THE UNIVERSITY OF CALGARY

Dividend Puzzle Revisited:

Effects of Taxation, Domestic and Foreign Profits

By

Ariella Weis

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ABSTRACT

The dividend puzzle is the inability to explain why firms, who are supposed to maximize shareholder welfare, transfer profits through dividends before exhausting all other lower tax options for transferring income? This thesis examines the dividend puzzle in a Canadian context. The methodology follows a direct method of evaluating the effects of taxation, domestic and foreign profits on corporate dividend payout introduced by James Hines Jr. (1996) and James Poterba (1987). Additionally, the signaling power of dividends is evaluated and the dividend tax theory is examined. An implication of the results can be applied to a corporation's investment decisions.

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DEDICATION

To my parents and brother

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CHAPTER 1:

INTRODUCTION

1.1 INTRODUCTORY DISCUSSION

The Canadian tax system can be characterized as a two-tier tax structure, where taxes are imposed once at the corporate level and again on shareholders as corporate profits are distributed in the form of dividends. This tax system can distort corporate financial decisions in two distinct ways: 1) it may distort financial decisions with a bias favoring debt to equity financing because a corporation is allowed to deduct interest costs whereas equity is subject to taxes; and 2) corporate decisions regarding the distribution of profits can be distorted by this tax system to favor retained earnings because with retained earnings the shareholder may avoid or defer double taxation.

These distortions lead to the focus of this paper, which is to revisit the dividend puzzle. To see the nature of the dividend puzzle, consider the following simple example. Say corporations are taxed at the rate τ and individuals are taxed at the rate m. With this tax system corporations have an after-tax profit of $(1 - \tau)\pi$, which can be distributed in two ways: 1) through the payment of dividends, or 2) retained earnings that are re-invested within the firm, thus generating capital gains. Imposing the assumption that the value of a firm increases with retained earnings on a one-to-one ratio yields the following, shareholders of a firm that does not distribute profits in the form of dividends receive an increase in the value of their share by $(1 - \tau)\pi$. Furthermore, if there does not

exist a tax on capital gains, the shareholder then receives an after-tax return of $(1 - \tau)\pi$. However, shareholders of a firm paying out dividends will receive an after-tax dividend payment of $(1 - m)(1 - \tau)\pi$, significantly lower than the after-tax return on capital gains. The dividend puzzle is then the inability to explain why firms, who we assume maximize shareholder welfare, transfer profits through dividends before exhausting all other lower tax options for transferring income?

Figures 1 and 2 demonstrate the difference in the amount of dividends paid out by Canadian corporations and the amount of share repurchases taken place during the years 1978 to 1996. Figure 1 represents real corporate cash dividend distribution in Canada. Cash dividend distribution is shown to have been increasing over the years, with a slight decline during the period 1990 to 1993. However, corporate share repurchases, an example of retained earnings, has been stagnant until it started to increase in 1984 (Figure 2).

There are a number of theories that propose to solve the dividend puzzle. Some of these theories are based on the idea that although dividends are taxed at a higher rate, dividends still maintain some importance in the eyes of shareholders and corporations. The most prominent theory is signaling. Theoreticians propose that dividends allow the firm to signal current investors and future investors on the profitability of the firm. That is, shareholders and future investors may feel that the payment of dividends by firms is a signal that the company is doing well and expects to be profitable in the future. Firms and shareholders may view dividends as a signaling tool because of asymmetric

information in the market place. Asymmetric information is the inability of shareholders and future investors to distinguish between profitable and non-profitable firms, and dividends have been shown to be a credible way of showing investors that a particular company is more profitable compared to similar firms in the same industry.

The literature has typically employed two types of tests to address the dividend puzzle. The first, is based on the idea that if the marginal investor values dividend payments and capital gains equally, then after a firm pays dividends the value of the share should decline in value by an amount equal to the value of the dividend on ex-dividend days.

Figure1: Canadian Corporate Cash Dividend Distribution, 1978 - 1996
(Base year 1986)

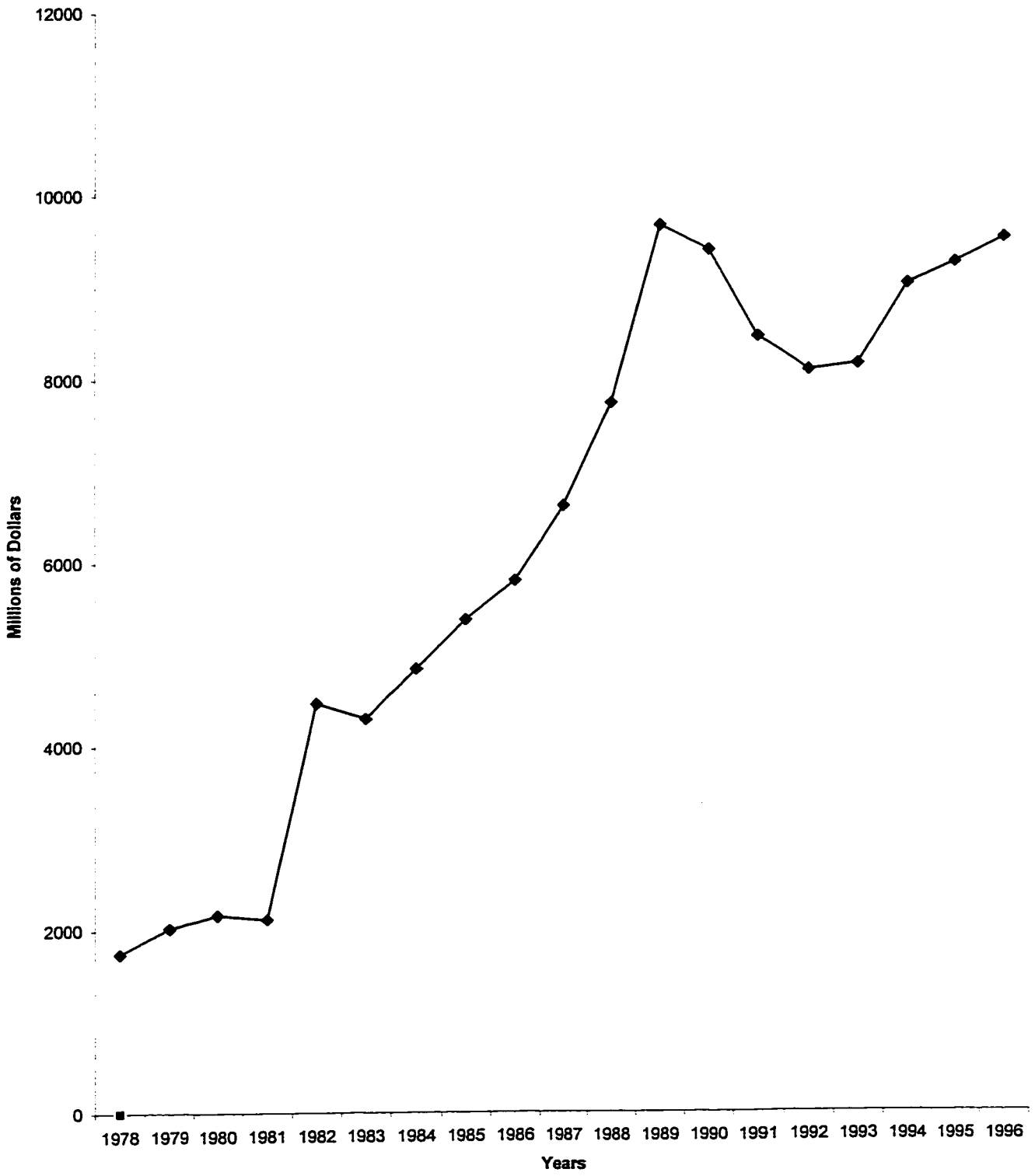
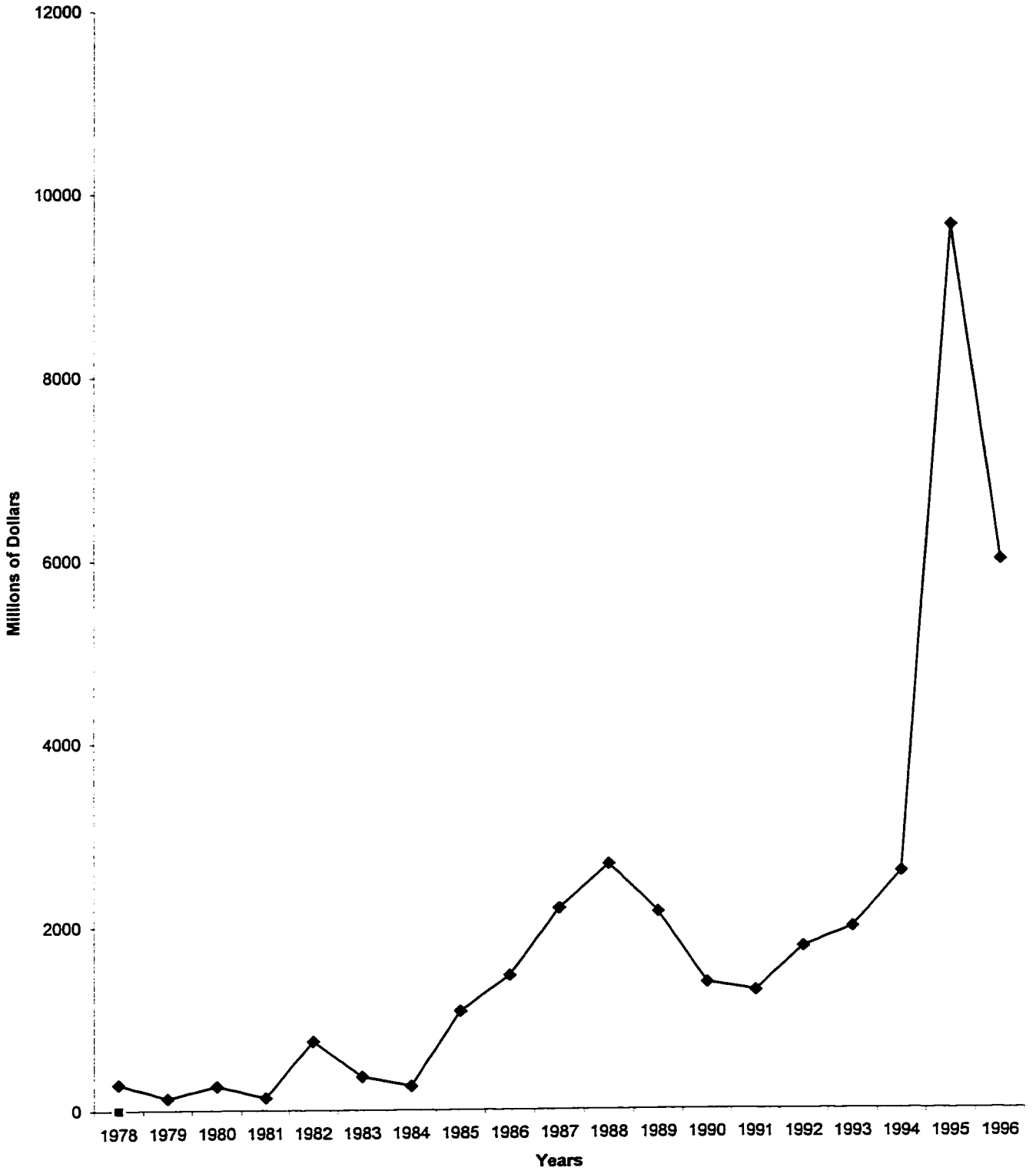


