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Stock Returns and the Dividend Tax Cuts of 2003

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Abstract: On May 21, 2003, House and Senate leaders in the United States of America announced a controversial tax cut package lowering the top rate for dividends to 15 percent through 2008 to increase investors' after-tax dividends income. This tax cut package was passed by the Congress on May 23, 2003, and signed by President Bush on May 28, 2003. Defining the event week around the announcement of the tax relief act, we examine the dividend tax cut effect on stock prices in the United States. The empirical evidence not only supports that the stock returns are higher during the dividend tax cut event week, but also suggests that firms paying lower dividends in the year of 2002 tend to have higher abnormal stock returns around the dividend tax cut event periods in 2003.

Keywords: dividend tax cut, stock returns, dividend policy

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股票收益與美國 2003 年股利稅率減免之研究

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摘要：美國的國會及參議院領袖於 2003 年 5 月 21 日宣佈了一項具爭議性的減稅法案，到 2008 年為止將股利的最高稅率調降至百分之十五以增加投資人的稅後股利收入。這項減稅法案在 2003 年 5 月 23 日經過美國國會通過，並在同年 5 月 28 日由布希總統正式簽署。將減輕賦稅法案宣佈該週定義為事件週，我們檢視股利稅率減免對美國股價所造成的影響。實證結果不只證實股票收益在該事件週中變得較高，更顯示在 2002 年付較低股利的公司在 2003 年的股利稅率減免事件期間獲得異常高的股票收益。

關鍵詞：股利稅率減免、股票收益、股利政策

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1. Introduction

On May 21st, 2003, House and Senate leaders in the United States of America announced an agreement on a controversial tax cut package that would lower the top rate for dividends and capital gains to 15 percent through 2008. This tax cut package was passed by the Congress on May 23rd, 2003, and signed by President Bush on May 28th, 2003. Before this tax cut package was announced, dividends were taxed as ordinary income and the income tax rate was up to 35 percent. For the lower income taxpayers, who are in the 10 percent and 15 percent brackets, dividends and capital gains tax rates are reduced to five percent. The new tax rates apply to capital gains realized or dividends received on or after May 6th, 2003. To be qualified for the dividends tax cut, investors must hold the underlying stocks for more than 60 days.

Prior to starting this new tax law, a dollar of dividends is taxed as ordinary income while a dollar of capital gain receives favorable tax treatment. The equality of tax treatment under the new tax cut package may affect people's investment preferences and therefore corporations' dividend policies. Several companies start to pay dividends or increase their dividends after the new law. For example, Microsoft Corp. announced its first annual dividend of 16 cents, citing the new tax law and improving business conditions.[1] In addition, Citigroup Inc. declared a 75 percent increase in its dividends and indicated that it would cut back on stock repurchases.[2] There are many other companies that increase their dividend payout under the new tax law, such as Qualcomm,[3] Knight Ridder Inc.,[4] Goldman Sachs, and Bank of America.[5] According to a

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[1] Tunick, Britt E., 'Jumping on the dividend bandwagon: the tax cut makes equity attractive in more ways than one', *The Investment Dealers' Digest: IDD*, June 30, 2003, page 1.

[2] Brown, Ken, and Mitchell Pacelle, 'Citigroup raises dividend 75%; other companies could follow', *Wall Street Journal* (Eastern edition), July 15, 2003, page A.1.

[3] *Communications Today*, July 22, 2003, page 1.

[4] *Wall Street Journal* (Eastern edition), July 23, 2003, page C.13.

[5] Tunick, Britt E., 'Jumping on the dividend bandwagon: the tax cut makes equity

survey for the chief financial officers, conducted by Financial Executives International and Duke University, 28 percent of companies that have already paid dividends probably will raise their payouts in response to the new tax law.[6] Of non-dividend payers, 13 percent of companies said they would probably start paying dividends.

According to the discount cash flow framework in stock evaluation, investors receive dividends as income from their stock investment. Stock values are influenced by the firms' dividend payments. If investors expect firms to increase their dividend payments after the dividend tax cut, their stock values should increase.

Dividend policies have different financial impacts on firm's value, such as reducing agency costs (Easterbrook, 1984 and Shefrin and Statman 1984), signaling effect (Bhattacharya, 1979 and Miller and Rock, 1985), and tax preference effect (Allen, Bernardo, and Welch, 2000). Increasing dividend payments may have positive effects on firm's value, and therefore increase firm values.

In this study, we use empirical data to examine the relationship between stock returns and the dividend tax cuts. The tax cut package was announced by the House and Senator leaders on May 21st, 2003, and then was passed by the Congress on May 23rd, 2003. Therefore, we define the event week from May 19th, 2003 (Monday) to May 25th, 2003 (Sunday). The empirical evidence supports that there are positive abnormal stock returns during the dividend tax cut event week. In addition, firms that paid lower dividend yields during the year of 2002 tend to have higher abnormal returns during the dividend tax cut event week in 2003. We interpret the finding by the investors' expectation that firms with low dividend yields tend to increase their dividend payments after the dividend tax cuts, and thus increase the firm values.

