareholding percentage are shown on Table 5A. The F value is significantly different from zero ($p = 0.0037$) for the whole model, meaning that there exist significant relationships between dependent variable and all independent variables. The DW statistic is around 2, implying there is no autocorrelation between error terms of the regression. The VIF's of independent variables are smaller than 10. This implies there is no significant multi-collinearity between the independent variables. However, the adjusted R^2 is only 0.0257, meaning the model's explanatory power is insufficient. Nevertheless, the purpose of this study is not to forecast dependent variables. Instead, we aim at testing the significance of independent variables. The lower adjusted R^2 does not affect our tests on individual independent variables, however.

Table 3: Descriptive statistics for variables used in the share structure regression model (1998-1999, 2000-2001)

Variable	Mean	Std. Dev.	Min.	First Quartile	Median	Third Quartile	Max.	Observations
$\Delta PDS_{i,j}$	-0.7056	3.0690	-20.4550	-1.2225	-0.2400	0.0150	34.3850	484
$\Delta LDS_{i,j}$	-0.0377	3.0200	-36.4650	-0.3225	0.0000	0.4225	15.6650	484
$\Delta RPS_{i,j}$	0.0917	1.3806	-7.8600	-0.0300	0.0000	0.0200	20.3800	484
$EROI_{i,j}$	-0.8834	2.7238	-8.1587	-2.6656	-1.1029	0.4179	9.8704	484
$VROI_{i,j}$	3.0533	2.7678	0.2003	1.4096	2.2601	3.8917	2.6384	484
$DMY_{i,j}$	0.5000	0.5005	0.0000	0.0000	0.5000	1.0000	1.0000	484
$DMI_{i,j}$	0.3471	0.4765	0.0000	0.0000	0.0000	1.0000	1.0000	484

Definitions of Dependent Variables : for firm i and year j ,

$\Delta PDS_{i,j}$: The decrease of average monthly shareholding percentage of individual directors and supervisors for firm i in year j

$$= (\text{Average shareholdings percentage of individual directors and supervisors})_{i,j} - (\text{Average shareholding percentage of individual directors and supervisors})_{i,j-1}$$

$\Delta LDS_{i,j}$: The decrease of average monthly shareholding percentage of institutional directors and supervisors for firm i in year j

$$= (\text{Average shareholding percentage of institutional directors and supervisors})_{i,j} - (\text{Average shareholding percentage of institutional directors and supervisors})_{i,j-1}$$

$\Delta RPS_{i,j}$: The decrease of average monthly shareholding percentage of related parties of directors and supervisors for firm i in year j

$$= (\text{Average shareholding percentage of related parties})_{i,j} - (\text{Average shareholding percentage of related parties})_{i,j-1}$$

Definitions of Control Variables: for firm i and year j ,

$$EROI_{i,j} = \frac{\sum_{k=1}^{12} (r_{i,j,k})}{12} = \text{Average monthly stock returns in the previous period.}$$

$$VROI_{i,j} = \frac{\sum_{k=1}^{12} (r_{i,j,k} - EROI_{i,j})^2}{12} = \text{Variation of monthly stock returns in the previous period.}$$

For the above annual numerical data, data for two years before 2000 (i.e., 1998 and 1999) are averaged as one observation and data for two years after 2000 (i.e., 2000 and 2001) are also averaged as another observation for each firm in regressions. In addition, regressions using one year before 2000 (i.e., 1999) and one year after 2000 (i.e., 2000) are conducted in our tests.

Definitions of Independent Variables: for firm i and year j ,

$DMY_{i,j}$: Yearly dummy variable for firm i in year j . (after 2000 = 1; before 2000 = 0)

$DMI_{i,j}$: Industry dummy variable for firm i in year j . (High-tech industry = 1; Non high-tech industry = 0)