Figure 2: Canadian Corporate Share Repurchases, 1978 - 1996
(Base year 1986)



Or, if the marginal investor faces a higher tax rate on dividends than on capital gains, the value of the share should fall by less than the value of the dividend on ex-dividend days. This form of testing has been criticized on the grounds that daily share prices may be influenced by other factors, for example, the announcement of changes in the company's returns.

The second approach is to directly test the effects of profits and taxes on the dividend payout rate. This is the approach followed in this thesis. Two methods of testing the dividend puzzle will be employed in the Canadian context. The first approach will follow James Hines Jr.'s (1996) methodology of capturing the effects of foreign and domestic profits on the dividend payout rate. Hines (1996) allows domestic and foreign after-tax profits to enter a regression equation separately to determine whether foreign profits generate different dividend policy than domestic profits. The idea is that companies with foreign earnings may have to signal "harder" in order to show shareholders and future investors that they have the ability to earn profits outside the domestic market. This paper closely follows the empirical tests used by Hines (1996), however; data for Canadian firms is used, gathered from the COMPUSTAT database during the period 1988 – 1994.

The second approach will be a combination of the James Poterba (1987) and Lintner (1956) methodology for testing three views of effects of taxation on dividend payout. The three views of dividend taxes are: 1) the traditional view, 2) the tax irrelevance view, and 3) the "new" view. These three views try to explain the affects of

taxes, if there are any, on the payment of dividends by corporations. The traditional view believes that changes to the tax system, for example an increase in the tax rate on dividends, would decrease the amount corporations would distribute in the form of dividends. Poterba (1987) tested these views by using the tax parameter as an independent variable in a linear regression. I apply a similar approach to Canadian data, taking explicit account of the taxation of dividends in Canada, which differs, from the treatment in the U.S.

1.2 OVERVIEW OF THE THESIS

Having provided some background for the dividend puzzle and past studies we may now proceed with the format of the thesis. Chapter two presents a theoretical review of the dividend puzzle. Past studies are summarized and the models used by both Hines (1996) and Poterba (1987) are discussed. Chapter two also includes a representation of the Canadian tax system with respect to dividends.

Chapter three presents the two empirical approaches in detail. The models described in this chapter follow closely with those introduced by Hines (1996) and Poterba (1987).

Chapter four presents the results associated with the Hines (1996) methodology. The results discussed in this chapter show that foreign after-tax profits stimulate more

dividends than an equal amount of domestic after-tax profits. These findings are consistent with those results reached by Hines (1996) with US data. These results strengthen the theory of firms applying dividends in order to signal the corporation's profitability to their shareholders and future investors.

Chapter five reviews the empirical results obtained by applying the Poterba (1987) methodology to Canadian data. The finding presented in this chapter point to the inability of the dividend tax to affect the payment of dividends in the short-run. This differs from Poterba, who finds that dividend taxes have affected dividend payout in the U.S.

A summary of the methodology, models, and results are provided in chapter six. The implications of the results are discussed in order to stimulate more research in this area and to shed some light on the dividend puzzle. This chapter will conclude with a discussion of potential areas of research which could be build on the framework established here.

CHAPTER 2:

DIVIDEND PUZZLE: REVIEW OF THEORY

INTRODUCTION

Corporate finance considers corporate policies dealing with equity, debt and the distribution of cash flows. Investors have the ability to gain access to a firm's operating cash flows through the purchase of shares. What the individual equity investor actually gets on buying a share is not a right to the firm's underlying cash flow but only to such cash dividends as the corporation's directors choose to declare (Miller, 1988). Dividends are a distribution of a company's profits, in proportion to the number of shares one holds. Equity issued by a corporation takes the form of either common shares or preferred shares. Over time preferred dividends remain at a fixed annual amount. However, common dividends may fluctuate with the company's profits. Therefore, a company must determine the amount of dividends it would like to distribute to shareholder, this procedure is commonly known as the dividend policy of a firm.

The affect of the firms' dividend policy on the value of a firm is important in understanding the corporation's decision making and has been the subject of extensive study. One of the first theories to emerge on this subject was introduced by Miller and Modigliani (1961). Their famous dividend irrelevance proposition states that, given the firm's investment decision, its dividend decision would have no effect on the value of the shares. The irrelevance proposition introduced by Miller and Modigliani relies on the assumptions of perfect capital markets, rational behavior, and perfect certainty. Perfect

capital markets means that there is no buyer or seller of securities in the market which is large enough for his/her transactions to control the value or price of the stock. Furthermore, all traders have full access to information about the shares and their prices. There are no brokerage fees, transfer taxes, or transaction costs associated with the issuing, selling, or buying of shares. In addition, a perfect capital market means that there are no tax differentials between capital gains and dividends. The idea behind the assumption of rational behavior is that investors prefer more wealth to less. Moreover, shareholders are indifferent as to whether a given increment of their wealth takes the form of cash payments or an increase in the market value of their holdings of shares (Miller and Modigliani, 1961). Full information implies that investors have complete assurance as to the firms' future investment program and future profits, there is no asymmetric or "inside" information on the part of management. Therefore, the hypothesis that financial policy is chosen to maximize shareholder welfare carries no implications for dividend policy (Hines, 1996).

While Miller and Modigliani's (1961) irrelevance proposition suggests that dividend policy has no effect on firm value, in practice changes in cash dividends seem to matter a great deal, at least to judge by the conspicuous price jumps typically accompanying announcements of major boosts or cuts in dividends (Miller, 1988). Moreover, it seems, at least in the short run, that firm managers have information about the firm's prospects, which are not known by investors. These considerations suggest fundamental changes to Miller and Modigliani's (1961) irrelevance hypothesis. The stance firms take on dividend policy has been the subject of extensive debate for the past

30 years. The term "dividend puzzle" is prominent in much of this debate. One of the major puzzles in corporation finance is why, in spite of the personal tax differential in favor of capital gains, firms pay out a large share of their earnings as dividends instead of retaining them for investment purposes or utilizing them to buy up outstanding stock (Crockett and Friend, 1988). For example, Revenue Canada taxes dividends and capital gains differently. As will be shown later, during the period 1982 to 1994, Canadian shareholders receiving dividends were taxed at higher level then individuals claiming capital gains. Despite the tax penalty, Canadian corporations continued to distribute profits in the form of dividends.

DIVIDEND PUZZLE: THEORIES

Why do corporations pay dividends? Why do investors pay attention to dividends? Recent literature has suggested a few answers. One explanation is that firms have no alternative but to distribute their profits in the form of dividends. This is the so-called "new" theory of dividends. This idea of the dividend process is analyzed by a number of authors: King (1977), Auerbach (1979), and Bradford (1981). Under this approach, dividend payout is seen as the residual disposition of funds after profitable investment opportunities are exhausted (Hines, 1996). If corporations pay dividends from their residuals it eliminates the use of other methods to distribute profits to their shareholders.

Another possibility is that investors may view dividends as a representation on the

return on risky investment. Corporations might use dividends to encourage other investors to buy new issues of common stock at high prices. It may also be the case that corporations who do not pay dividends demonstrate their confidence in investment opportunities that can be missed if it paid dividends. Furthermore, if the corporation makes these investments, it may increase the value of the shares by more than the amount of the lost dividends (Black, 1976). If this is the case, shareholders are better off because they end up with capital appreciation greater than the dividends they missed out on. And, they would be taxed at a lower rate on capital gains than on dividends.

Other approaches have been introduced to explain the dividend puzzle. One approach focuses on the so-called clientele effect. This approach takes into consideration that tax rates vary considerably between individual investors. Therefore, an investor will consider which stock to invest in depending on his/her tax bracket. For example, an investor with low tax rates on dividends, like institutions may opt out to invest in stocks that have a high dividend yield. While, investors with a high tax rate on dividends may specialize in low yielding companies. According to Miller (1977), under perfect certainty investors tend to specialize in stocks that "cater" to their tax group. However, when uncertainty is introduced, investors lean towards diversification rather than specialization. By doing this investors spread out their tax burden.

Another approach to the dividend puzzle is to relax the assumption of no transaction costs introduced by Miller and Modigliani (1961). The liquidation of stocks may overcome tax incentives for individual investors in low tax brackets if they have

large, recurring liquidity needs (Crockett and Friend, 1988). For example, shareholders who need greater liquidity are the elderly (Pettit, 1977). This need for liquidity is attributed to the need of shareholders to finance current consumption and the desire to avoid the transaction costs associated with the selling off of stock.