The issue about firms paying dividends can be traced back to Miller

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attractive in more ways than one', *The Investment Dealers' Digest: IDD*, June 30, 2003, page 1.

[6] Brown, Ken, and Mitchell Pacelle, 'Citigroup raises dividend 75%; other companies could follow', *Wall Street Journal* (Eastern edition), July 15, 2003, page A.1.

and Modigliani (1961), who provide a dividend irrelevance argument in a perfect capital market without transaction costs. Nevertheless, in the real world, the capital market is imperfect. There are various tax rates for different investors, information asymmetry between insiders and outsiders, transaction costs, and flotation costs, which make dividend policies relevant. Dividends were taxed at an unfavorable rate when compared to capital gains before the new law. However, companies still paid dividends. Black (1976) points out this issue as a dividend puzzle. There are several possible explanations provided for this dividend puzzle, including the agency theory (Easterbrook, 1984; Shefrin and Statman, 1984; Shleifer and Vishny, 1986), the clientele effect (Shefrin and Statman, 1984; Allen, Bernardo, and Welch, 2000), the signaling effect (Bhattacharya, 1979; Aharony and Swary, 1980; Eades, 1982; John and Williams, 1985; Miller and Rock, 1985; Kumar, 1988; Healy and Palepu, 1988; Benartzi, Micharly, and Thaler, 1997; Mougoue and Rao, 2003), and other reasons such as the bird-in-the-hand explanation and the corporate liquidity (Gaver and Gaver, 1993; Smith and Watts, 1992).

According to Abrutyn and Turner's (1990) survey of the Chief Executive Officers for 550 corporations out of the biggest 1000 ones in the United States, 63 percent of these firms ranked the signaling explanation for the dividend puzzle either first or second. The tax clientele hypothesis receives the weakest support. Baker, Powell, and Veit (2002) also find that managers give strongest support to the signaling hypothesis for paying dividends, and little or no support for the tax preference and agency cost explanation. Most respondents disagree with the bird-in-the-hand explanation. Zeng (2003) uses empirical data to support the signaling hypothesis, the agency theory, and the liquidity hypothesis.

A lot of small profitable firms with strong investment opportunities seldom pay dividends. After controlling for firm characteristics, Fama and French (2001) empirically find that firms have become less likely to pay dividends. They suggest that the perceived benefits of dividends have declined through time. Nonetheless, the current dividend policy should be

the equilibrium in which the benefits of paying dividends offset the higher tax costs that investors bear. If the dividend tax rate decreases, while other things remain the same, the benefits of paying dividends should outweigh the costs of paying dividends. According to Baker, Powell, and Veit's (2002) survey on 630 financial managers of Nasdaq firms, more than 80 percent of these managers agree that a firm should formulate its dividend policy to produce maximum value for its shareholders. Thus, the new tax treatment is likely to push companies to distribute more dividends to maximize shareholders' wealth. However, the dividend smoothing (Lintner, 1956; Allen, Bernardo, and Welch, 2000; Shirvani and Wilbratte 1997; Baker, Powell, and Veit, 2001), which is widely found in the theoretical and empirical studies, plays a key role when firms make the dividend policy changes. Although we expect firms to increase dividend payments under the new dividend tax law, the amount of the increase depends on firms' abilities to sustain the new dividend payouts, such as their future earnings, future cash flows (Bradley, Capozza, and Seguin, 1998), firm risks (Cybert, Kang, and Kumar, 1996), and profitability.

Dividend policies may affect firm values. Under the dividend signaling hypothesis, firms pay dividends because there is favorable inside information, indicating that the stock prices should go up after firms pay dividends (John and Williams, 1985). Travlos, Trigeorgis, and Vafeas (2001) study the emerging stock market of Cyprus and find that the announcements of both cash and stock dividends elicit significant positive abnormal returns. They attribute the result to an information-signaling explanation. Asquith and Mullins (1983) point out that there are both positive and negative effects of dividends on shareholders. The positive effects include dividends' communicating positive information held by managers, dividends' reducing institutional constraints on investors, and investors' preference to receive cash rather than capital gains. The negative effects include tax burden, transaction costs, and equity issuance cost when dividends are funded with new equities. They find that overall the positive effects dominant the negative effects. There are abnormal

returns when dividends are announced. Naranjo, Nimalendran, and Ryngaert (1998) also have empirical evidence that stock returns are positively related to dividend yield.

