The Effect of Relative Tax Rates of Capital Gains and Dividends on Real Investments.

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Proposal:

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Abstract

Using the Pecking Order Theory as a framework Torrez (2006) developed a simple model that examines the effect the difference between the dividend and capital gain tax rate has on corporate investment. The model finds that a relative dividend rate tax cuts will increase the corporate cost of capital and lower investment. Therefore, any increase in the value of the stock market from this act would simply be a response to an increase in after tax returns and not from an increase in production. The purpose of this research proposal is to test this hypothesis empirically.

Introduction

In Torrez (2006), a decrease in the dividend tax rate relative to the capital gains tax rate will have the effect of encouraging companies to increase dividends, this in-turn will lower retained earnings. Using a simply model, Torrez (2006) predicts that this decrease in retained earnings will actually increase the cost of capital and therefore decrease capital expenditures.

The basic idea is as follows: Corporate officers have a goal of maximizing the after tax returns of shareholders. When dividend tax rates are low relative to capital gain tax rate the will simply increase dividends. When the difference between the dividend tax and capital gain tax rate increases, these managers lower dividend payments and attempt to create capital gains by investing retained earnings that result from the lower dividends. This is of course is with the goal of increasing after tax returns for shareholders.

The objective of this proposal is to test the hypothesis of the model put forth in Torrez (2006) empirically.

Background

The premise of supply side economics is to encourage investment by cutting taxes. Proponents of dividend tax cuts argue that such a tax cut will encourage more corporate investment. The model underlying this view implies that cutting dividend taxes reduces the corporate cost of capital, and therefore leads to a higher level of investment.

As Poterba (2004) points out a decrease in the dividend tax rate will likely increase the value of stocks. "Lower dividend taxes reduce the tax burden on investors who purchase new equity issues in expectation of future dividend payouts." On the other hand, Torrez (2006) argues that a cut in the dividend tax rate relative to the capital gain tax rate will increase the corporate cost of capital and lower investment, and therefore, any increase in the value of the stock market from such a tax cut will simply be a response to an increase in after tax returns and not from an increase in production.

Pecking Order Theory predicts that companies prefer to finance real investment internally rather than with external funds if possible. Myer and Majluf (1984) predict that external finance with risky securities is more costly relative to internal finance. The greater the risk premium of the securities issued, the larger the cost difference and the more likely positive net present value investment projects will be rejected. This does not mean that companies will never use debt or equity financing. Pecking Order Theory does however predict that internal financing will be preferred to all forms of external financing and that when a company does finance externally it prefers debt financing to equity financing.

If companies do indeed prefer internal financing it implies that real investments are a positive function of retained earnings. Since retained earnings are negatively related to dividends, Pecking Order Theory implies that real investment is an inverse function of dividends. This combined with the fact that companies tend to smooth dividends over time (Allen and Michaely (2003)) and are hesitant to let dividends fluctuate once they have changed them, could cause a long term decrease in capital expenditures. Using the dividend to asset ratio as their main

dependent variable, Auerbach and Hassett (2003) find evidence that dividends respond negatively to investment and positively to cash flow, as Pecking Order Theory would predict.

Pérez-González (2003) finds that the Tax Relief Act (TRA) of 1986, that lowered the dividend tax rate, had a positive effect on dividends. Blouin, Raedy, and Shackelford (2004) and Poterba (2004) find dividend tax cuts of the Job Growth and Taxpayer Relief Reconciliation Act (JGTRRA) of 2003 has had the effect of raising dividends. Both Pérez-González and Blouin, Raedy, and Shacklford find that the effect on dividends will be greater for those companies that have a large percentage of individual shareholders. This result should not be surprising since institutional shareholders have never paid taxes on dividends. Therefore institutional shareholders did not benefit in terms of dividends from either the TRA of 1986 or the JGTRRA of 2003. Using the difference between the maximum dividend tax and capital gain tax rates produces a dividend coefficient of 0.047 with a p-value of 0.0001. So there is evidence that the spread between the dividend tax and capital gain tax rate does indeed affect dividend policy.

Combined with the assumption that a goal of a publicly traded firm is to maximize the return to its shareholders the implication of Pecking Order Theory is therefore a tradeoff between dividends paid and total return[1]. To see this more clearly consider a company who is faced with the choice of multiple investment projects along with the dividend decision. Since external finance is more costly, every dollar paid in dividends implies higher financing costs for those investments. In other words there may be investment projects that would be rejected and would otherwise have a positive net present value.

The problem can be lessened in this situation if the personal tax rate on dividends is higher than that of capital gains. In this case public firms will have less incentive to pay dividends and more incentive to take on investment projects to increase capital gains. This will tend to raise investment spending by publically traded corporations.

