Abstract

The Job Growth and Taxpayer Relief Reconciliation Act of 2003 lowered dividend taxes to the same rate as capital gains taxes in the United States using the Pecking Order Theory as a framework. This paper develops a model that examines the effect the tax cut will have on corporate investment. The model finds that the dividend rate tax cut will increase the corporate cost of capital and lower investment. Therefore, any increase in the value of the stock market from this act will simply be a response to an increase in after tax returns and not from an increase in production.

Key Word: Corporate Investment, Tax Policy, Dividends, Pecking Order Theory

Resumen

En los Estados Unidos, el *Job Growth and Taxpayer Relief Reconciliation Act* de 2003 bajó la tasa de impuestos sobre los dividendos al mismo nivel de las ganancias de capital. Este artículo desarrolla un modelo que examina el efecto que la reducción impositiva tendrá sobre la inversión corporativa. Mediante el modelo se encontró que una reducción impositiva aumentará el costo del capital corporativo y reducirá la inversión. Por lo tanto, cualquier aumento en el valor de la bolsa de valores, como consecuencia de esta acta, simplemente será el resultado de un aumento en los rendimientos después de restar los impuestos y no de un aumento en la producción.

Palabras Clave: Dividendos, Inversión Corporativa, Política de Impuestos, Teoría de la Jerarquía

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The Effect of Dividend Tax Policy on Corporate Investment

Introduction

The premise of supply side economics is to encourage investment by cutting taxes. This was the stated reason for the Job Growth and Taxpayer Relief Reconciliation Act of 2003 (JGTRRA). Part of this act lowered dividend taxes to the same rate as capital gains taxes. Proponents of this tax cut argue that this 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. Lower dividend taxes reduce the tax burden on investors who purchase new equity issues in expectation of future dividend payouts" (Poterba 2004). In this paper we argue that this part of the JGTRRA may actually increase the corporate cost of capital and lower investment in the economy and any increase in the value of the stock market from this act 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.

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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 predicts that internal financing will be preferred to all forms of external financing and that when a company does finance externally they prefer 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 related negatively 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.

Combined with the assumption that the 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 public corporations and mean more investment in the economy as a whole.

Stylized Facts

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. Their results also show that adding the ratio of the individual investor's after tax net income from dividends to capital gains (q^N) produces an insignificant coefficient on q^N. The addition of q^N does not change the sign or significance level of the coefficients on either the investment or the cash flow variable. They take this as evidence that dividend tax policy does not affect investment. There is however another possible interpretation of their results, the absolute magnitude of the coefficients on investment and cash flow do become smaller when q^N is added to the regression. The coefficient on investment goes from -0.432 to -0.326 while the coefficient on cash flow decreases from 0.193 to 0.133. This suggests that the negative relationship between dividends and investment is in part attributable to changes in the relative tax rate of dividends. The same argument can be made for the positive relationship between dividends and cash flow. This alternative explanation is feasible if the dividend tax rate does affect dividends, and dividends affect investment. If so, adding q^N would result in investment seeming to have less of an effect on dividends.

Although Auerbach and Hassett do not find the dividend tax rate to have a significant effect on dividends, 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 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 dividend. Therefore institutional shareholders did not benefit in terms of dividends from either the TRA of 1986 or the JGTRRA of 2003.

This author is unaware of any evidence in which changes in the dividend tax rate positively affects dividends nor is the author aware of any theories that predict this result. In fact, it would not be in the best interest of a company's shareholders nor the company to raise dividends in response to an increase in the relative dividend tax rate. This would of course lower the shareholder's after tax return. Instead the company should concentrate on increasing capital gains by raising its stock price, assuming capital gains are taxed at a lower rate.

Whether the increase in dividends from a dividend tax cut actually translates into a decrease in capital expenditure is less clear. As stated above Auerbach and Hassett (2003) find evidence against the view of the proponents of JGTRRA and using an alternative explanation of their results provided weak evidence that the dividend tax rate is actually positively related to investment. Starting with Fazzari, Hubbard, and Peterson (1988) there has been a great deal of literature suggesting a positive correlation between cash flow and investment.[2] This suggests that there is wedge between the cost of internal finance and external finance. This is what Pecking Order Theory predicts.

Additional evidence (and in the view of this author more convincing) is presented by Lamont (1997). Lamont finds that when large oil companies' cash flow decreases due to decreases in the price of oil, the capital expenditure of all the company's subsidiaries decreases regardless of whether their business is related to the petroleum market. There is no other reason for the company to lower investment to subsidiaries unrelated to oil since the drop in oil prices does not adversely affect these subsidiaries' profits. This suggests that when internal funds available for investment decrease, companies are hesitant about borrowing to keep investment levels constant. Again, this is consistent with Pecking Order Theory.