Nevertheless, not all studies support that dividends increase firm values. Modigliani (1982) argues that dividends tend to reduce market value of the firm because of the higher dividend tax rates. Barclay (1987) also demonstrates that the dividend policy affects the market valuation of a firm's securities because of different tax treatment for dividends and capital gains. Investors would discount the value of taxable cash dividends relative to capital gains, which suggests that dividends reduce market value of the firm more than that of capital gains. These two studies argue that dividends decrease firm value. However, Naceur and Goaied (2002) investigate the value creation process in the Tunisia stock exchange during the period from 1990 to 1996 and find that dividend policies are irrelevant to firm values.

Although we have different arguments about the effect of dividend increase on firm values, generally speaking, most studies support that there is a positive relationship between dividend payouts and stock returns. This positive relationship is attributed to dividend's signaling function or reducing agency cost. In the dividend tax cut situation, dividend increase is not because of its signaling function. However, we expect that some dividend's functions, such as monitoring the agency problem, would increase firm values. Therefore, the stock prices should go up after the dividend increases.

There was a dividend income tax increase case in 1993. Ayers, Cloyd, and Robinson (2002) study the effect of the increase in the dividend income tax on share values. They regress daily abnormal stock returns surrounding the passage of the Revenue Reconciliation Act of 1993 on firm dividends, tax status of the investor, and other control variables. They find negative stock price reaction to the increase in the dividend income tax. The magnitude of the negative stock price reaction is related to the magnitude of firms' dividend yields. The higher the dividend yields, the

more negative the stock price reacts to the dividend tax increase. In addition, Gentry, Kemsley, and Mayer (2003) study the impact of dividend taxes on firm valuation by exploiting institutional characteristics of REITs. They find that firm value is positively related to tax basis, which suggests that future dividend taxes are capitalized into share prices. Auerbach and Hassett (2005) investigate the effects of 2003 dividend tax cuts on the value of the firm. They find that firms with higher dividend yields benefited more than other dividend paying firms. They also find that non-dividend-paying firms experienced larger abnormal returns than other firms.

This study investigates the same dividend tax cut event issues as Auerbach and Hassett (2005) do. We utilize the market model to generate the abnormal returns during the dividend tax cut periods, while including several control variables in the regression. We not only find abnormal stock returns during the dividend tax cut event week, but also find that firms with lower dividend payments in the year of 2002 have higher abnormal returns. We interpret the finding by the expectation that firms tend to increase their dividend payments after the new tax law. Low dividend firms have more potential to increase their dividends. Thus, there is a negative relationship between the magnitude of the firms' dividend yields in the year of 2002 and the magnitude of the abnormal stock returns during the dividend tax cut in 2003.

In Section II, we provide a detailed description of our data and methodology. Section III presents our results and Section IV concludes.

2. Data and Methodology

In order to investigate the stock reactions to the dividend tax cut, we obtain the daily stock prices of all public traded corporations surrounding the dividend tax cut event from DataStream database. In addition to the event week (from May 19, 2003 to May 25, 2003), we have eight control weeks, four of them prior to the event week, *i.e.,* from April 21, 2003 to May 18, 2003, and the other four weeks after the event week, *i.e.,* from

May 26, 2003 to June 22, 2003. To employ the market model to generate the abnormal daily returns for each stock, we estimate the coefficients in the market model by utilizing the daily stock prices for each sample stock and the market, *i.e.,* S&P 500, for year 2002.[7] DataStream is the only data source that includes the most updated stock prices at the time the research is conducted. For each firm, we also acquire its total dividend yields in 2002.

We compute the expected return for each stock based on the market model in which the expected return is only affected by the market return. In addition to the dividend tax cuts, each stock's return might also be affected by other factors that are not included in investors' expectation. Based on the model used by Ayers, Cloyd, and Robinson (2002), we introduce five control variables to investigate the effect of the dividend tax cuts on the share values. These five control variables are the profitability, the leverage ratio, the book-to-market ratio, the firm size, and the industry. They are defined as follows.

Profitability = Net Income/Market Value
Leverage = Total liabilities/Market Value
Book-to-Market = Total Equity/Market Value
Size = Log of Market Value
Industry = First digit of the SIC code

To compute the values of the control variables, we obtain the financial information in year 2002 for each sample firm from the Compustate database. In the standard market model, the expected stock return is a linear function of the market return. We estimate the intercept

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[7] In the market model, the stock return is a function of the market return. In other words, the market return is the independent variable and the stock return is the dependent variable in the model. For each stock, we obtain the intercept and the slope in the market model by utilizing the daily stock returns and the market returns in 2002. After obtaining the market model, we use the market return during the dividend tax cut event periods to forecast the expected stock returns. Comparing the actual stock return to the expected return from market model we generate the abnormal daily return for each stock. The market model is listed as follows.