**Table 4: Correlation coefficients for variables in the share structure model
(1998-1999, 2000-2001)**

Variables	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EROI_{i,j}$	$VROI_{i,j}$
$\Delta PDS_{i,j}$	0.1376	-0.1031	-0.0249	0.0256	0.0635
(p-value)	(0.0024)***	(0.0233)**	(0.5854)	(0.5735)	(0.1628)
$\Delta LDS_{i,j}$	-0.0132	-0.0831	-0.0776	0.0123	-0.0342
(p-value)	(0.7720)	(0.0677)*	(0.0883)*	(0.7868)	(0.4529)
$\Delta RPS_{i,j}$	0.0822	0.0397	0.0935	-0.0386	0.0271
(p-value)	(0.0709)*	(0.3833)	(0.0398)**	(0.3963)	(0.5523)
$DMY_{i,j}$	1.0000	0.0000	0.4583	-0.0529	0.3058
(p-value)	(0.0000)	(1.0000)	(0.0001)***	(0.2447)	(0.0001)***
$DMI_{i,j}$		1.0000	0.6285	0.3330	0.1027
(p-value)		(0.0000)	(0.0001)***	(0.0001)***	(0.0238)**
$DMY_{i,j} \times DMI_{i,j}$			1.0000	0.0923	0.2051
(p-value)			(0.0000)	(0.0423)**	(0.0001)***
$EROI_{i,j}$				1.0000	0.1944
(p-value)				(0.0000)	(0.0001)***
$VROI_{i,j}$					1.0000
(p-value)					(0.0000)

*** 1% significance level

** 5% significance level

* 10% significance level

(Variables are defined in Table 3)

When the share structure regression model uses ΔPDS (the decrease in average shareholding percentage of *individual* directors and supervisors on the board) as dependent variable, the independent year dummy variable ($DMY = 1$ for 2000-2001; $DMY = 0$ for 1998-1999) has significantly positive relationship (regression coefficient of $DMY = 0.94307$, p-value is 0.0077) with ΔPDS . This result infers that after the new *SUI of 2000* rescinds the option to defer taxation on stock dividends for individual shareholders, the shareholding percentage of *individual* directors and supervisors on the board increases more during the period of 2000-2001 than that during 1998-1999. It is inconsistent with Hypothesis One.

Taiwan's political and economical environment suffered severe changes in 2001. The Kuo-Ming-Party government lost the presidential campaign for the first time ever in ninety years. In addition, six new laws in finance and banking were enacted and the treasury stock system started to be implemented. The annual TaiEx index declined from 7737 (in 1998), 7426 (in 1999), 7847 (in 2000), down to 4907 (in 2001). Including data of 2001 may make the empirical results explaining the effect of macro-economy more than the effect of a law change. The empirical result in Table 5A may describe the scenario that individual directors and supervisors increase their shareholdings to retard

the drop in stock price during the bear market in 2001. In order to examine this possibility, we rerun the regression by using data from one year before and one year after the implementation of the new *SUI of 2000*. That is, $DMY = 1$ for 2000 and $DMY = 0$ for 1999 and use annual data in lieu of two-years averaged data before and after 2000. As expected, using annual data before and after January 1 2000, the significantly negative relationship between the ΔPDS and DMY emerges (regression coefficient of $DMY = -0.267$, p-value = 0.074), as shown in Table 5B. It indicates that after the new *SUI of 2000*, the shareholding percentage of *individual* directors and supervisors on the board decrease more in 2000 than that in 1999, consistent with Hypothesis One.

In addition, ΔPDS and the industrial dummy variable ($DMI = 1$ for high-tech industry, $DMI = 0$ for non-high-tech industry) are mildly correlated at 14.2% level of significance with negative coefficient of regression (-0.2479). This means the decrease in average shareholding percentage of *individual* directors and supervisors on the board for high-tech industries is deeper than that for non-high-tech industries. The high-tech industries in this study include electronics, electric machineries, chemicals and automobiles. The t-value of coefficient of $DMI \times DMY$ is not significant (the p-value = 0.965). Therefore, the interactive effect of industry dummy and yearly dummy will not change our conclusions stated in this section.