Therefore, if a company rationally increases its dividend payment in response to a dividend tax cut, it may come at the expense of capital expenditures. The company is maximizing the utility of their individual shareholders, but in this case the utility maximization of the individual shareholders may not be in the best interest of the Macro-Economy. In this case the increase in benefits to individual shareholders may come at the expense of real capital expenditures. This will cause real GDP to be lower in the future due to the reduction in real investments. This suggests that the increase in value of the stock market will be in the form of ''paper'' gains and not an increase in the intrinsic before tax value of these firms.

Model

If the goal of a company's managers is to maximize return to their stockholders we may write the company's one period objective function as follows.

[1] $$R = \arg\max\left[\frac{P_{t+1} - P_t + D_{t+1}}{P_t}\right]$$

Where
P denotes stock prices
D denotes dividends
the subscript denotes the time period.
If we assume the objective is to maximize the after-tax income of its shareholders, we may write the above equation as follows.

[2] $$R = \arg\max\left[\frac{P_{t+1} - P_t}{P_t}(1-c) + \frac{D_{t+1}}{P_t}(1-\theta)\right]$$

where c and q are the tax rates on capital gains and dividend respectively. The following restriction will be placed on these tax rates.

$0 \leq c \leq 1$

$0 \leq \theta \leq 1$

A three period model (t, t+1, t+2) will now be considered, where dividends are paid in period t+1 and the stock is repurchased in period t+2 for the price of P_{t+2} The objective function will therefore be written as:

[3] $$R = \arg\max\left[\frac{P_{t+2} - P_t}{(1+\delta)^2 P_t}(1-c) + \frac{D_{t+1}}{(1+\delta)P_t}(1-\theta)\right]$$

Where d is the individual's discount factor.
Investment in period t will be equal to funds received.

$I_t = P_t$

The investment in period t+1 will be retained earnings plus any amount raised by external finance. Retained earnings are the difference between total earnings (E_{t+1}) and dividends. For simplicity corporate taxes will be ignored.

[4] $$I_{t+1} = E_{t+1} - D_{t+1} + B_{t+1}$$

Assume the selling price is the book value of the company at period t+2 (P_{t+2}). The book value of the company is a function of the company's past real investment projects. The decision the firm must make is how much to pay in dividends and how much to borrow in period t+1 (B_{t+1}) This will of course determine the amount of investment the company makes in period t+1 (I_{t+1}).

The period t+2 price (P_{t+2}) can therefore be written as the return from investment in period t+1, [(1+g) (I_{t+1})]. Where g represents the rate of return on the company's investments.

For simplicity it will be assumed that the company has a target after tax rate of return that can be written as follows.[3]

[5] $$\overline{R} = \left[\frac{(1+\gamma)\left[E_{t+1} - D_{t+1} + B_{t+1}\right] - P_t}{(1+\delta)^2 P_t}[1-c] - (1+r)B_{t+1} + \frac{D_{t+1}}{(1+\delta)P_t}[1-\theta]\right]$$

Where r is the interest rate paid on debt.

q^N will be defined as the ratio of the individual investor's after tax net income from dividends to capital gains.

[6] $$q^N = \left(\frac{[1-\theta]}{[1-c]}\right)$$

Solving for dividends yields[4]

[7] $$D_{t+1} = \left[(1+\gamma) - (1+\delta)q^N\right]^{-1}\left[(1+\gamma)\left[E_{t+1} + B_{t+1}\right] - P_t - \frac{(1+r)(1+\delta)^2 P_t B_{t+1}}{[1-c]} - \frac{\overline{R}(1+\delta)^2 P_t}{[1-c]}\right]$$

The derivative with respect to q^N can now be calculated in terms of D_{t+1}[5].

[8] $$\frac{\partial D_{t+1}}{\partial q^N} = \left(\frac{1+\delta}{\left[(1+\gamma) - (1+\delta)q^N\right]}\right) D_{t+1}$$

If we assume that dividends are nonnegative, the change in the dividend ratio of after tax net income from dividend to capital gains q^N, is positively related to the increase in dividends. This is true as long as $(1+\gamma) > (1+\delta)q^N$

Which will occur as long as the rate of return is greater than or equal to the discount rate of investors and

$$[9] \qquad q^N = \frac{[1-\theta]}{[1-c]} \leq 1 \leq \frac{(1+\gamma)}{(1+\delta)}$$

It makes sense that the rate of return to a company's investment projects should be greater or equal to the discount rate of shareholders; otherwise no shareholder would buy the company's stock.

The question now becomes how will an increase in dividends from a decrease in the dividend tax rate affect corporate investment. To see this consider the long run corporate cash flow identity presented below. This identity simply states that over time income from after tax profits and the issuance of new shares has to equal the amount spent on dividends and investment.