$E(R_i) = a + b*R_m$

where $E(R_i)$ is the expected return for stock i; R_m is the market return.

and the slope in the market model for each stock, using the firm's daily returns and the market daily returns in 2002, while the market return is based on the value weighted market index, S&P 500. Using the estimated intercept, the slope, and the market returns surrounding the dividend tax cut event, we compute each firm's expected daily returns from April 21, 2003 to June 22, 2003. Comparing the actual stock returns to the expected returns, we obtain the daily abnormal stock returns, which is the actual return subtracted by the expected return. The weekly abnormal returns are the sum of the daily abnormal returns within the week.

$$AR_i = R_i - E(R_i) = R_i - [\, a + b * R_m \,]$$

$$CAR_{it} = \sum_{d=1}^{n} AR_{id}$$

Where AR_i: firm i's abnormal return on day d

R_i: firm i's actual daily return

$E(R_i)$: firm i's expected return based on the market model

a: the intercept term of the market model

b: the slope of the market model

R_m: the market's daily return

CAR_{it}: firm i's cumulative weekly abnormal return in week t

d: trading days in week t

n: number of trading days in week t

The initial sample includes all public traded firms, which account for 2,843 corporations, shown in Table 1. The mean of the dividend yields for these firms is 2.67 percent. However, 91 percent of these firms have zero dividend yields in 2002 in the DataStream. In order to analyze the effect of dividend yields on stock returns, we decide to analyze only those firms that paid dividends in 2002. Hence, we have 262 firms as the sample. The mean of the dividend yield for these 262 firms is 29 percent while the standard deviation is 24 percent. The frist quartile of the dividend yield is 18.32 percent and the fourth quartile is 33.41 percent.

Table 1 Summary statistics for dividend payments

There are 2,843 public traded firms in the initial sample group. But, only 262 firms have positive dividend yields in year 2002. The summary statistics of dividend yields for these two groups are presented.

Sample	N	Mean	Median	Std Dev	1st quartile	4th quartile
Initial sample	2843	2.6698	0.0000	11.7268	0.00	0.00
Positive dividend	262	28.9707	23.9800	27.0654	18.32	33.41

We analyze abnormal stock returns in nine weeks surrounding the dividend tax cut event. In order to examine the timing effect of the dividend tax cut, we create an event dummy as an independent variable. The event dummy is equal to one when the cumulative weekly abnormal return (CAR_{it}) is four weeks prior to the event week, which is also the first week in our nine weeks sample. Then, we increase the dummy value by one when the cumulative weekly abnormal return gets closer to the event week; *i.e.*, the dummy value is equal to two when the cumulative weekly abnormal return (CAR_{it}) is three weeks prior to the event week, equal to three when two weeks prior to the event week, and equal to four when one week prior to the event week. Thus, the event dummy is set to be five when the week is the event week and six, seven, eight, and nine when the week is one week, two weeks, three weeks, and four weeks after the event, respectively. In the regression, we use the last week, where the event dummy equals nine, as the benchmark.

Firms that have different dividend payouts might have different reactions to the dividend tax cut law. As a result, the abnormal returns during the dividend tax cut periods might also vary. We include the dividend yields of the year 2002 as an independent variable to examine how the abnormal returns are influenced by the firms' dividend yields in 2002. In addition, we investigate whether different dividend payout firms have different reactions during the nine event weeks. In other words, we allow the interactions between dividend yields and the event dummy in our model.

In addition, there are five control variables in our regression,

including the profitability, the leverage ratio, the book-to-market ratio, the firm size, and the industry. There are nine different industries, according to the first digit of the SIC code. From Table 2, we find that the services industry (Hotels-Recreation) has the highest average dividend yield of 35.52 percent while the manufacturing industry (Food-Petroleum) has the lowest average dividend yield of 21.52 percent. In the last industry category, the public administration, we have zero samples. As a result, there are actually eight different industries in our sample, which make the industry dummy to range from 1 to 7. The regression model is listed as follows:

$$CAR_{it} = \alpha + \beta_1 \times Dividend_i + \beta_2 \times Event_t + \beta_3 \times Dividend_i \times Event_t + \beta_4 \times Profit_i + \beta_5 \times Leverage_i + \beta_6 \times BTM_i + \beta_7 \times L(Size_i) + \beta_8 \times Industry\text{-}dummy_i + \varepsilon_{it}$$

Where

CAR_{it}: firm i's cumulative weekly abnormal return at week t

$Dividend_i$: the dividend yield for firm i in 2002

$Event_t$: weekly timing dummy variable for event week t (t= 1 to 8)

$Profit_i$ (profitability): firm i's net income dividend by its market value

$Leverage_i$ (leverage ratio): firm i's total liabilities divided by the its market value

BTM_i (book-to-market ratio): firm i's total book equities divided by its market value

$L(Size_i)$: Log of firm i's market value

$Industry\text{-}dummy_i$: the fist digit of firm i's SIC code

Table 2 Dividend yields by industries

We analyze the mean and the standard deviation of dividend yields (in percentage) for sample firms by industries. The industry is categorized by each firm's first digit of SIC code.