Table 5A: Regression Results on changes in average monthly share holdings of *individual* supervisors and directors in board (1998-1999, 2000-2001)

$$\Delta PDS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

	Intercept	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EROI_{i,j}$	$VROI_{i,j}$
Estimated Value	-0.9017	0.9430	-0.6492	-0.3465	0.0754	0.0002
(t value)	(-3.1400)	(2.6800)	(-1.4900)	(-0.5900)	(1.3600)	(0.4700)
(p value)	(0.0020)***	(0.0070)***	(0.1370)	(0.5540)	(0.1750)	(0.6400)
(VIF)	(0.0000)	(1.6357)	(2.2670)	(2.5980)	(1.2051)	(1.1629)

Model Specification:

F-Value = 3.55 (p = 0.0037***)

$R^2 = 0.0358$ (Adjusted $R^2 = 0.0257$)

D-W statistic = 2.153

*** 1% significance level

** 5% significance level

* 10% significance level

(Variables are defined on Table 3)

Table 5B: Regression Results on changes in average monthly share holdings of individual supervisors and directors in board (1999, 2000)

$$\Delta PDS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

	Intercept	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EROI_{i,j}$	$VROI_{i,j}$
Estimated Value	-0.2325	-0.2617	-0.2479	0.0103	-0.0081	-0.0002
(t value)	(-1.9900)	(-1.7900)	(-1.4700)	(0.0400)	(-0.5300)	(-0.8700)
(p value)	(0.0470)	(0.0740)	(0.1420)	(0.9650)	(0.5980)	(0.3830)
(VIF)	(0.0000)	(1.6511)	(2.0773)	(2.6547)	(1.2492)	(1.0886)

Model Specification:

F-Value = 2.54 (p = 0.0274**)

R² = 0.024 (Adjusted R² = 0.0147)

D-W statistic = 1.997

*** 1% significance level

** 5% significance level

* 10% significance level

(Variables are defined on Table 3)

Empirical test on Hypothesis Two (shareholding percentage of institutional directors and supervisors): Not Proved

Table 6 exhibits the regression results of Hypothesis Two about share structure of institutional directors and supervisors' shareholding percentage. For the whole model, the F-value is not significantly different from zero (p = 0.415), meaning no significant relationship exists between dependent variable and all independent variables. The DW statistic is around 2, implying there is no autocorrelation between error terms of the regression. The VIF's of all independent variables are less than 10, showing there is no significant multi-collinearity problem among them. Nevertheless, the adjusted R² is only 0.0001, indicating that the overall fitness of the regression model is lacking.

When the share structure regression model uses ΔLDS (the decrease in average share holdings ratio of institutional directors and supervisors on the board) as dependent variable, the regression coefficient of the independent year dummy ($DMY = 1$ for 2000-2001, $DMY = 0$ for 1998-1999) is 0.1011 (p = 0.773), indicating that after the newly amended *SUI of 2000* annuls the shareholder's option to delay the taxation of stock dividends, the change of the average share holdings of institutional investors is increasing, although the increase is not significant. The expected sign of Hypothesis Two is supported by our empirical results. According to article 42 of Taiwan's *Income Tax Law*, the investment revenue of institutional investors is free of corporate income tax after the implementation of the integrated income tax system in 1998. After the new *SUI of 2000* was implemented, the average shareholding percentage of institutional investors on the board is increasing (or descended slower). Individual directors and supervisors may sell

their stock dividends for cash and transfer their stock to institutional directors and supervisors for keeping the control of the firm. Furthermore, the industry dummy variable ($DMI = 1$ for high-tech, $DMI = 0$ for non high-tech) is also not significantly correlated with ΔLDS ($\beta_2 = -0.4540$, $p = 0.296$), indicating the decrease in shareholding percentage of *institutional* directors and supervisors is not significantly different correlated with industry dummy. In addition, the regression coefficient on $DMY \times DMI$ is not significant ($\beta_3 = -0.3003$, $p = 0.607$). The interactive effect of industry dummy and yearly dummy will not change our conclusions. We get similar results when we use data from one year before and one year after the implementation of the new *SUI of 2000*.