Easterbrook (1984) suggests that shareholders demand dividend payments because it may reduce the financial discretion of management and thereby avoid some agency problems. That is, investors may hold the belief that dividend payments decrease the funds available to management for investment. Therefore, managers would only have the ability to invest in projects that are beneficial to the value of the firm.

Another approach is currently the focus of many studies. This approach modifies the irrelevance proposition by relaxing the assumption of homogenous information. Asymmetric information is introduced by assuming that managers are better informed about the company than the shareholders of the firm. This approach looks at the signaling power of dividends. By paying dividends a firm can signal its profitability to shareholders and potential shareholders (Hines, 1996). This may be especially important for firms earning profits abroad. In fact, it may be the case that firms earning foreign profits pay more dividends than an equal amount of domestic profits, in order to signal investors of their profitability. These models emphasize the fact that dividends are a credible way to show investors that your company is more profitable than other firms in the same industry.

THEORIES: DIVIDENDS AND TAXES

As discussed, taxes play a prominent role in theories of dividend policy. There are three theories that seek to explain the effects of corporate taxes and dividend taxes on the dividend payout rate. Two theories imply that changes to the dividend tax will not affect future dividend payment, while the third view infers that changes to the dividend tax will affect the dividend payout rate. Studies in the US have tended to support the traditional view, where changes to taxes will affect the dividend payout.

THE TRADITIONAL VIEW

This view "solves" the dividend puzzle by assuming that shareholders value dividends have some intrinsic value independent of their role as a way of distributing profits to shareholders. One possibility is that dividends are seen as a signaling tool, to show the managers confidence in the companies capabilities. Another possibility is that dividend distributions may help alleviate agency problems within the firm. In addition, dividends secure the shareholders income, hence, aid consumers with consumption planning. The traditional view asserts that dividends are set by balancing the dividend tax burden against the benefits of paying dividends (Poterba, 1987).

Poterba (1987) discusses the implications of the traditional view to a firm's opportunity cost of financing. He assumes that the discount rate investors apply to the return on equity (ρ) depends, for the reasons discussed above, on the payout ratio (α), so

$\rho'(\alpha) < 0$ (Poterba, 1987). Therefore, the rate of return on equity falls as the dividend payout increases. The firm then must earn the following pre-tax rate of return, in order to satisfy shareholders:

$$(1) \quad \frac{\rho(\alpha^*)}{(1-\theta\alpha^* - c(1-\alpha^*))}$$

where $\alpha^* = \alpha(\theta, c)$ is the optimal dividend payout ratio for a firm given as a function of the dividend tax rate and the capital tax rate. According to this theory the shareholders exchange the intrinsic benefits of dividends with the tax costs associated with dividends. In other words, firms trade-off the tax penalty (due to the higher tax rate on dividends than capital gains) against the signaling power or the agency benefits. At the optimal level of dividends, the shareholder is indifferent between retained earnings and new-share issues as a source of financing.

This view also assumes that dividends are taxed a higher rate than capital gains. Therefore, an increase in the effective tax rate on dividends for marginal investors will thus lead to a decrease in the price of the dividend-paying stocks (McKenzie and Thompson, 1996). Consequently, this would entail gains or losses for shareholders.

However, Poterba (1987) points out a number of weaknesses to the traditional

view. First, the traditional view fails to explain the intrinsic value of dividends. That is, this view does not provide a reason for shareholders demand of dividends, when one knows of other less heavily taxed means of sharing information. Secondly, the infrequency of new share issues and the high use of free cash flow and borrowing to be the primary source of financing are not explained well by the traditional view.

THE TAX IRRELEVANCE VIEW

The tax irrelevance view rejects the assumption that dividends are taxed at a higher rate than capital gains. The idea used in this view suggests that both dividends and capital gains are taxed at an effective rate of zero. Hence, dividend taxes are completely irrelevant when one is concerned with investment and in the determination of equity pricing (McKenzie and Thompson, 1996). Furthermore, this view does not believe in the idea that dividends have an intrinsic benefit that out weights the tax cost.

The tax irrelevance view uses the dividend tax rate of a marginal investor clientele. This group of investors are described as investors who are indifferent between holding the firm's equity to some other financial asset that is taxed differently (McKenzie and Thompson, 1996).

It is possible that the marginal investor clientele does not pay taxes on dividends or capital gains. McKenzie and Thompson (1996) list groups of investors that are in this

position, they include universities, pension funds, charities and individuals investing in stocks through RRSPs. There may also be groups that are taxed at the full corporate rate with respect to both dividends and capital gains, for example, brokerage firms. If any of these two groups form the investor clientele, an increase/decrease to the relative tax rate would have no impact on the price of equity or on the user cost of capital.

THE "NEW" VIEW

The new view assumes that the dividend tax rate is higher than the capital gains tax rate. Therefore, this view has to find an explanation to the divided puzzle. This view suggests that companies pay dividends because they do not have any other alternative. A corporation pays out dividends after it has exhausted every other investment possibility. That is, the company has financed all of their investment opportunities and consumed all other possibilities for their funds. Therefore, this view sees dividends as a residual -funds left over after the company has satisfied all of its other obligations (McKenzie and Thompson, 1996). Hence, this theory's explanation to the dividend puzzle is that corporations utilize retained earnings to finance their projects and use the residual funds to pay dividends since there are no other tax preferred alternatives to distribute profits.

REVIEW OF THE EVIDENCE

There are several items of direct evidence regarding the value placed on dividends relative to earnings retention, all of which tend to support the view that the market is

indifferent between a dollar of before-tax dividend income and a dollar of other corporate return, or actually prefers dividend income in spite of the higher taxes that result (Crockett and Friend, 1988). In two surveys of individual investors by Blume and Friend (1975) and Blume, Friend, and Westerfield (1982,1984) it was found that dividends were preferred to retained earnings for all economic classes. Furthermore, 47% of US managers believe that the price of their stock would increase as a result of an increase in dividends. Only 17% of managers believe an increase in dividends would decrease the price of the stock. Informational effects were cited most often as the reason for the expected price change, with higher stock prices resulting if greater future profitability was inferred and lower prices if the dividend increase was viewed as indicating a lack of profitable investment opportunities (Crockett and Friend, 1988). In addition, less than 1% of managers expected the prices to decrease because investors have a tax-based preference for retained earnings.

Other more indirect studies have brought forth investors preferences between retained earnings and dividends. Some of the evidence has come from cross-sectional analysis of stock prices or market rates of return. Early cross-sectional studies regressed stock price or holding period return (which is inversely related to stock price) against the dollar amounts of dividends and retained earnings and tested for significant differences in the estimated coefficients (Crockett and Friend, 1988). A preference for retained earnings is suggested if in the price regression the retained earnings coefficient is greater than the dividend coefficient, while the opposite would be expected in the return regression. However, using only the two variables, dividends and retained earnings as independent

variables might lead to a correlation problem associated with omitted variables. Therefore, later studies included other factors that may affect stock prices. For example, company risk and the availability of profitable investment opportunities. Studies which used price as a dependent variable suggested that dividends were preferred to retained earnings (Gordon, 1962; Lintner 1962). However, when risk and investment opportunities were introduced by Friend and Puckett (1964) the results differed. In growth industries there seemed to be some preference for retained earnings, while, other industries showed a preference to dividends.

Cross-sectional analysis using holding period return as the dependent variable include the theory of required rate of return. In this approach, if dividends are disfavored, it should produce a positive relationship between the payout ratio or dividend yield and the required rate of return (Crockett and Friend, 1988). However, in these cross-sectional studies the ex post rate of return is used as the dependent variable, which can cause difficulty in determining whether the explanatory variables affect the required rate of return or the deviation of the ex post rate from the ex ante rate or both (Crockett and Friend, 1988). Nerlove (1968) uses holding period returns as the dependent variable and included earnings growth, sales growth, and a number of other variables, including a measure of leverage and industry dummies as the explanatory variables. Nerlove (1968) found that the coefficient for dividends was small relative to the retained earnings coefficient, which is consistent with dividends being the preferred outcome.

Other studies have focused on the effects of changes in investor tax rates on

dividend income and capital gains. These studies test the tax irrelevance view by examining share price movements around ex-dividend days. If marginal investors value dividend income as much as they value capital gains, then when shares experience ex-days their price should decline by the full amount of the dividend payment (Poterba and Summers, 1985). However, if the tax rate on dividends is higher than the capital gains tax rate for the marginal investor, then share prices should fall by less than the dividend payment. Furthermore, if the individual investor is untaxed, then changes to the dividend tax rate should not affect the value of dividends and capital gains. Poterba and Summers (1985) studied the issue of whether taxes affect dividend valuation, as well as, the role of short-term trading in determining the ex-dividend day behavior of share prices in Britain. They used United Kingdom data because of the extensive changes to the shareholder tax preference ratio during 1965 and 1973. Their empirical results point to the traditional model of dividend taxes, which regards them as additional corporate tax burdens. Moreover, the results lead to the rejection of economic models that suggest that dividend payments have no adverse tax consequences, as well as, those which argue that firms pay dividends because money is "trapped" within the corporate sector (Poterba and Summers, 1985).

Two recent papers are particularly relevant for our purpose. The first, by James R. Hines, Jr. (1996) introduced the idea that foreign profits may be a factor in determining the dividend payout rate. Hines (1996) suggested a number of reasons why it would be useful to distinguish between the effects of foreign and domestic profits on dividend payouts. First, there may be "informational" difference between foreign and domestic

profits. This difference may be able to explain the underlying determinants of corporate dividend policy. For example, it may be the case that firms pay dividends in order to signal to investors their profitability. However, investors may have difficulty determining foreign profits. Because foreign profits are an important part of profits, the signaling view implies that foreign profits should stimulate greater average dividend payouts than do domestic profits.

A second reason to determine the effects of foreign and domestic profits on the corporate dividend payout is that the payout rate used by a firm may influence the relative cost of different operations (Hines, 1996). It is usually the case that dividends impose a tax cost to shareholders. Therefore, firms who earn foreign profits and distribute dividends to shareholders may feel obligated to pay dividends at a higher rate out of their foreign profits. This occurs because investors have difficulty determining foreign profits. Corporations that follow this particular dividend policy increase the cost of capital in their foreign operations in comparison to their domestic operations.