Industry	Description	N	Mean	Std Dev
1	Mining and Construction	14	30.8714	22.6653
2	Manufacturing (Food-Petroleum)	23	21.5213	7.5307
3	Manufacturing (Plastics-Electronics)	27	25.3181	16.5632
4	Transportation	78	23.6096	8.1213
5	Wholesale Trade and Retail Trade	7	28.4786	13.7717
6	Finance Insurance and Real Estate	107	35.1521	38.3169
7	Services (Hotels-Recreation)	5	35.5240	37.9590
8	Services (Health-Private Household)	1	23.1400	-
9	Public Administration	0	-	-

3. Results

We examine the summary statistics of the control variables in the 262 samples in Table 3. We also compare the control variables of high dividend firms to low dividend firms. The high (low) dividend firms are within the top (lowest) ten percent of dividend yields among all positive dividend firms. The mean of profitability, which is the net income divided by the market value, is -0.10972, whereas the high dividend firms have lower profitability than the low dividend firms. However, the difference is not statistically significant. The mean leverage ratio of the sample firms is 3.3089. The difference of leverage ratio between high dividend firms and low dividend firms is statistically significant at 95 percent confidence level, with a *p*-value of 0.0357. The high dividend firms have higher leverage ratio than that of the low dividend firms, while the variances of these two sub samples are tested to be different and the Satterthwaite method is utilized for the comparison. High dividend firms also have a higher book-to-market value, but the difference is not statistically significant. For the firm size or the market value, surprisingly, low

dividend firms tend to be larger than high dividend firms. The difference is statistically significant at 95 percent confidence level, with a *p*-value of 0.0085.

Table 3 Summary statistics for all control variables

We examine whether each of control variables is significantly different from zero when we use all positive dividend paying firms as the sample. In addition, we compare control variables, including the profitability (profit), the leverage ratio (leverage), the book-to-market ratio (BTM), and the firm size (size), between low dividend-paying firms and high dividend-paying firms. Low dividend firms are those with dividend payments in the lowest ten percent among all dividend paying firms while high dividend firms are those with dividend payments in the highest ten percent. The control variables are defined as follows:

Profit =Net Income/Market Value
Leverage =Total liabilities/Market Value
BTM =Total Equity/Market Value
Size =Log(Market Value)

Net income is for year 2002; total liabilities, total equities, and market values are valued on December 31, 2002.

Variable	Dividend	N	Mean	Std Dev	T value	Pr > |t|	Method[a]
Profit	All	262	-0.0972	0.8171	-1.9254	0.0553	
	Low	26	-0.2100	1.4402			
	High	26	-0.8650	2.9453			
	Diff.(L-H)		0.6550	2.0876	1.4100	0.1683	Satterthwaite
Leverage	All	262	3.3089	8.6081	6.2219	<.0001**	
	Low	26	2.1212	2.9748			
	High	26	12.2900	32.3214			
	Diff.(L-H)		-10.1700	20.5430	-2.2200	0.0357*	Satterthwaite
BTM	All	262	0.9201	1.9732	7.5478	<.0001**	
	Low	26	0.6145	0.4679			
	High	26	1.8917	8.3185			
	Diff.(L-H)		-1.2770	5.3053	-1.0800	0.2908	Satterthwaite
Size	All	262	2.7231	0.9127	48.2933	<.0001**	
	Low	26	2.8241	1.6392			
	High	26	2.0453	1.1458			
	Diff.(L-H)		0.7788	1.2735	2.7400	0.0085**	Pooled

[a]For T-Tests, we use the Satterthwaite method when variances are significantly different, and use the Pooled method when variances are not significantly different.

* Statistically significant at 95% confidence level

** Statistically significant at 99% confidence level

Since investors get higher net tax income from dividends after the tax cut plan, the dividend tax cut plan is beneficial to stockholders. Therefore, we expect the stock returns to be higher during the event periods. From Table 4, we find that the cumulative abnormal returns (CARs) are actually significantly greater than zero for all four weeks prior to the event week. The average cumulative abnormal weekly return across the 262 sample firms, four weeks prior to the event, is 126 basis points with a *p*-value of 0.0007, indicating that there are significant abnormal weekly returns four weeks prior to the event week. The same statistics three weeks prior to the event week is 83 basis points with a *p*-value of 0.0040. It is 91 basis points with a *p*-value of 0.0017 two weeks prior to the event week and 79 basis points with a *p*-value of 0.0185 one week prior to the event week. In the event week, the average cumulative weekly abnormal return is 269 basis points and the *p*-value is less than 0.0001. From Graph 1, the event week has the highest cumulative abnormal returns. For the week after the tax cut event week, the cumulative abnormal return is not significantly different from zero, but it is a negative number. A possible interpretation for this finding is that investors overreact to the tax cut announcement during the event week. Hence, during the week after the event, investors tried to adjust the stock prices so that our study shows negative weekly cumulative abnormal returns after the event, but it is not statistically significant. Nevertheless, the weekly cumulative abnormal return is statistically significant and has a mean of 144 basis points two weeks after the event. The weekly cumulative abnormal return is not significantly different from zero three weeks and four weeks after the event.