Basic Methodology

The basic equation to be examined will use real investment as the dependent variable. The main dependent variable will be the dividend payout rate along with a dummy variable for those years which the dividend and capital gains tax rate are equal. The control variable will consist of an estimate of tobin's Q and cash flow. Other controls variable will be dummies to control for different industries.

$$I/K = \alpha + \beta*Q + \gamma*(CF/K) + \delta*(DIV/K) + \varepsilon$$

Where I is investment, Q is an estimate of Tobin's Q, CF is cash flow, DIV are dividends and K is the capital stock of the company.

The difference between the dividend tax rate and the capital gains tax rate will also be used. However I do not expect this difference to affect investment directly rather the effect will be

[1] There are of course many theories as to why companies pay dividends that do not imply a company's goal is to maximize shareholder wealth. However, it is unlikely that a company's\management would respond to changes in the dividend tax rate for any other reason except to benefit their shareholders.

indirect through the amount of dividends paid. Therefore this difference will be used at an instrument for dividends in the investment regression.

The final version of the paper will estimate the above equation using a Error-in-Variables regression within a Generalized Method of Moments (GMM) framework.

Data

The primary source of data will come from current Standard and Poor's Compustat industrial files. Data on dividends and capital gains tax rates will come from the internet[2]. As is standard in this type of analysis financial, regulated and quasi-public firms are eliminated from the sample.

Investment will consist of Capital Expenditures or Property, Plant and Equipment minus Sale of Property (CAPXV-SPPE)[3]. The estimate of Tobin's Q will be a measure of book-to-market value of each firm. The numerator of this measure will consist of the year end price times the number of common shares outstanding and total book assets minus the book value of equity ((CSHO*PRCC)+AT-(CEQ+TXDB)). The denominator is book assets (AT). Cash flow will be measured as income before extraordinary items plus depreciation and amortization (IB + DP). Investment, cash flow and dividends are normalized by book assets (AT). I use the maximum dividend and capital gain tax rates for the measurement of the spread between the two tax rates. Firms with Q values in the top and bottom 5% are deleted from the sample.

Preliminary Results

I begin with basic OLS results in Table I below. As expected dividends are negatively related to investment expenditures.

Table I:
Ordinary Least Square Regression
Dependent Variable Investment dividend by Total Assets (I/K)

		R^2=.03
Variable.	Coefficient	Standard Error
Intercept	0.0616	0.000839
Q	0.0120	0.000388
CF/K	0.0671	0.000958
DIV/K	-0.1694	0.008036
Industry Dummies		Yes

Many have argued that measurement errors in Q will bias the coefficients of the other variables in the regression (Riddick and Whited 2009, Cummins, et al. 2006, Erickson and Whited, 2000

[2] Data on the maximum capital gains tax rate is obtained at http://www.cch.com/wbot2012/029CapitalGains.asp while data on maximum dividend tax rate is obtained at http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=213

[3] Variable names within the Compustat data set are in parenthesis.

2002, 2006). Therefore an errors-in-variables regression is estimated in Table II below. Although the magnitude of the dividend coefficient has become smaller it is still negative and significant.

Table II: Errors-in-Variables Regression Dependent Variable Investment dividend by Total Assets (I/K)		
Variable.	Coefficient	Standard Error
Q	0.0633	0.00253
CF/K	0.1837	0.00248
DIV/K	-0.0460	0.00250
Industry Dummies		N0

It is not enough too simply to show a negative correlation between dividends and investment expenditures. I must show that it is the spread between the dividend and capital gains tax rate that helps drive this correlation. The simplest course of action is to add this variable to the regression as part of the preliminary results. The results are in table III below. The coefficient on dividends remains largely unchanged. The coefficient on the difference between the two tax rates is positive as expected and significant.

Table III: Error-in-Variables Regression Dependent Variable Investment dividend by Total Assets (I/K)		
Variable.	Coefficient	Standard Error
Q	0.0697	0.00256
CF/K	0.1815	0.00247
DIV/K	-0.0461	0.00249
DIFF	0.0410	0.00252
Industry Dummies		No

Of course simply adding the spread in the dividend and capital gains tax rate to the regression is unsatisfactory to test the hypothesis that this spread is what actually drives the effect dividends have on investment. After all Torrez (2006) shows the spread between the two tax rates should not affect investment directly, instead the spread will affect investment through its effect on dividend policy. Therefore I will use the difference between dividend and capital gains tax rates as an instrument for dividends in the above regression. The results are in table IV below.

Table IV: Instrumental Variables Regression Using the difference between dividend tax and capital gain tax rate as an instrument for dividend payments. Dependent Variable Investment dividend by Total Assets (I/K)		
		R^2=.002
Variable.	Coefficient	Standard Error
Intercept	-0.14365	0.120188
Q	0.011691	0.002028
CF/K	0.065132	0.004987
DIV/K	17.73658	10.46276
Industry Dummies		Yes

As can be seen when the difference between the dividend tax and capital gains tax rate are used and an instrument for dividends, the coefficient on dividends changes from negative to positive. This result strongly suggests that managers do indeed concentrate on trying to achieve capital gains by investing, instead of using earnings to pay dividends when the spread between the two tax rates increase. It seems to be this spread between the tax rates that drives the negative results in the OLS and errors-in-variables regression.