The impact on corporate saving by changing the relative tax burdens on dividends and capital gains is one of the most controversial issues of capital income taxation (Poterba, 1987). Corporate financial policy concentrates on maximizing shareholder's welfare. Therefore, if shareholders are tax-penalized when firms pay dividends instead of repurchasing shares, firms should not pay dividends. That is, publicly held firms should find other means to distribute cash to investors, if their shareholders are tax-penalized when they receive dividends. As mentioned before there are three views dealing with

how dividends and corporate income taxation affect corporate saving; the traditional view, the tax irrelevance view, and the "new" view.

Poterba (1987) evaluates the three views of how dividend taxes affect corporate savings by testing whether payout policy responds to changes in the relative tax burden on dividends and capital gains. His study focused on US data because of the tax reforms of 1964, 1969, and 1981. These reforms included variation in the tax rates and changes to the pattern of share ownership. By looking at these tax reforms allows Poterba (1987) to evaluate the response of investors to changes to their tax rates and therefore conclude which economic model explains the behavior of US investors. If the investor's dividend tax rate is higher than his capital gains tax rate the investor may opt to invest in companies which have lower dividend payments or may stay with his original portfolio.

This thesis will investigate the dividend puzzle in a Canadian context by applying the approaches developed by Hines (1996) and Poterba (1987) to Canadian data. By applying these empirical approaches to Canadian data, we may shed some new light on how Canadian corporations fit in the equation dealing with the dividend puzzle. It may be the case that Canadian firms do respond to changes in the tax system imposed on their shareholders, in order to maximize shareholder welfare, like in Poterba's (1987) study of US firms. It may also be the case that Canadian corporations, like US corporations, use dividends to signal shareholders and future investors on how well the company is doing, no matter if dividends are taxed higher than capital gains Hines (1996).

DIVIDEND TAXATION IN CANADA

The tax system with respect to dividends and capital gains in Canada is similar to the tax system in the US, in the sense that "double taxation" occurs. This means that income received from the corporate sector is first taxed at the corporate level and then again at the personal level. However, unlike the US the Canadian tax system does attempt to integrate personal and corporate taxes in order to reduce the amount of double taxation. The Canadian integration system provides a notional credit for taxes paid at the corporate level on dividends distributed to individuals (McKenzie and Thompson, 1996). That is, after the payment of corporate taxes at the rate u, the firm pays out a $1 dividend. These dividends are grossed-up by a factor of $\frac{1}{(1-d)}$, where d stands for the notional dividend tax-credit rate, giving taxable dividends of $\frac{\$1}{(1-d)}$, which are taxed at the personal tax rate m. Therefore, the individual faces a tax liability of $\theta = \frac{m-d}{1-d}$, after the dividend tax credit is applied. Table 1 shows calculations for the individual's tax liability after the dividend tax credit is applied. The calculations are for top bracket Ontario residents in each year. For example for the year 1986 the personal tax rate (m) for top bracket Ontario residents was 53.38% and the dividend tax credit was 22.67%. Therefore, entering these numbers into the equation $\frac{m-d}{1-d} = \frac{0.5338-0.2267}{1-0.2267}$ gives a tax liability for investors of 0.3972 or 39.72%. Table 1 also shows the top bracket personal income tax rate and the dividend tax credit during the years 1977 to 1994.

During this period, the tax liability was between 32% in 1983 and 1984 and 49% during the years 1978 – 1981. The personal income taxes facing top bracket Ontario residents was at 62% from 1977 to 1982, then the income tax rate decreased to a level between 50% and 53% in the period 1983 to 1994. During the same period, the dividend tax credit decreased from 25% to 13%.

As discussed above, what is often of interest is the tax rate on dividends relative to the tax rate on capital gains. Towards this end Poterba (1987) defines a tax preference parameter $\gamma_t = \frac{1-\theta_t}{1-C_t}$, where C_t is the accrual equivalent effective tax rate on capital gains. The relevant comparison with the dividend tax rate is the accrual equivalent capital gains rate because investors can defer capital gains by delaying the realization of capital gains. The first step in determining the accrual capital gains rate is to define the realized tax rate on capital gains. The realized rate is the capital gains inclusion rate multiplied by the personal income tax of the shareholder. Therefore, looking at Table 2 the realized rate was 0.2669 or 26.69% in 1986, the personal income tax (0.5338) x the capital gains inclusion rate (0.5). During 1986 the capital gains inclusion rate was 50%, but in 1988 and 1989 the inclusion rate increased to 66.667% and 75% respectively.

To convert this realized rate into an accrual equivalent rate we need information on holding periods. This information is difficult to come by on a yearly basis, so we adopt instead an approach suggested by King and Fullerton (1984). They suggest that the accrual equivalent capital gains is roughly half of the realized rate. While this is

admittedly ad hoc, McKenzie and Thompson (1996) suggest that is a reasonably accurate approximation. The last column in Table 2 shows the accrual equivalent effective tax rate on capital gains for a top bracket Ontario taxpayer in each year.

Table 1
Shareholder's final tax liability[1]

	Personal tax rate	Dividend tax credit	Theta
1977	0.62	0.2	0.52
1978	0.62	0.25	0.49
1979	0.62	0.25	0.49
1980	0.62	0.25	0.49
1981	0.62	0.25	0.49
1982	0.63	0.25	0.50
1983	0.49	0.25	0.32
1984	0.49	0.25	0.32
1985	0.52	0.25	0.36
1986	0.53	0.23	0.40
1987	0.53	0.17	0.43
1988	0.52	0.13	0.45
1989	0.52	0.13	0.45
1990	0.53	0.13	0.46
1991	0.53	0.13	0.46
1992	0.55	0.13	0.48
1993	0.50	0.13	0.43
1994	0.52	0.13	0.45

[1] Capital gains, the dividend tax, and the personal income tax levels where taken from the National Finances, Canadian Tax Foundation. The personal income tax in this study is defined by top bracket Ontario residence. There are no surtaxes added and the tax is a combination of federal and provincial marginal rates.

Table 2
Calculations for
Realized Rate on Capital Gains

	Personal tax rate	Capital Gains Inclusion Rate	Realized Rate	Accrual Rate
1977	0.62	0.5	0.31	0.16
1978	0.62	0.5	0.31	0.16
1979	0.62	0.5	0.31	0.16
1980	0.62	0.5	0.31	0.16
1981	0.62	0.5	0.31	0.16
1982	0.63	0.5	0.32	0.16
1983	0.49	0.5	0.25	0.12
1984	0.49	0.5	0.25	0.12
1985	0.52	0.5	0.26	0.13
1986	0.53	0.5	0.27	0.13
1987	0.53	0.5	0.27	0.13
1988	0.52	0.67	0.35	0.17
1989	0.52	0.67	0.35	0.17
1990	0.53	0.75	0.40	0.20
1991	0.53	0.75	0.40	0.20
1992	0.55	0.75	0.41	0.21
1993	0.5	0.75	0.38	0.19
1994	0.52	0.75	0.39	0.20

For example, in 1986 the realized rate was calculated to be 0.2669 or 26.69%, therefore C_t for that year would be half of the realized rate, 0.13345 or 13.345%. During the period 1977 – 1994, the accrual equivalence tax rate has fluctuated. From 1977 to 1982 the accrual rate was around 15%, then during 1983 and 1984 the rate was at 12%. However, in 1985 the accrual equivalence tax rate started to increase and in 1994 it was at 19%.

Finally, the tax preference parameter as defined by Poterba (1987) is calculated. Table 3 shows calculations of the tax preference parameter for the period 1977 to 1994. In 1986, C_t was 0.13345, the personal income tax was 0.5338, and the dividend tax credit was 0.22667. Therefore, $\gamma_t = \frac{1-\theta_t}{1-C_t}$ was 0.69568 or 69.568% for the year 1986. A γ less than 1 indicates that capital gains are taxed preferred relative to dividends. Table 3 demonstrates the rates for the tax preference parameter. During the years 1983 and 1984, the tax parameter was 77%, the highest rate during the period of 1977 – 1994. This is a big jump in γ was due to the large drop in the personal income tax rate, which lowered the tax rate on dividends much more than the accrual rate on capital gains. 1977 to 1982 showed the lowest tax level ranging from 56% to 60%. In the years 1986 to 1994 the tax preference parameter in the high sixties.

For there to be complete integration, the notional dividend tax-credit rate must equal the corporate tax rate u (that is, d=u). With a fully integrated tax system, the total effective tax rate on income derived in the corporation and distributed as dividends is simply the individual's tax rate, m (McKenzie and Thompson, 1996). However, in Canada the credit is notional for taxes paid at the corporation and may bear no relation to

the actual taxes paid by corporations. In fact, during the period 1982 – 1994 the dividend tax-credit rate was approximately 17 percent compared to the corporate tax rate that is between 20 – 28 percent, depending on the industry and size. This notional integration system may distort economic incentives in a number of ways. First, this tax system may distort the way financial decisions are made, favoring debt to equity because interest costs are tax deductible whereas equity is subject to at least one level of taxation (Beaulieau, 1994). Secondly, it may distort the way in which corporations choose to distribute profits, leaning toward retained earnings, which will defer the double taxation accompanying the payment of dividends.