Table 4 Summary statistics for cumulative abnormal returns (CARs)

We test if the nine weekly cumulative abnormal returns are significantly different from zero.

CAR(i) [a]= Cumulative abnormal return for the week which is "i" weeks before (if i is a negative number), in (if i is equal to zero), or after (if i is a positive number) the tax reduce event week.

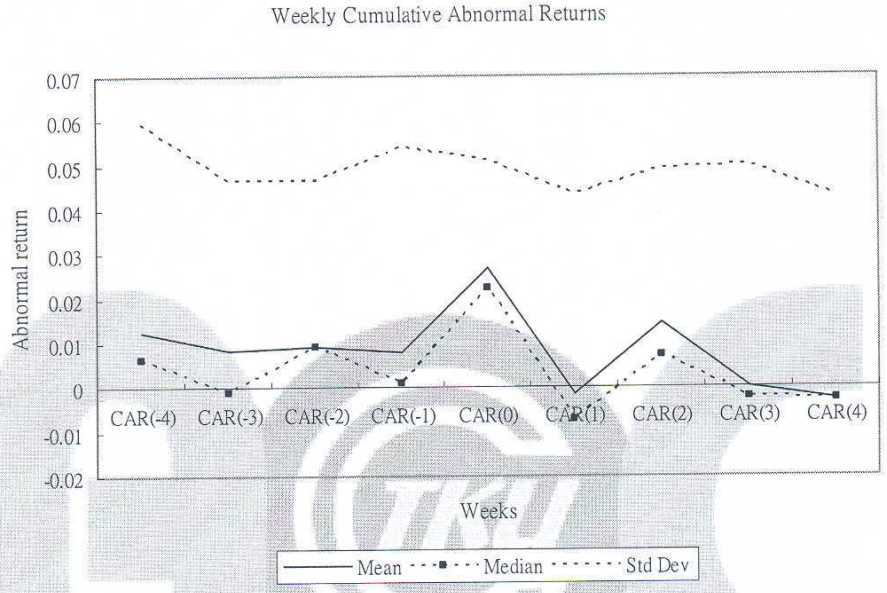
Variable	N	Mean	Median	Std Dev	T value	Pr > |t|
CAR(-4)	262	0.0126	0.0065	0.0592	3.4464	0.0007**
CAR(-3)	262	0.0083	-0.0010	0.0464	2.9029	0.0040**
CAR(-2)	262	0.0091	0.0091	0.0465	3.1702	0.0017**
CAR(-1)	262	0.0079	0.0009	0.0541	2.3696	0.0185*
CAR(0)	262	0.0269	0.0222	0.0511	8.5264	<.0001**
CAR(1)	262	-0.0016	-0.0073	0.0434	-0.6073	0.5442
CAR(2)	262	0.0144	0.0071	0.0490	4.7671	<.0001**
CAR(3)	262	0.0001	-0.0024	0.0499	0.0031	0.9976
CAR(4)	262	-0.0026	-0.0026	0.0428	-0.9666	0.3347

[a] CAR(i): Cumulative abnormal return is calculated as the sum of each transaction day's abnormal return within the week, while the daily abnormal return is the actual daily return minus the expected daily return. We use the market model to compute the expected daily return. In the market model, we use daily returns of the stock and the daily returns of the value weighted market index (S&P 500) in 2002 to run the regression and get the intercept and the slope for each stock while the dependent variable is the stock's daily return and the independent variable is the market index's daily return. Using the intercept and the slope, we can compute every day's expected return for the stock when we have that particular day's market index return.

* Statistically significant at 95% confidence level

** Statistically significant at 99% confidence level

CAR(i) [a]= Cumulative abnormal return for the week which is "i" weeks before (if i is a negative number), in (if i is equal to zero), or after (if i is a positive number) the tax reduce event week, which is calculated as the sum of each transaction day's abnormal return within the week, while the daily abnormal return is the actual daily return minus the expected daily return from the market model.