After-Tax Profits + *Net New Share Issues* ≡ *Dividends* + *Investment*

From this identity the analysis of what will happen to investment when dividends increase can be undertaken using Pecking Order Theory. There is no reason to believe that changes on the individual dividend tax rate will change the after-tax profit of the firm since corporate taxes remain unchanged. This implies the only way the firm can keep investment constant when dividends increase is to increase net new shares. According to Pecking Order Theory new equity issues is the most costly form of finance. Therefore the predicted result would be a decrease in investment.

Conclusion

This paper has presented a very simple model where a decrease in the dividend tax rate lowers dividends and subsequently lowers real investment spending of publicly held firms. In addition, this paper presents some ''stylized facts'' from the literature in support of these conclusions. The prediction that a decrease in the dividend tax rate will have a positive effect on dividends is strongly supported by the evidence. The effect that will have on investment is less clear.

The fact that investments tend to be lumpy and the fact that these decreases in investment will tend to be at the margin make empirical study difficult. It is for this reason that no solid conclusions as to the effect of the relative dividend tax rate on investment spending have been reached. For this reason the daunting task of empirical verification of this model is left for future research.

Having said that, view that a decrease in the dividend tax rate will increase investment, spending should be view with a great suspicion. It is likely that this provision of the Job Growth and Taxpayer Relief Reconciliation Act of 2003 will have the opposite effect relative to its intention.

Notes

[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.

[2] See Hoshi, Kashyap, and Scharfstein (1991), Kaplan and Zingales (1997), and Lamont (1994).

[3] See Appendix I.

[4] See Appendix II.

[5] See Appendix III.

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Appendix I

After tax return can be written as

[*A5a*]

$$R = \text{argmax}\left[\frac{(1+\gamma)I_{t+1} - P_t}{(1+\delta)^2 P_t}(1-c) - (1+r)B_{t+1} + \frac{D_{t+1}}{(1+\delta)P_t}(1-\theta)\right]$$

Substituting for $I_{t+1} = E_{t+1} - D_{t+1} + B_{t+1}$ yields

[*A5b*]

$$R = \text{argmax}\left[\frac{(1+\gamma)[E_{t+1} - D_{t+1} + B_{t+1}] - P_t}{(1+\delta)^2 P_t}[1-c] - (1+r)B_{t+1} + \frac{D_{t+1}}{(1+\delta)P_t}(1-\theta)\right]$$

For simplification it will be assumed that the company has a target after tax rate of return, which can be written as

[*A5c*]

$$\overline{R} = \left[\frac{(1+\gamma)[E_{t+1} - D_{t+1} + B_{t+1}] - P_t}{(1+\delta)^2 P_t}[1-c] - (1+r)B_{t+1} + \frac{D_{t+1}}{(1+\delta)P_t}[1-\theta]\right]$$

Appendix II

This paper will now solve for dividends in the target after tax rate of return equation in Appendix I. First the each dividend term in period t+1 in will be isolated on the left hand side of the equation.

[*A7a*]

$$D_{t+1}(1+\gamma)-D_{t+1}(1+\delta)q^{N}=(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\overline{R}(1+\delta)^2P_t}{[1-c]}$$

[*A7b*]

$$D_{t+1}\left[(1+\gamma)-(1+\delta)q^{N}\right]=(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\overline{R}(1+\delta)^2P_t}{[1-c]}$$

Solving for dividends in period t+1 yield.

[*A7c*]

$$D_{t+1}=\left[(1+\gamma)-(1+\delta)q^{N}\right]^{-1}\left[(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\overline{R}(1+\delta)^2P_t}{[1-c]}\right]$$

Appendix III

Using the equation for dividend in period t+1 from Appendix II and taking the derivative with respect to q^N yields

[*A8a*]

$$\frac{\partial D_{t+1}}{\partial q^N}=\frac{(1+\delta)}{\left[(1+\gamma)-(1+\delta)q^N\right]^2}\left[(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\bar{R}(1+\delta)^2P_t}{[1-c]}\right]$$

This can be written in the following form.

[*A8b*]

$$\frac{\partial D_{t+1}}{\partial q^N}=\frac{(1+\delta)}{\left[(1+\gamma)-(1+\delta)q^N\right]}\left[(1+\gamma)-(1+\delta)q^N\right]^{1}\left[(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\bar{R}(1+\delta)^2P_t}{[1-c]}\right]$$

Remembering that dividend in period t+1 is equal to

[*A8c*]

$$D_{t+1}=\left[(1+\gamma)-(1+\delta)q^N\right]^{1}\left[(1+\gamma)[E_{t+1}+B_{t+1}]-P_t-\frac{(1+r)(1+\delta)^2P_tB_{t+1}}{[1-c]}-\frac{\bar{R}(1+\delta)^2P_t}{[1-c]}\right]$$

means we can write the derivative of dividends with respect to q^N in term of D_{t+1}.

[*A8d*]

$$\frac{\partial D_{t+1}}{\partial q^N}=\left(\frac{1+\delta}{\left[(1+\gamma)-(1+\delta)q^N\right]}\right)D_{t+1}$$