Table 6: Regression Results on changes in average monthly share holdings of *institutional* supervisors and directors in board (1998-1999, 2000-2001)

$$\Delta LDS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

	Intercept	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EROI_{i,j}$	$VROI_{i,j}$
Estimated Value	0.2786	-0.1011	-0.4540	-0.3003	0.0521	-0.0003
(t value)	(0.9700)	(0.2900)	(-1.0500)	(-0.5100)	(0.9400)	(-0.6800)
(p value)	(0.3310)	(0.7730)	(0.2960)	(0.6070)	(0.3460)	(0.4960)
(VIF)	(0.0000)	(1.6357)	(2.2670)	(2.5980)	(1.2051)	(1.1629)

Model Specification:

F-Value = 1.00 ($p = 0.41$)

$R^2 = 0.0104$ (Adjusted $R^2 = 0.0001$)

D-W statistic = 2.156

*** 1% significance level

** 5% significance level

* 10% significance level

(Variables are defined on Table 3)

Empirical test on Hypothesis Three (share holdings of *related Parties* directors and supervisors): Not Proved

Table 7 shows the regression results of Hypothesis Three about the effects of the *SUI of 2000* on share structure. For the whole model, the F-value is not significantly different from zero ($p = 2957$), indicating no significant relationship exists between dependent variable and all independent variables. The DW statistic is around 2, implying error terms of regression are uncorrelated with each other. VIF's are less than 10, implying there are no significant multi-collinearity problems among independent variables. However, the adjusted R^2 is only 0.0023. That means the overall fitness of the regression model is lacking. Since the purpose of this study is not for prediction, the low adjusted R^2 will not affect our tests to independent variables,

Table 7: Regression Results on changes in average monthly share holdings of related parties of supervisors and directors in board (N = 518)

$$\Delta RPS_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + \beta_4 \cdot EROI_{i,j} + \beta_5 \cdot VROI_{i,j} + \varepsilon_{i,j}$$

	Intercept	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EROI_{i,j}$	$VROI_{i,j}$
Expected value	-0.0619	-0.0720	-0.2816	0.2817	-0.0340	0.0009
(t value)	(-0.5400)	(-0.5000)	(-1.7100)	(1.2300)	(-2.2600)	(4.2800)
(p value)	(0.5880)	(0.6150)	(0.0880)*	(0.2210)	(0.0240)**	(0.0001)**
(VIF)	(0.0000)	(1.6511)	(2.0773)	(2.6547)	(1.2492)	(1.0886)

Model Specification:

F-Value = 4.60 (p = 0.0004***)

R² = 0.043 (Adjusted R² = 0.034)

D-W statistic = 1.996

White test $NR^2 = 12.96$ (p = 0.5296)

*** 1% significance level

** 5% significance level

* 10% significance level

(Variables are defined on Table 3)

As the share structure regression model uses ΔRPS (the change in shareholding percentage of related parties of the directors and supervisors on the board) as dependent variable, the yearly dummy ($DMI = 1$ for 2000-2001, $DMI = 0$ for 1998-1999) is not a significant independent variable at 5% significance level ($\beta_1 = 0.129$, $p = 0.421$). This result is not consistent with what expected in Hypothesis Three. Our empirical result implies that after the newly amended *SUI of 2000* rescinds the shareholder's option to delay the taxation of stock dividends, the average shareholding percentage of related parties of directors and supervisors did not increase significantly. Hypothesis Three expects that through related parties shareholdings in terms of stock dividends, directors not only lower the share-holding costs, but also secure control of the firm although related parties may not be members of the board. Nevertheless, the empirical results may show a different scenario. Directors and supervisors ordinarily engage in tax planning by transferring their shares to spouses and children. After the new *SUI of 2000*, the share holdings of their spouses and children shall be levied at a highest 50% gift tax in excess of NT\$1,000,000 in the year they received shares transferred. The total tax burden may not be reduced. That may explain the insignificant increase in share holdings of the related parties. Using change in shareholding percentage of related parties as dependent variable, the industry dummy ($DMI = 1$ for high-tech industry, $DMI = 0$ for non-high-tech

industry) is also not a significant explanatory variable ($\beta_2 = 0.037$, $p = 0.850$). The coefficient of $DMI \times DMY$ is not significant ($p = 0.361$), indicating that the interactive effect of industry dummy and yearly dummy will not change our conclusions stated in this section. We get similar result on related parties when we use data from one year before and one year after the implementation of the new *SUI of 2000*.