Table 3
Calculations for the Tax Preference Parameter

	Personal Tax	Dividend tax credit	Theta	Capital Gains	Realized Rate	Accrual Rate	Tax Parameter
1977	0.62	0.2	0.52	0.5	0.31	0.15	0.56
1978	0.62	0.25	0.49	0.5	0.31	0.15	0.60
1979	0.62	0.25	0.49	0.5	0.31	0.15	0.60
1980	0.62	0.25	0.49	0.5	0.31	0.15	0.60
1981	0.62	0.25	0.49	0.5	0.31	0.15	0.60
1982	0.63	0.25	0.50	0.5	0.31	0.16	0.59
1983	0.49	0.25	0.32	0.5	0.25	0.12	0.77
1984	0.49	0.25	0.32	0.5	0.25	0.12	0.77
1985	0.52	0.25	0.36	0.5	0.26	0.13	0.74
1986	0.53	0.23	0.40	0.5	0.27	0.13	0.70
1987	0.53	0.17	0.43	0.5	0.26	0.13	0.66
1988	0.52	0.13	0.45	0.67	0.35	0.17	0.67
1989	0.52	0.13	0.45	0.67	0.35	0.17	0.67
1990	0.53	0.13	0.46	0.75	0.40	0.20	0.68
1991	0.53	0.13	0.46	0.75	0.40	0.20	0.68
1992	0.55	0.13	0.48	0.75	0.41	0.20	0.66
1993	0.50	0.13	0.43	0.75	0.38	0.19	0.71
1994	0.52	0.13	0.45	0.75	0.39	0.19	0.69

CHAPTER 3:

METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the empirical approach employed to test the dividend puzzle. The first approach used was introduced by Hines (1996) in his paper, "Dividends and Profits: Some Unsubtle Foreign Influences," in The Journal of Finance.

The second approach that will be followed was introduced by Poterba (1987) in, "Tax Policy and Corporate Saving," in the Brookings Papers on Economic Activity. This methodology adheres directly to Poterba's (1987) equation using the tax parameter and the dividend target to explain corporate dividends.

3.2 TESTING FOR FOREIGN AND DOMESTIC EFFECTS

This approach allows one to test the relative effects of domestic and foreign profits on corporate dividend payout. The procedure involved in testing the effects of domestic and foreign profits on dividend payout will be a direct one, using ordinary least squares. The idea that foreign and domestic profits may have a differential effect on dividend payout is tested using a model of the dividend process. This process allows domestic and foreign profits to enter a regression equation separately, hence allowing one to distinguish between the variables in question. In order to test the model, firm-level data is needed. The required data includes: common dividends, foreign pretax income, domestic pretax income, domestic income tax payable, and foreign income tax paid. The following model tests the effects of foreign and domestic profits on corporate dividend

payouts. The model treats foreign and domestic profits as exogenous variables and allows one to distinguish between the effects of domestic and foreign profits.

(1) $D_{it} = \lambda_t \varphi_t + \varphi_t \alpha_t E_{it} + \varphi_t \eta F_{it} + \varepsilon_{it}$

Where D_{it} is firm i's common dividend payout is year t, E_{it} is domestic after-tax profits, F_{it} is foreign after-tax profits, η is a parameter common to all firms and time periods, and λ_t and φ_t are year specific parameters common to all firms. The parameter that we are interested in is η, which reflects the impact of foreign profits relative to domestic profits on the corporate dividend payout. To calculate η, an identifying restriction is required to reach a value for η by dividing the F_{it} coefficient by the E_{it} coefficient. The identifying restriction in this case is, $\varphi_t \alpha_t = \varphi_t$, a result of assuming that the domestic after-tax coefficient α_t is equal to 1. Without this restriction a value for η will not be calculated by dividing $\varphi_t \eta$ by φ_t. The following criterion is used to distinguish between the effects of foreign and domestic profits on dividend payout. If $\eta = 1$, then foreign and domestic profits influence dividends equally. However, if $\eta > 1$, then foreign profits influence dividends more than an equal amount of domestic profits and if $\eta < 1$, then domestic profits stimulate more dividends than foreign profits.

In testing equation (1) with US data, Hines comes to the conclusion that $\eta > 1$. In fact, he estimates the value of η to be 3.40. Hines believes that this may be a consequence of some nonlinearity in the true dividend payout function. In order to test for nonlinearity, he suggests running the data on the following nonlinear payout model:

(2) $D_{it} = \tau_t + \varphi_{1t}\left(E_{it} + \eta F_{it}^{*}\right) + \varphi_{2t}\left(E_{it} + \eta F_{it}^{*}\right)^2 + \varepsilon_t$

here, F* is defined as foreign after-tax profits adjusted for the associated residual US tax liability. F* (after-tax profits) can be calculated three ways: (1) foreign profits minus foreign tax paid, (2) foreign profits minus the sum of foreign tax paid and current US taxes on foreign source income, and (3) foreign profits minus the sum of foreign tax paid, current US taxes on foreign source income and estimated future domestic taxes on unrepatriated current foreign-source income. The method that is used with Canadian data will be foreign profits minus foreign tax paid.

Results reached by cross-sectional data may yield to a number of problems. Hines points out that with cross-sectional data the estimates may pick up correlation. That is, correlation may arise between foreign profits and the payout level, simply because of omitted variables. He uses as an example, the fact that larger more mature firms may have higher ratios of foreign-source to domestic-source profits than smaller firms may. Therefore, may also pay dividends at higher rates. Therefore, dividend rates may be unrelated to the actual amount of foreign profit. This type of heterogeneity can be attributed to the correlation of firm maturity and dividends. It may also be the case that certain industries, Hines' example, is the petroleum industry, have higher ratios of foreign to domestic profits and therefore pay higher dividend rates. These two cases (maturity and industry) can cause high dividend rates, which are not related to foreign profits.

There are a number of ways in which one can account for heterogeneity. Hines follows a method, which allows the profits coefficients to vary by industry, as well as, adding firm size as an exogenous variable:

(3) $$D_{it} = \tau_t + \nu_k \psi_t E_{it} + \nu_k \varphi_t F^*_{it} + \delta S_{it} + \varepsilon_{it}$$

where the equation stands for firm ι in industry k, in which ν is an industry specific parameter, S_{it} is a firm's size, measured by assets, and δ is an estimated parameter. Equation (3) is estimated imposing the constraint $\nu_k = \nu$, ∀k. The above restriction is then relaxed and estimates the following equation is estimated:

$$(4) \quad D_{it} = \tau_t + \nu_k \psi_t E_{it} + \nu_k \varphi_t \eta F_{it}^{*} + (\eta - 1)\nu_k F_{it}^{*} \psi_t + \delta S_{it} + \varepsilon_{it}$$

Hines modifies equation (4), by replacing $(\eta - 1)\nu_k$ by (η -1). This new equation arises because, as Hines points out, the interaction between η and ν_k is of less interest than the parameter η itself and therefore, $(\eta - 1)\nu_k$ is replaced by (η - 1).

The second method of controlling for heterogeneity uses the panel nature of the COMPUSTAT data. The following equation is estimated:

$$(5) \quad D_{it} = \gamma_t + \psi_t E_{it} + \varphi_t \eta F_{it}^{*} + \varepsilon_{it}$$

where γ is used to capture systematic payout differences between firms with extensive foreign operations and those that earn most of their profits domestically. This method can be used as long as firms' characteristics do not change over the time period in question. That is, the firm's payment of dividends out of "permanent" profits would be reflected in γ. Hines goes on further to eliminate firm-specific effects by lagging equation (5). Equation (6) is estimated by Hines (1996) implementing the assumption that $\beta_5 = 1$, which means that a one unit change in last periods dividends causes a one unit change in this periods dividends. I however, let the model estimate the coefficient associated with the variable $D_{i,t-1}$:

$$(6)\quad D_{it} = \tau_t + \beta_{1t}E_t + \beta_{2t}F_{it}^{*} + \beta_{3t}E_{i,t-1} + \beta_{4t}F_{i,t-1}^{*} + \beta_{5}D_{i,t-1} + \mu_{it}$$

where, $\beta_{1t} = \psi_t$, $\beta_{2t} = \eta\psi_t$, $\beta_{3t} = -\psi_{t-1}$, $\beta_{4t} = -\eta\psi_{t-1}$. This model yields the following values for η:

$$\frac{\beta_{2t}}{\beta_{1t}} = \eta \quad \text{OR} \quad \frac{\beta_{4t}}{\beta_{3t}} = \eta$$

When lagging profits and dividends to eliminate the firm-specific effects, once can still encounter heterogeneity. That is, there may still be the problem of omitted variables. The maturity of a firm and the industry in which the firm is in may affect the corporate dividend payout rate (as discussed on page 3). Therefore, the following equation is tested:

$$(7)\quad D_{it} = \tau_t + \beta_{1t}E_t + \beta_{2t}F_{it}^{*} + \beta_{3t}E_{i,t-1} + \beta_{4t}F_{i,t-1}^{*} + \delta S_{it} + \beta_{5t}D_{i,t-1} + \mu_{it}$$

where, S_{it}, is firm's size, measured by assets, and β_{5t} is an estimated parameter.

3.3 TESTING FOR TAX EFFECTS

This next section adheres to Poterba's (1987) methodology for testing the dividend puzzle. Poterba (1987) uses time series data to estimate his equation. This paper modifies that approach and uses cross-sectional and firm-level data in order to allow a direct test for the dividend puzzle.

It is presumed that Firms pay out dividends in order to maximize shareholder's welfare. Hence, a number of studies have been constructed to look at the effects of taxation on corporate payout rate. These studies believe that there is a tax cost associated with dividends. That is, a change in the dividend tax level may increase the cost of holding stock that has a high payout rate. To evaluate the affects of taxation on dividend payout, Poterba(1987) suggests testing the relative burden of corporate and personal taxes on corporate dividend payout. This model looks at how a firm's payout policy responds to changes in the relative tax burden on dividends and capital gains.