Erickson and Whited (2000, 2002) use a higher order moments to estimate the errors-in-variable regression. This allows them to perform certain robustness checks including a coefficient of determination variable to test how well the regression predicts investment expenditures. A method will be explored that allows this errors-in-variables GMM regression to include an instrumental variable for dividends. Unfortunately the specific technique that Erickson and Whited does not lend itself to panel or time-series data. This is of course a problem when trying to analyze the effect relative tax rates are constant during any calendar year.

In order to understand how analyzing the relationship in the way Erickson and Whited (2000, 2002) lends itself to, the same simple errors-in-variable regression preformed in Table II is run for each year from 1971 until 2011. The coefficient on the dividend payout rate along with its standard error is reported in Table V below. Also reported in Table V is the difference between the top dividend and capital gains tax rate.

Of the 42 years analyzed all but 3 have negative coefficients on the dividend tax rate. None of the 3 years with positive coefficients are shown to be statistically significant at the 10% level. Of the 39 years with negative coefficients 27 are statistically significant. It seems that this relationship was stronger from 1971 until 2000. The majority of years from 2001 to 2011 have coefficients on the dividend payout rate which are statistically insignificant. It seems the negative relationship between the dividend payout rate and the investment rate is greater when the difference in relative tax rates are greater. In fact, of the 11 years with no difference between the top dividend and capital gains tax rate, only 1 year has a negative and statistically significant tax rate. This provides evidence that in years when there is a difference in relative tax rate public firm decision makers choose not to pay dividends and instead invest retained earnings in an attempt to increase capital gains to their shareholders.

Table V:
Errors-in-Variables Regression by Year
Dependent Variable Investment dividend by Total Assets (I/K)
Model: $I/K = \alpha + \beta*Q + \gamma*(CF/K) + \delta*(DIV/K) + \varepsilon$
Coefficient on DIV/K shown (δ) relative to the difference between the highest Dividend and Capital Gains tax rate (DIFF)

Year	Number of Observations	Dividend Coefficient (δ)	Standard Error	DIFF (%)
1971	2576	-0.5870	0.0789*	37.5
1972	3222	-0.8750	0.0830*	35.0
1973	3052	-0.8300	0.0846*	35.0
1974	2714	-0.6256	0.0825*	35.0
1975	2880	-0.6256	0.0766*	35.0
1976	3156	-0.5514	0.0804*	35.0
1977	3106	-0.6137	0.0751*	35.0
1978	3183	-0.6801	0.0835*	36.2
1979	3395	-0.5353	0.1285*	35.0
1980	3419	-0.3627	0.0909*	42.0
1981	3891	-0.4517	0.1050*	49.13
1982	4227	-0.2580	0.0314*	30
1983	4564	-0.2129	0.0395*	30
1984	4870	-0.2946	0.0697*	30
1985	4405	-0.0680	0.0596	30
1986	4424	-0.3695	0.0368*	30
1987	4606	-0.6790	0.0319*	10.5
1988	4952	-0.0127	0.0333	0.0
1989	4890	0.0201	0.0280	0.0
1990	4653	-0.0954	0.0472*	3.0
1991	4603	-0.0439	0.0522	3.0
1992	4869	-0.0687	0.0281*	3.0
1993	5316	-0.1567	0.0439*	11.6
1994	5926	-0.4319	0.0559*	11.6
1995	6230	-0.1090	0.0306*	11.6
1996	6917	-0.0718	0.0182*	11.6
1997	7043	-0.1541	0.0484*	11.6
1998	6724	-0.1805	0.0303*	19.6
1999	6469	-0.0560	0.0174*	19.6
2000	6510	-0.1550	0.0326*	19.6
2001	6383	-0.0369	0.0266	18.6
2002	5479	0.0679	0.0520	18.6
2003	5259	-0.0051	0.0184	0.0
2004	5303	0.0829	0.0307	0.0
2005	5145	-0.00903	0.0306	0.0
2006	5049	-0.0594	0.0406	0.0
2007	4858	-0.0279	0.0269	0.0
2008	4228	-0.2545	0.1793	0.0
2009	4275	-0.00776	0.0258	0.0
2010	3919	-0.0770	0.0306*	0.0
2011	3458	-0.0181	0.0314	0.0

Conclusion

Using a simply model, Torrez (2006) predicts that dividends will increase when the spread between dividend and capital gains tax rates decrease which will lead to a lowering of retained earnings. This decrease in retained earnings will in turn increase the cost of capital and therefore decrease capital expenditures. Preliminary results do indeed support this hypothesis. It does seem that public firm decision makers choose not to pay dividends when the difference in relative tax rates are greatest and instead invest retained earnings in an attempt to increase capital gains to their shareholders. Further research is needed to confirm these results.

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