Empirical test on Hypothesis Four (Dividend policy): Proved

Table 8 and Table 9 present descriptive statistics and correlation coefficients of the variables used in the dividend policy regression model. In the study period (1998-1999, 2000-2001), the Pearson correlation (-0.3350 , $p = 0.0001$) is significantly negative between payout ratio of stock dividends and year dummy of *DMY*, indicating the payout ratio of stock dividends in 2000-2001 is less than that in 1998-1999. Table 10 shows the regression results of Hypothesis Four about the effect of the new *SUI of 2000* on a firm's dividend policy. For the whole model, the F-value ($F = 5095$, $p = 0.0002$) is significantly different from zero, implying there is significant relationship between dependent variable and all independent variables. The DW statistic is around 2, implying there is no auto-correlation between error terms of the regression. The VIF value is smaller than 10, implying no significant multi-collinearity problems among independent variables. However, the adjusted R^2 is only 0.101. Since the purpose of this study is not for prediction, the low adjusted R^2 will not affect the tests to individual independent variables.

Table 8: Descriptive statistics on variables used in the dividend policy regression model (1998-1999, 2000-2001)

Variable	Mean	Standard deviation	Min.	First quartile	Median	Third quartile	Maxi.	Observations
$SDR_{i,j}$	0.5096	0.4373	-2.8125	0.3179	0.4752	0.6796	2.8260	176
$DMY_{i,j}$	0.5	0.5014	0.0	0.0	0.5	1.0	1.0	176
$DMI_{i,j}$	0.4886	0.5012	0.0	0.0	0.0	1.0	1.0	176
$EPR_{i,j}$	0.0546	0.0282	0.0023	0.0359	0.0501	0.0675	0.2260	176

Definitions of variables : for firm i and year j

$SDR_{i,j} = \left(\frac{ESD_{i,j}}{EPS_{i,j-1}} \right)$ = stock dividend (from earnings) payout ratio

$EDS_{i,j}$ = stock dividends (from earnings) declared

$EPS_{i,j}$ = earnings per share

$DMY_{i,j}$ = the year dummy variable (1 for 2000-2001; 0 for 1998-1999)

$DMI_{i,j}$ = the industry dummy variable (1 for high-tech; 0 for non-high-tech.)

$EPR_{i,j}$ = earnings price ratio (earnings per share / annual average price)

Table 9: Correlation analyses on variables used in the dividend policy model (1998-1999, 2000-2001)

Variables	$SDR_{i,j}$	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EPR_{i,j}$
$SDR_{i,j}$	1.0000	-0.33502	-0.0637	-0.1939	-0.1709
(p-value)	(0.0000)	(0.0001)***	(0.4007)	(0.0099)***	(0.0233)**
$DMY_{i,j}$		1.0000	0.0000	0.5686	0.4098
(p-value)		(0.0000)	(1.0000)	(0.0001)***	(0.0001)***
$DMI_{i,j}$			1.0000	0.5817	-0.2133
(p-value)			(0.0000)	(0.0001)***	(0.0045)***
$DMY_{i,j} \times DMI_{i,j}$				1.0000	0.0853
(p-value)				(0.0000)	(0.2602)
$EPR_{i,j}$					1.0000
(p-value)					(0.0000)

*** 1% significance level

** 5% significance level

* 5% significance level

(Variables are defined in Table 8)

Table 10: Regression analysis on dividend policy regression model (1998-1999, 2000-2001)

$$SDR_{i,j} = \beta_0 + \beta_1 \cdot DMY_{i,j} + \beta_2 \cdot DMI_{i,j} + \beta_3 \cdot (DMY_{i,j} \cdot DMI_{i,j}) + EPR_{i,j} + \varepsilon_{i,j}$$

	Intercept	$DMY_{i,j}$	$DMI_{i,j}$	$DMY_{i,j} \times DMI_{i,j}$	$EPR_{i,j}$
Estimated value	0.7490	-0.319	-0.114	0.0960	-0.8840
(t value)	(8.7100)	(-3.43)	(-1.2900)	(0.7700)	(-1.7100)
(p value)	(0.0001)***	(0.0007)***	(0.2004)	(0.4390)	(0.4800)
(VIF)	(0.0000)	(2.2129)	(2.0380)	(2.9617)	(1.2740)

Model Specification:

F-Value = 5.95 (p = 0.0002***)

R² = 0.122 (Adjusted R² = 0.101)