Once again, firm level data is used. The required data includes: common dividends paid, after-tax profits, and a tax parameter. The data includes over 100 Canadian firms during the years 1982 – 1994. After-tax profits are calculated by subtracting income tax payable from pretax income. The following model deals with testing the effects of taxes:

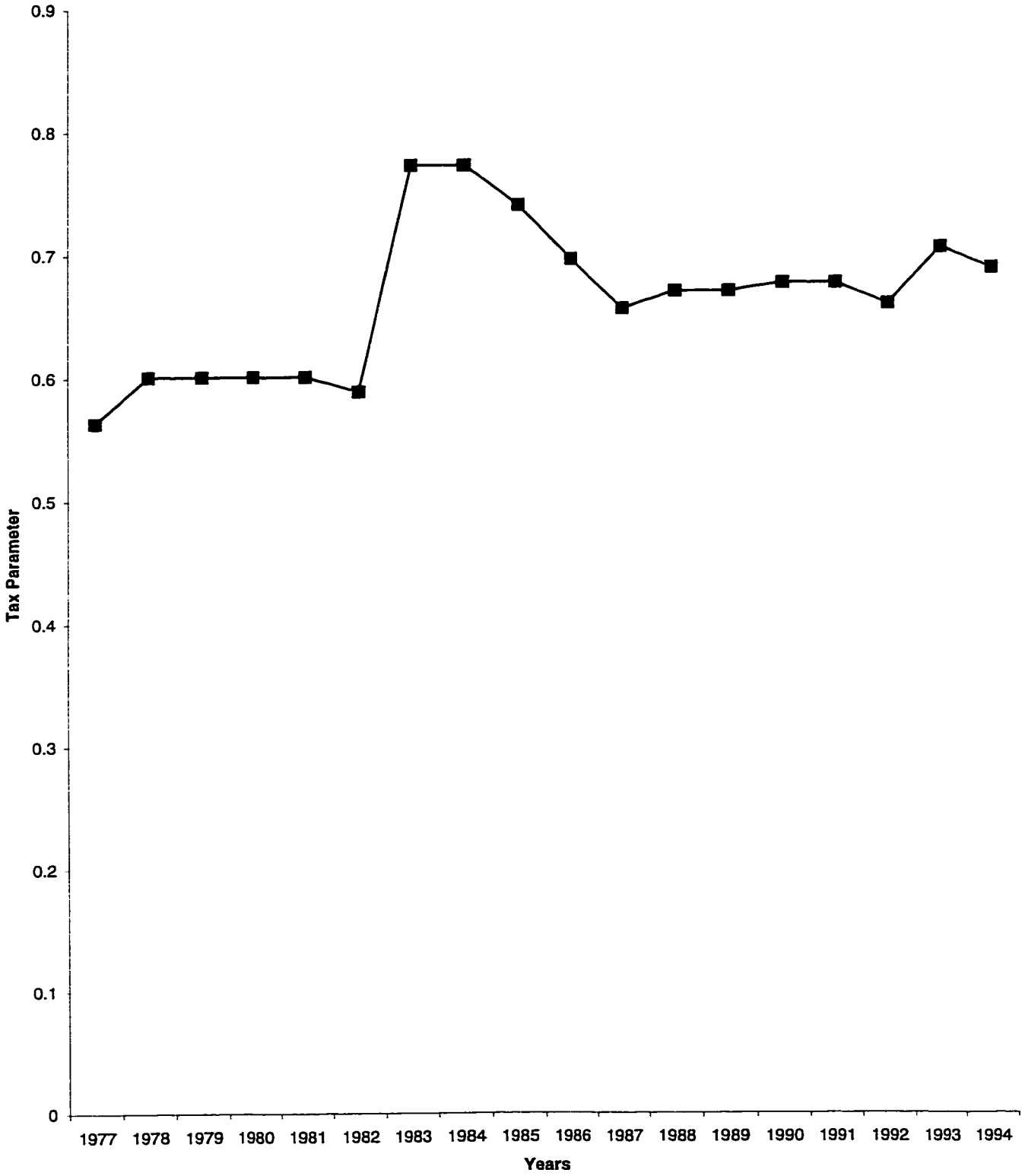
(8) $D_t = \beta_0 + \beta_1 Y_t + \beta \gamma_t + \varepsilon_t$

Y_t is the firm's after tax profits. γ_t is the tax parameter, which takes into account personal income tax, capital gains tax, and the dividend tax credit. This parameter was discussed in chapter 2.

In Chapter 2 the calculations for θ_t, the individual tax liability, the realized rate and C_t (the accrual rate) were demonstrated. All these variables are used to arrive at a value for the tax preference parameter, which is used by Poterba (1987) to test for the tax effects on corporate dividend payout.

The tax preference parameter γ measures the tax penalty on dividends relative to capital gains. That is, this parameter takes into account the difference in the tax rates for dividends and capital gains. Therefore, a value of $\gamma < 1$ shows that capital gains are tax preferred compared to dividends, as it has been in Canada for the past 23 years. Furthermore, a decrease in the dividend tax rate of an increase in the capital gains tax rate causes γ to increase, causing dividends to become tax preferred compared to capital gains.

Figure 3: Canadian Tax Parameter, 1977 - 1994



The variable D* is defined as last periods target dividend payout. D* is calculated using Lintner's definition:

(9) $D^{*} = r_i \otimes E_{it}$

r_i is defined to be a specific firm's payout rate. That is, r_i is represented by dividing dividends in period t for a specific firm by the firm's earnings in period t.

CHAPTER 4:

EMPIRICAL RESULTS FOR THE DIVIDEND REGRESSION: FOREIGN AND DOMESTIC AFTER-TAX PROFITS

4.1 INTRODUCTION

This chapter will discuss the results of estimating equations (1) to (6) in Chapter 3. The discussion will include a summary of the results of each equation and a comparison to the results reached by Hines (1996).

4.2 DATA

The data used in this section consists of firm-level data reported in COMPUSTAT. There are 918 Canadian companies reported in COMPUSTAT. However, only a subset of firms report information concerning their foreign pretax income and foreign income taxes paid. This subset of firms equals 20. Although this is a small number of firms, with six years (1988 – 1994) of data for each firm we have a balanced panel with 120 observations. This group of firms report foreign pretax income of 712.071 million dollars as a maximum and –316.66 million dollars as a minimum. Furthermore, the maximum common dividend payout reported by these firms is 359.4 million dollars and the minimum is 0. The average foreign income taxes paid are 12.98 million dollars and the average domestic income taxes paid are 13.12 million dollars. Table 4 provides further summary statistics for these 20 firms. The average size of the firms reported is 2162.03 million dollars, measured by total assets of the firm.

Table 4
In millions of dollars

	Maximum	Minimum	Average
Common Dividends	359.4	0	38.59
Pretax Income Domestic	901.718	-396.671	26.29
Income Taxes-Domestic	304.151	0	13.12
Pretax Income Foreign	712.071	-316.66	43.62
Income Taxes-Foreign	165.586	-3.96	12.98
Profits – Domestic	619.5	-455.617	13.17
Profits – Foreign	586.832	-357.448	30.64
Total Assets	14013.7	0.32	2162.03

4.3 RESULTS: TESTING FOR FOREIGN AND DOMESTIC EFFECTS

Table 5 presents the results of estimating equation (1):

(1) $D_{it} = \lambda_t \varphi_t + \varphi_t \alpha E_{it} + \varphi_t \eta F_{it} + \varepsilon_{it}$

In this ordinary least squares estimation the coefficient on domestic after-tax profits is 0.12, while the coefficient on foreign after-tax profits is 1.33. This means that a one million dollar increase in domestic after-tax profits causes dividends to increase by $ 120,000, while a one million dollar increase in foreign after-tax profits increases dividends by $1,330,000. Both coefficients are significant at the 95% significance level shown by the p-values of 0.0372 and 0 for domestic after-tax profits and foreign after-tax profits, respectively. Furthermore, using equation (1) yields a significant constant term

of 17.51 with a t-statistic of 3.33. The signs of the two coefficients support the theory that profits affect dividend payout positively, either in domestic markets or in foreign markets. Further tests were run on the coefficients. One such test was the null hypothesis that $\beta 1 = \beta 2 = 0$, which states that both the coefficients equal zero. With an F-statistic of 41.50 the null is rejected at the 95% level, which means that both coefficients are significantly different from zero and therefore cannot be dismissed from the regression. The second test run was to check for symmetry between domestic after-tax profits and foreign after-tax profits. The null hypothesis is $\beta 1 = 1 - \beta 2$. Once again the F-statistic is greater than the distributed F-statistic. Therefore, the null hypothesis is rejected and the symmetry between the coefficients is dismissed.

Although the tax effects will be addressed more directly in the next chapter, motivated by Poterba (1987) the effects of the tax parameter was also tested in this context. When the tax parameter was added as an independent variable neither the Durbin-Watson statistic nor the R^2 change. Furthermore, the p-value associated with the tax parameter coefficient was 0.9893, which means that the coefficient is significant at the 1.07% level. Therefore, in this context at least, the tax parameter does not appear to have been a significant factor in determining dividend payout.

Table 5

Dividend Payout Regression Equation
The dependent variable is common dividends. E is domestic after-tax profits and F is foreign after-tax profits. This table reports ordinary least square regression results. The sample is COMPUSTAT firms reporting foreign and domestic profits during the years 1988 – 1994.

	Coefficient	Std. Error	t-statistic	p-values
Constant	17.51	5.25	3.33	0.0011
Domestic after-tax profits	0.12	0.06	2.10	0.0372
Foreign after tax profits	1.33	0.22	6.16	0
Summary Statistics				
Adjusted R-squared	0.37			
Sum of squared resid.	424554.3			
Durbin-Watson	1.57			

The value of η is greater than one. In fact, equation (1) yields a value of $\eta = 10.89$. This value of η is quite a bit larger than the η calculated by Hines (1996) for US data, in fact the values of η Hines estimates using equation (1) is 3.40, slightly smaller then the value reached using Canadian data. This large value may be a consequence of some nonlinearity in the true dividend payout function. Therefore, to test for the robustness of the results reached in the linear form, equation (2) is estimated. Equation (2) tests non-linearity by presenting a nonlinear payout model:

$$(2)\quad D_{it} = \tau_t + \varphi_{1t}\left(E_{it} + \eta F_{it}^{*}\right) + \varphi_{2t}\left(E_{it} + \eta F_{it}^{*}\right)^2 + \varepsilon_t$$

In estimating equation (2) the foreign after-tax profits coefficient drops in value, but the domestic after-tax profit coefficient increases. The domestic after-tax profit coefficient is 0.22 and the coefficient for foreign after-tax profits is 0.0003 (See Table 6). The non-linear estimation shows domestic after-tax profits as significant at the 95% level with a t-statistic of 3.37. Foreign after-tax profit is also shown to be significant at the 94.4% level with a t-statistic of 1.93. In estimating equation (2) a symmetry test was also run. Equation (2) yielded an F-statistic of 137.58, which allows the null hypothesis to be rejected at the 95% significance level. Furthermore, the null hypothesis of $\beta 1 = 1 - \beta 2$ is also rejected at the 95% level with an F-statistic of 28.36. This all suggests that estimating the non-linear equation gives results that the coefficients are significantly different from zero.