Graph 1 Weekly Abnormal Returns

Since the cumulative abnormal returns vary over the weeks, we include the event dummy in the regression model to examine how the cumulative abnormal returns change over time surrounding the event, whereas the last sample week is the benchmark in the regression. In addition to the five control variables in the regression model, we examine the effect of the dividend yields on the cumulative weekly abnormal returns and allow the interactions between the event dummy and the dividend yields. From Table 5, we find that the *R*-square of the regression is 0.0859, while the *F*-statistics is 7.81, with a *p*-value less than 0.0001. Dividend yields, the event dummy, and their interaction term are all significant at 95 percent confidence level. The parameter of the dividend yield is -0.0004 with a *p*-value of 0.0010, indicating that lower dividend firms tend to have higher stock returns. For the event dummy, the event week has the estimated parameter of 0.0357 and a *p*-value less than 0.0001, suggesting that the abnormal returns are 357 basis points higher during the tax cut event week when compared to the benchmark.

The interaction term of the dividend and the event dummy is also significant, suggesting there is interaction between the dividend yield and the timing of the abnormal returns surrounding the dividend tax cuts. For the control variables, the profitability and the firm size are statistically significant in the model. The parameter estimation for profitability is -0.0098, suggesting that firms with high profitability actually tend to have lower abnormal returns. For firm size, the parameter estimation is -0.0036, suggesting that larger firms tend to have lower abnormal returns. The book-to-market ratio and the leverage ratio do not have significant effect on stock returns in the model.

Table 5 Regression results for the model

We create an event dummy variable, ranging from 1 to 9, in which 1 represents the week that is four weeks prior to the event, 2 represents the week that is three weeks prior to the event, and …etc. We run the regression model by using CAR(i) as the dependent variable. Besides, the independent variables include the dividend yield, the event dummy, the interaction term between dividend and event, profit, leverage, BTM, size, and industry.

$$CAR_{it} = \alpha + \beta_1 \times \text{Dividend}_i + \beta_2 \times \text{Event}_t + \beta_3 \times \text{Dividend}_i \times \text{Event}_t + \beta_4 \times \text{Profit}_i + \beta_5 \times \text{Leverage}_i + \beta_6 \times \text{BTM}_i + \beta_7 \times \text{L(Size}_i) + \beta_8 \times \text{Industry-dummy}_i + \varepsilon_{it}$$

Overall regression significance

R-square	F value	Pr > F
0.0859	7.81	<.0001**

Source	DF	Type III SS	Mean Square	F value	Pr > F
Event	8	0.2020	0.0253	10.88	<.0001**
Dividend	1	0.0279	0.0279	12.01	0.0005**
Dividend*Event	8	0.1569	0.0196	8.45	<.0001**
Profit	1	0.0519	0.0519	22.37	<.0001**
Leverage	1	0.0003	0.0003	0.12	0.7267
BTM	1	0.0071	0.0071	3.07	0.0797
Size	1	0.0192	0.0192	8.29	0.0040**
Industry	7	0.0200	0.0029	1.23	0.2826
Parameter		**Estimate**	**Std Dev**	**T value**	**Pr > |t|**
Intercept		0.0481	0.0168	2.86	0.0043**
Event 1		-0.0068	0.0062	-1.10	0.2685
Event 2		0.0093	0.0062	1.51	0.1303
Event 3		0.0189	0.0062	3.06	0.0022**
Event 4		-0.0006	0.0062	-0.09	0.9252
Event 5		0.0357	0.0062	5.77	<.0001**
Event 6		-0.0039	0.0062	-0.63	0.5295
Event 7		0.0103	0.0062	1.67	0.0950
Event 8		-0.0097	0.0062	-1.56	0.1180
Dividend		-0.0004	0.0001	-3.29	0.0010**

Table 5 Regression results for the model (Continued)

Parameter	Estimate	Std Dev	T value	Pr > |t|
Dividend*Event 1	0.0008	0.0002	4.86	<.0001**
Dividend*Event 2	0.0001	0.0002	0.34	0.7338
Dividend*Event 3	-0.0002	0.0002	-1.60	0.1096
Dividend*Event 4	0.0004	0.0002	2.45	0.0145*
Dividend*Event 5	-0.0002	0.0002	-1.36	0.1749
Dividend*Event 6	0.0002	0.0002	1.06	0.2872
Dividend*Event 7	0.0002	0.0002	1.48	0.1385
Dividend*Event 8	0.0004	0.0002	2.71	0.0069**
Profit	-0.0098	0.0021	-4.73	<.0001**
Leverage	-0.0001	0.0002	-0.35	0.7267
BTM	0.0013	0.0008	1.75	0.0797
Size	-0.0036	0.0012	-2.88	0.0040**
Industry 1	-0.0282	0.0167	-1.70	0.0899
Industry 2	-0.0276	0.0164	-1.68	0.0937
Industry 3	-0.0343	0.0164	-2.09	0.0364*
Industry 4	-0.0292	0.0162	-1.80	0.0720
Industry 5	-0.0365	0.0172	-2.12	0.0340*
Industry 6	-0.0323	0.0162	-2.00	0.0458*
Industry 7	-0.0323	0.0181	-1.79	0.0740