D-W statistic = 2.003

*** 1% significance level

** 5% significance level

* 5% significance level

(Variables are defined in Table 8)

When the dividend policy regression model employs SDR (stock dividend payout ratio) as dependent variable, the year dummy ($DMY = 1$ for 2000-2001, $DMY = 0$ for 1998-1999) is negatively correlated with SDR significantly as expected ($\beta_1 = -0.319$, $p = 0.0007$). The empirical result indicates that payout ratio of stock dividends (from earnings) in 2000-2001 is significantly less than that in 1998-1999. This result is consistent with Hypothesis Four. However, the industry dummy, DMI , is not a significant explanatory variable ($\beta_2 = -0.114$, $p = 0.200$) for stock dividend payout ratio. Since the regression coefficient of $DMY \times DMI$ is insignificantly positive ($\beta_3 = 0.096$, $p = 0.439$), the interactive effect of industry dummy and yearly dummy will not change our conclusions stated above. We get similar results when we use data from one year before and one year after the implementation of the new SUI of 2000.

V. CONCLUDING REMARKS

This study employs public information about monthly shareholdings of individual and institutional directors and that of related parties reported to Taiwan's SFC for firms listed in the Taiwan Stock Exchange. Our purpose is to investigate the effects of the newly amended *SUI of 2000*, which rescinded the option to delay taxation on stock dividends, on the share structure on the board and corporate dividend policy. We employ the research methodology suggested by Kole and Lehn (1999). Using a sample of 242 firms, this study empirically tests the share structure models. In addition, we also examine the dividend policy model by using 88 listed firms that keep on issuing stock dividends during 1998-2001. Our empirical study indicates that after the implementation of the new *SUI of 2000*, the average shareholding percentage of *individual* directors and supervisors on the board is significantly lower than before and the stock dividend payout ratio is also lowered. However, the effect of the new *SUI of 2000* on average shareholding percentages of institutional directors and supervisors and on that of related parties of board members are not significant. These empirical results are robust since we also conduct analyses using data from one year before and one year after the new *SUI of 2000* to eliminate possible interferences of political and economical turmoil in Taiwan in 2001.

Our dependent variables, the average shareholding percentage of the directors and supervisors on the board and that of related parties, are constructed from firms' information reported to Taiwan's SFC pursuant to the item 1 of article 25 of Taiwan's *Law of Securities Exchange*. Therefore, the validity of our conclusions is subject to the honesty of directors and supervisors on the board that are required to report changes in their share holdings each month.

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二〇〇〇年台灣新修訂《促進產業升級條例》取消股票股利緩課對公司董事會股權結構及股利政策之影響

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摘要：為鼓勵企業投資，台灣自 1960 開始制訂《獎勵投資條例》，實施三十年以來，成效斐然，《獎勵投資條例》於 1990 年 12 月 31 日終止適用，而自 1991 年 1 月 1 日開始施行《促進產業升級條例》，以鼓勵產業研究發展，吸引外資，促進產業升級與區域均衡發展，《促進產業升級條例》於 1999 年底已屆有效期限。為繼續推動我國產業之再升級，同時配合 1998 年 1 月 1 日開始實施之兩稅合一制度，新修訂之《促進產業升級條例》於 2000 年 1 月 1 日起開始實施，其中為配合兩稅合一制度而刪除企業股東所獲配股票股利緩課之條文，係原《促進產業升級條例》第十六條¹：

「第十六條 公司以其未分配盈餘增資供下列之用者，其股東因而取得之新發行記名股票，免予計入該股東當年度綜合所得額；其股東為營利事業者，免予計入當年度營利事業所得額課稅。但此類股票於轉讓、贈與或作為遺產分配時，面額部分應作為轉讓、贈與或遺產分配時所屬年度之所得申報課稅。至實際轉讓價格或贈與遺產分配時之時價如低於面額時，以實際轉讓價格或贈與、遺產分配時之時價申報：

一、增置或更新從事生產、提供勞務、研究發展、品質檢驗、防治污染、節省能源或提高工業安全衛生標準等用之機器、設備或運輸設備者。

¹ 第十七條原為員工紅利轉增資，及創投事業以未分配盈餘轉增資，所發行之股票準用第十六條之緩課優惠，亦一併刪除，但與本文研究主題（公司董事會之股權結構）無關，故不贅列。