Table 6

Dividend Payout Regression Equation
The dependent variable is common dividends. E is domestic after-tax profits and F is foreign after-tax profits. This table reports ordinary least square regression results. The sample is COMPUSTAT firms reporting foreign and domestic profits during the years 1988 - 1994.
Pro is (E + F) and ProF is (E +F) squared.

	Coefficient	Std. Error	t-statistic	p-values
Constant	24.86	5.37	4.63	0
Pro	0.22	0.066	3.37	0.001
ProF	0.0003	0.0001	1.93	0.056
Summary Statistics				
Adjusted R-squared	0.28			
Sum of squared resid.	482145.3			
Durbin-Watson	1.36			

The estimation of both equation (1) and equation (2) yields a low Durbin-Watson statistic. The Durbin-Watson statistic is 1.57 and 1.36 respectively. This may be a result of the nature of cross-sectional estimates, which may pick up correlation between foreign profits and the payout level. The correlation problem may be attributed to omitted variables. As pointed out by Hines (1996), this heterogeneity could arise if dividends are correlated with firm maturity even after controlling for firm size as reflected by the squared term in equation (2). It may also be the case that firms in certain industries have relatively higher payout rates as a result of industry-specific characteristics that are unrelated to their foreign profitability. Therefore, equation (3) is estimated with total assets as an explanatory variable measuring firm size, while imposing the constraint

$\nu_k = \nu \; \forall \; k$. In this equation heterogeneity is controlled by including firm size in the regression, while imposing a constraint allowing all industry types to enter the regression equally.

(3) $D_{it} = \tau_t + \nu_k \psi_t E_{it} + \nu_k \varphi_t F_{it}^{*} + \delta S_{it} + \varepsilon_{it}$

Table 7

Size-Adjusted Dividend Payout Regression Equation
The dependent variable is common dividends. E is domestic after-tax profits and F is foreign after-tax profits. This table reports ordinary least square regression results. The sample is COMPUSTAT firms reporting foreign and domestic profits during the years 1988 - 1994.
Total assets is the measure of firm size.

	Coefficient	Std. Error	t-statistic	p-values
Constant	6.66	5.47	1.22	0.2249
Domestic after-tax profits	0.15	0.05	2.66	0.0089
Foreign after-tax profits	0.46	0.28	1.66	0.1
Total Assets	0.0099	0.002	4.54	0
Summary Statistics				
Adjusted R-squared	0.45			
Sum of squared resid.	368769.9			
Durbin-Watson	1.71			

Table 7 shows that the domestic after-tax profit coefficient is 0.145 and the foreign after-tax profit coefficient is 0.463. Comparing the results of equation (1) to equation (3) shows that adding total assets, the domestic after-tax profit coefficient

increased very slightly in magnitude, while the foreign after-tax profit coefficient decreased in magnitude. The total asset (firm's size) coefficient is 0.0099, which means that a one million dollar increase in total assets causes a positive $99,330 change in dividends. At the 95% significance level the domestic after-tax profit coefficient and the total asset coefficient are significant, with t-statistics of 2.66 and 4.54 respectively. In addition, the elasticity of dividends with respect to total assets was significantly less than one indicating an inelastic relationship. The foreign after-tax profit coefficient has a fairly high standard error, but with a t-statistic of 1.66 it is still significant at the 94.6% level. This drop in the coefficient on foreign after-tax profits in Table 7 from Table 6 suggests that more mature firms may already have a good reputation in the market and may not have to signal investors their profitability in foreign countries. Estimating equation (3) yields an estimated value of $\eta = 3.18$. Although the value of η dropped it still shows that foreign earnings stimulate more dividends than an equal amount of domestic earnings, which supports the signaling theory of dividends. In addition, equation (3) yields a similar value in both the US and Canada, Hines' estimate of η was 3.02.

Adding firm size as an explanatory variable increased the Durbin-Watson statistic to 1.71. A higher Durbin-Watson statistic means that the problem of omitted variables has been partially solved.

Another way to solve the heterogeneity problem is to relax the constraint of $v_k = v$ for all firms and add firm size as an independent variable. Hence, creating

$(\eta - 1)\nu_k F_{it} \psi_t$ as another explanatory variable, which takes into account foreign after-tax profits specific to firms in industry k.

(4) $$D_{it} = \tau_t + \nu_k \psi_t E_{it} + \nu_k \varphi_t \eta F^*_{it} + (\eta - 1)\nu_k F^*_{it} \psi_t + \delta S_{it} + \varepsilon_{it}$$

In this equation the value of η is determined under the null hypothesis that $\eta = 1$. The t-statistic for this coefficient is 1.02 compared to 1.96 at the 95% significance level. Therefore, the null hypothesis of $\eta = 1$ is rejected. This result gives further support to the fact, that foreign profits and domestic profits do not stimulate dividends equally in Canadian firms.

Table 8

Size-Adjusted Dividend Payout Regression Equation
The dependent variable is common dividends. E is domestic after-tax profits and F is foreign after-tax profits. This table reports ordinary least square regression results. The sample is COMPUSTAT firms reporting foreign and domestic profits during the years 1988 - 1994.
Firm size is measured by Total Assets. Pro equals (E + F) and ProfitsFo equals (n - 1)F.

	Coefficient	Std. Error	t-statistic	p-values
Constant	6.66	5.47	1.22	0.2249
Pro	0.15	0.055	2.66	0.0089
ProfitsFo	0.32	0.31	1.03	0.3058
Total Assets	0.0099	0.0022	4.54	0
Summary Statistics				
Adjusted R-squared	0.45			
Sum of squared resid.	368769.9			
Durbin-Watson	1.71			

Even after relaxing the constraint the total asset coefficient is still significant with a value of 0.0099 and a t-statistic of 4.54 (See Table 8). It should also be pointed out that equation (3) and equation (4) have the same value for the domestic after-tax profit coefficient, while dropping the constraint slightly lowers the magnitude of the foreign after-tax profit coefficient. Furthermore, the Durbin-Watson statistic is 1.71, which shows an improvement from equation (2), but still may reflect an omitted variable problem.

Equation (6) captures the systematic payout differences between firms with extensive foreign operations and those that earn most of their profits domestically.

Furthermore, equation (6) eliminates firm-specific effects by lagging the dependent variable and the independent variables, this allows us to look at the payout differences are at the industry level.

$$(6) \quad D_{it} = \tau_t + \beta_{1t}E_t + \beta_{2t}F^*_{it} + \beta_{3t}E_{i,t-1} + \beta_{4t}F^*_{i,t-1} + \beta_5 D_{i,t-1} + \mu_{it}$$

Estimating equation (6) increases the Durbin-Watson statistic to 2.10. However, the Durbin-Watson statistic cannot be used as a test for autocorrelation in this case because one of the dependent variables is common dividends lagged one period. This variable biases the Durbin-Watson statistic when determining the existence of serial correlation in a first-difference equation. Therefore, the Durbin-h is used to test for serial autocorrelation within equation (6). The Durbin-h tests the null hypothesis that no autocorrelation exists. In this case the Durbin-h test fails to reject the null hypothesis of no autocorrelation and therefore, it can be concluded that equation (6) presents unbiased results. Table 9 shows that the significant variables include domestic after-tax profits, foreign after-tax profits, and last years dividend payout with t-statistics of 3.24, 2.30, and 2.72 respectively. By adding the lagged variables of dividends, the domestic after-tax profit coefficient and the foreign after-tax profit coefficient increased in value. That is, domestic after-tax profit coefficient increased from 0.145234 to 0.189424 and the foreign after-tax profit coefficient changed from 0.462514 to 0.644528. The value of η associated with equation (6) is 3.40 calculated by dividing foreign after-tax profits by domestic after-tax profits. Accounting for foreign after-tax profits, specific to firms increased the value of η, further suggesting that foreign after-tax profits stimulate more

dividends than domestic after-tax profits. Once again, the tax parameter was added to equation (6) to determine its significance when looking at foreign after-tax profits and domestic after-tax profits separately, to no effect.

Table 9
Dividend Payout Regression: First Differences
The dependent variable is common dividends. E is domestic after-tax Profits and F is foreign after-tax profits. This table reports ordinary least Square regression results. The sample is COMPUSTAT firms reporting Foreign and domestic profits during the years 1988 - 1994.