* Statistically significant at 95% confidence level

** Statistically significant at 99% confidence level

4. Conclusions

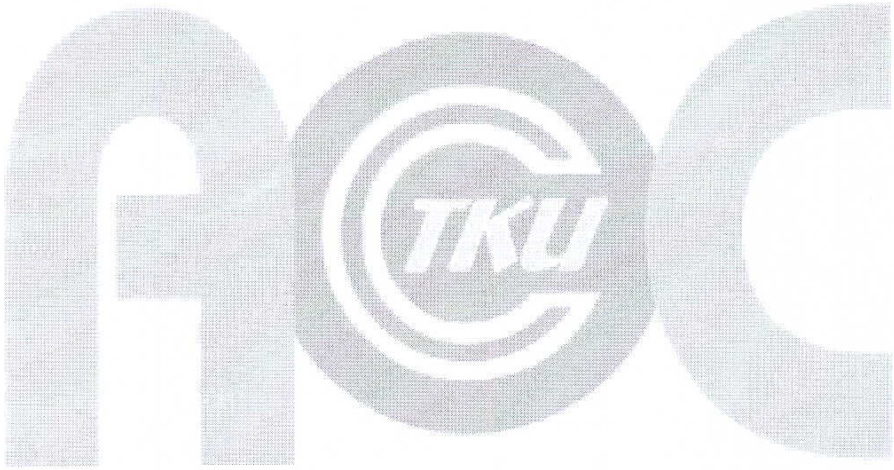
Since the dividend tax cut plan makes dividends more attractive to investors and firms should maximize stockholders' wealth (Baker, Powell, and Veit 2002), we expect firms to increase dividend payments after the dividend tax cut plan. The stock prices should increase after the dividend increases because some dividend functions, such as monitoring agency problems (Easterbrook 1984 and Shefrin and Statman 1984) should increase firm values. From our empirical analysis, we find that there are positive abnormal stock returns surrounding the event and the cumulative

abnormal stock returns are greater than zero before the tax cut event weeks and during the event week. These findings support our hypothesis.

We also show that firm dividend yields play an important role in stock returns. During the dividend income tax increase in 1993, Ayers, Cloyd, and Robinson (2002) not only find negative stock price reaction to the increase in the dividend income tax, but also find that firms with higher dividend yields tend to have more negative stock price reactions. However, in the dividend tax increase case, firms do not tend to reduce their dividend payouts because of dividend smoothing (Lintner 1956 and Shirvani and Wilbratte 1997). As a result, the investors net of tax dividend income decreases, which also lead to the negative stock price reaction. The more dividends a firm pays, the higher loss that its investors bear from the dividend income tax increases, suggesting that "higher dividend payouts firms" should have bigger magnitude of the negative stock reaction. However, in the tax cut situation, firms are expected to increase their dividend payments to maximize stockholders' wealth. Those firms with lower dividend yields have more potential to increase their dividend payouts after the dividend tax cut. Hence, firms with lower dividend yields should have higher stock returns. We find that firms with lower dividend yields in the year of 2002 actually have higher abnormal returns surrounding the dividend tax cut plan. Our empirical evidence is the opposite of Auerbach and Hassett (2005)'s finding that firms with higher dividend yields benefited more from the dividend tax cuts of 2003. We argue that investors expect these low dividend yield firms to increase their dividend payouts after the new tax law. As a result, the abnormal returns are higher for low dividend yield firms.

In our initial sample, there are 2843 firms; however, 91 percent do not pay any dividend in the year of 2002. According to Fama and French (2001), the proportion of firms paying cash dividends falls from 66.5% in 1979 to 20.8% in 1999. In our database, the proportion drops to 9.2% in 2002. When we use all firms in the analysis, the population size of zero dividend firms is too large for us to be able to see the effect of dividend

yields on stock returns. As a result, we exclude all the zero dividend firms in our study. Nevertheless, many of these zero dividend firms tend to start paying dividends after the new tax law effective, such as Microsoft Corporation, who announced its first annual dividend of 16 cents after the new tax cut plan.[8] Excluding these zero dividend firms became a caveat in this paper. In addition, we expect firms to increase dividend payments after the new tax law was issued. For future research, we suggest the investigation of the proportion of firms that increase dividend payments after the new law effective, and the relationship between stock returns and the dividend payments.



[8] Tunick, Britt E., 'Jumping on the dividend bandwagon: the tax cut makes equity attractive in more ways than one', *The Investment Dealers' Digest: IDD*, June 30, 2003, page 1.

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