二、償還因增置或更新前款之機器、設備或運輸設備之貸款或未付款者。

三、轉投資於第八條所規定之重要事業者。」

1991 年《促進產業升級條例》第十六條刪除之立法理由雖屬正當，然亦不容忽視取消緩課股票股利後，對企業之大股東(大多為董監事及經理人)及公司經營之衝擊。蓋大股東所獲配之股票股利數額龐大，而且其個人綜合所得稅邊際稅率大多在 40%，若依原《促進產業升級條例》，本可緩課之盈餘轉增資之股票股利，從 2000 年 1 月 1 日起即不得緩課，使得原得適用緩課規定之股東，失去緩課之選擇權。大股東雖獲配股票股利，但並無實質現金收入，然於 2001 年 3 月底申報其 2000 年度個人綜合所得稅時卻須以現金繳納其股票股利所得（以面額計算）之稅款。大股東為因應新修訂《促進產業升級條例》取消緩課股票股利之規定所造成之個人現金流量問題，不外兩種方法：其一為在 2000 年股東會配發 1999 年股票股利所定之除權日前，出脫部分持股，以把即將獲配之股票股利先行變現；其二為繼續持股參加除權，待 2001 年 3 月申報綜合所得稅時，再賣出持股以繳納稅金。此兩者皆會降低大股東之持股，大股東賣出持股，不但影響權益證券市場股價之穩定，而且大股東一般皆兼任公司之董監事，而為熟悉公司業務之內部人士，其持股向下異動，有對投資大眾發出企業經營不利之訊號意涵，因而影響公司之股價及企業經營，值得吾人重視。由於企業股權逐漸分散是上市公司之趨勢，本研究設定下列四項假說以探討《促進產業升級條例》修訂之影響：

假說一：在其他情形不變下，2000 年新修訂《促進產業升級條例》取消股票股利緩課之優惠後，將使企業董事會中平均董監事個人(不含關係人)持股比例之下降程度在 2000 年後大於 2000 年前。

假說二：在其他情形不變下，2000 年新修訂《促進產業升級條例》取消股票股利緩課之優惠後，將使企業法人機構董監事持股比例下降程度在 2000 年後小於 2000 年前。

假說三：在其他情形不變下，2000 年新修訂《促進產業升級條例》取消股票股利緩課之優惠後，將會使企業董監事之關係人平均持股比例下降程度在 2000 年後小於 2000 年前。

假說四：在其他情形不變下，2000 年新修訂《促進產業升級條例》取消

股票股利緩課之優惠後，將會使企業盈餘轉增資之股票股利發放率在 2000 年後小於 2000 年前。

本研究以公開發行並於台灣證券交易所掛牌上市公司為樣本，攫取個人、法人董監事之年度月平均持股比例變動、董監關係人年度月平均持股比例變動，及盈餘轉增資支股票股利發放率等資料，採用 Kole and Lehn (1999) 之方法，探討 2000 年一月一日起實施之新修訂《促進產業升級條例》有關取消緩課盈轉股票股利後，對企業董事會股權結構及股利政策之影響。本研究以 242 家樣本公司，檢測股權結構迴歸模型，並以 1998 年至 2001 年持續發放盈轉股票股利之 88 家上市公司檢測股利政策模型。本研究之實證分析得到以下結論：

1. 在新修訂《促進產業升級條例》於 2000 年 1 月 1 日實施之後，台灣上市公司董事會個人董監事平均持股比例較法案修訂前顯著為高。
2. 在新修訂《促進產業升級條例》於 2000 年 1 月 1 日起實施之後，台灣上市公司董事會法人董監事之平均持股比例，並不較法案之修訂前顯著為高。
3. 在新修訂《促進產業升級條例》於 2000 年 1 月 1 日起實施之後，台灣上市公司董監事關係人之平均持股比例，並不較法案修訂前顯著為高。
4. 在新修訂《促進產業升級條例》於 2000 年 1 月 1 日起實施之後，台灣上是東司以未分配盈餘分派股票股利之公司，其股票股利發放率較法案修訂前顯著為低。

關鍵字：股票股利緩課、董事會股權結構、股利政策