	Coefficient	Std. Error	t-statistic	p-values
Constant	9.43	5.17	1.82	0.0704
Domestic after-tax profits	0.19	0.058	3.24	0.0015
Foreign after-tax profits	0.64	0.28	2.30	0.0229
Domestic after-tax profits (-1)	0.072	0.056	1.29	0.1967
Foreign after-tax profits (-1)	0.37	0.28	1.33	0.1857
Common Dividends (-1)	0.22	0.079	2.72	0.0074
Summary Statistics				
Adjusted R-squared	0.45			
Sum of squared resid.	354890.9			
Durbin-H	1.44			

The results reached estimating equations (1) to (6) all point to the fact that the value of η for Canadian firms reporting foreign profits is significantly greater than one. In these equations a value of $\eta > 1$ shows that foreign after-tax profits stimulate more dividend payout than an equal amount of domestic after-tax profits within Canadian

firms. These results can be attributed to a number of reasons. Since these firms earn foreign profits it may be the case that shareholders insist on higher dividends because it may reduce the financial discretion of management with foreign investment. As well, it may be the case that firms view dividends as a signal of their profitability. Especially firms earning profits in foreign countries may see dividends as a large part of signaling to shareholders and future investors that they are not only profitable domestically, but are also profitable in foreign countries. Moreover, the addition of total assets as an explanatory variable (equation 3) still showed a value of η greater than 1. Equation (3) showed the significance of total assets in determining the dividend payout rate. While, equation (6) showed the insignificance of domestic after-tax profits lagged one period and foreign after-tax profits lagged one period in determining the dependent variable, common dividend payout. Therefore, it would seem logical to add total assets as an independent variable and omit foreign after-tax profits and domestic after-tax profits as explanatory variables in equation (6), creating equation (7).

$$(7)\quad D_{it} = \tau_t + \beta_{1t}E_t + \beta_{2t}F_{it}^{*} + \beta_{3t}E_{i,t-1} + \beta_{4t}F_{i,t-1}^{*} + \delta S_{it} + \beta_{5t}D_{i,t-1} + \mu_{it}$$

Table 10 shows that most of the variables are significant at the 95% significance level, when estimating equation (7), including domestic after-tax profits and total assets. The symmetry hypothesis was tested and rejected with an F-statistic of 5.87. Equation (7) common dividends lagged one period as an explanatory variable. Therefore, the Durbin-h statistic is used to test the null hypothesis that of whether autocorrelation exists. The Durbin-h statistic is normally distributed therefore an F-statistic of 0.58 fails to reject

the null hypothesis at the 95% level. Hence, this test gives the result that no autocorrelation exists and that the results given by equation (7) are unbiased.

Table 10

Dividend Payout Regression: First Differences and Total Assets
The dependent variable is common dividends. E is domestic after-tax profits and F is foreign after-tax profits. This table reports ordinary least square regression results. The sample is COMPUSTAT firms reporting foreign and domestic profits during the years 1988 – 1994.

	Coefficient	Std. Error	t-statistic	p-values
Constant	3.80	5.37	0.71	0.4802
Domestic after-tax profits	0.19	0.057	3.30	0.0013
Foreign after-tax profits	0.44	0.27	1.62	0.107
Common Dividends (-1)	0.20	0.076	2.62	0.0098
Total Assets	0.0075	0.0023	3.26	0.0014
Summary Statistics				
Adjusted R-squared	0.48			
Sum of squared resid.	341104.5			
Durbin-H	1.62			

The addition of total assets and the lagged variable decreased the value of the domestic after-tax profit coefficient, but also decreased the foreign after-tax profit coefficient from 0.64 to 0.44. This decrease is not drastic and therefore maintains a value of $\eta > 1$. In fact, Equation (7) yields an estimated value of $\eta = 2.37$ (See Table VII). This value of $\eta > 1$ reinforced the theory behind the signaling power of dividends. This

result once again points to foreign after-tax profits stimulating more dividends than an equal amount of domestic after-tax profits.

This chapter presents the empirical results reached estimating the effects of foreign and domestic after-tax profits on dividend payout within Canada. The results reached using Canadian firms seem to closely follow the results reached by Hines (1996) using US firms. The value of η ranged from 3.40 to 2.40 for US firms, whereas Canadian firms showed a range between 10.89 and 3.30 for η. Both Canadian firms and US firms use foreign after-tax profits to stimulate more dividends than an equal amount of domestic after-tax profits. This result supports the signaling theory of dividends. Canadian firms earning profits in foreign markets may feel the need to signal to investors their ability to earn foreign profits and therefore use foreign after-tax profits to stimulate more dividends than their domestic after-tax profits.

CHAPTER 5

EMPIRICAL RESULTS FOR THE DIVIDEND REGRESSION: PROFITS AND THE TAX PARAMETER

5.1 INTRODUCTION

In this chapter the equation suggested by Poterba (1987) is estimated with a few modifications. The section elaborates on the results reached and uses financial economic theory to interpret these results.

5.2 DATA

This section uses a panel of firm-level data reported in COMPUSTAT. The number of Canadian firms reporting common dividend payout, pretax income and income taxes paid continuously during the period 1982 – 1994 is 175 firms. Table 11 shows relevant statistics associated with this group of Canadian firms. The tax parameter takes into account the personal tax rates between 1982 – 1994 of Ontario residents included in the highest tax bracket. This group of companies the maximum after-tax profits is 1809 million dollars and the minimum is –1163.79 million dollars. In addition, in 1983 and 1984 the tax parameter was at the highest level at 77.23%. In 1982 the tax parameter was 58.87%, the lowest level during the period 1982 – 1994 (see Table 3 in Chapter 2). The range of common dividend payout was between 0 and 1335.79 million dollars, with an

average of 26.14455 million dollars. The average payout ratio exhibited by these firms was 1.053 million dollars, while the average tax parameter over this period was 69.02%.

Table 11
These numbers are in millions

	Maximum	Minimum	Average
Common Dividends	1335.79	0	26.14455
Income Tax Payable	931.9	-279.6	54.76334
Pretax Income	2613	-1418.3	64.69178
Profits	1809	-1163.79	39.35259
Tax Parameter	0.77233	0.588656	0.690221
Average Payout Ratio	93.01284	-7.35526	1.053412

5.3 RESULTS: TESTING FOR TAX EFFECTS

The results of estimating equation (8) using the available data are reported in Table 12. The profit coefficient has a value of 0.356, while the tax parameter coefficient equals –36.86. The signs associated with the explanatory variables depict the way the dependent variable, common dividend payout, would be affected. If there occurs a positive change to profits the dividend payout rate would also change positively. A positive change to the tax parameter should also affect the dividend payout rate positively because the tax preference parameter is a relation between the dividend tax rate and the capital gains tax rate. That is, a one million dollar increase in profits causes dividends to increase by $356,000, while an increase in the tax parameter would cause dividends to

decrease by -$36,860,000. Equation (8) estimates the tax preference coefficient to be negative, but insignificant. This suggests that Canadian firms do not refer to the difference between the two tax rates when determining the dividend payout rate.

Table 12
Dividend Regression: Tax Parameter
The dependent variable is common dividends. The Independent variables are profits and the tax Parameter. These firms report these variables during the period 1982 - 1994.

	Coefficient	Std. Error	t-statistic	p-values
Constant	37.59	17.06	2.20	0.0276
Profits	0.36	0.0078	45.41	0
Tax Parameter	-36.86	24.65	-1.50	0.135
Summary Statistics				
Adjusted R-squared	0.48			
Sum squared resid.	7204585			
Durbin-Watson	1.26			

(8) $D_t = \beta_0 + \beta_1 Y_t + \beta \gamma_t + \varepsilon_t$

However, the profit coefficient is significant at the 95% significance level with a t-statistic of 45.41, showing the importance of profits in determining the amount Canadian firms pay out in dividends. When looking at the Durbin-Watson statistic it

would appear that there is an omitted variable problem. To account for this, equation (9) is estimated:

(9)

$$D_t = \beta_0 + \beta_1 Y_t + \ldots + \beta_5 Y_{t-4} + \beta_6 \gamma_t + \ldots + \beta_{10} \gamma_{t-4} + \beta_{11} D_{t-1} + \ldots + \beta_{14} D_{t-4} + \beta_{15}\left(D_{t-1} + D^*_{t-1}\right) + \mu_t$$

Equation (9) includes DDIV as an independent variable. DDIV is measured by subtracting last periods dividend target from last periods actual dividend payout. The dividend target was calculated by multiplying the average payout ratio (dividends/earnings) with profits for each period. In addition, four lags of profits, dividends, and the tax parameter were added as explanatory variables. The Durbin-H statistic was calculated because of the lagged dividend variables, Table 13 shows that the Durbin-H statistic is 0.055, showing that there exists no autorcorrelation in equation (9). Once again, the profit coefficient is significant at the 95% level with a t-statistic of 21.72. However, the DDIV coefficient is insignificant, a t-statistic of 0.53 is significantly and a p-value of 0.5955, showing that DDIV is significant at the 40.45% level. This result shows the insignificance of the dividend gap $\left(D_{t-1} - D^*_{t-1}\right)$ in ascertaining the future dividend payout rate. This estimation suggests that Canadian firms dismiss past targets in their decision making. All the lags are significant except for the dividend coefficient lagged four time (t-4) and all the lags associated with the tax parameter. Furthermore, estimating equation (8) shows that the tax parameters for individual lags are the wrong sign and insignificant, reinforcing the conclusion that dividend taxation seems to play no role in dividend policy in Canada.

Table 13

Dividend Regression: Tax Parameter and DDIV
The dependent variable is common dividends. The independent variables are profits, the tax parameter DDIV, and four period lags of profits, dividends and the tax parameter. DDIV is actual dividends(t-1) minus dividend target(t-1).

	Coefficient	Std. Error	t-statistic	p-values
Constant	60.14	32.08	1.87	0.0609
Profits	0.17	0.008	21.73	0
Tax Parameter	-8.25	19.64	-0.42	0.6745
DDIV	-0.00067	0.0013	-0.53	0.5955
Profits(-1)	0.052	0.009	5.747	0
Profits(-2)	0.046	0.0091	5.06	0
Profits(-3)	0.024	0.0091	2.58	0.0101
Profits(-4)	0.041	0.009	4.52	0
Common dividends (-1)	0.27	0.021	12.70	0
Common dividends (-2)	0.094	0.022	4.28	0
Common dividends (-3)	0.056	0.022	2.60	0.0093
Common dividends (-4)	-0.029	0.019	-1.49	0.1352
Tax parameter (-1)	-3.75	19.48	-0.19	0.8474
Tax parameter (-2)	-28.37	20.11	-1.41	0.1586
Tax parameter (-3)	-10.87	19.45	-0.56	0.5762
Tax parameter (-4)	-31.95	19.69	-1.62	0.1048
Summary Statistics				
Adjusted R-squared		0.71		
Sum squared resid.		3950359		
Durbin-H		0.055		

The results obtained estimating equations (7) to (8) with Canadian data suggest that Canadian firms only take into consideration past profits and past dividend when determining their common dividend payout rate. In particular, last periods dividend gap between actual dividend payments and the dividend target is irrelevant to Canadian companies in determining the dividend payout ratio. The evidence on the impact of dividend taxes is troublesome for the traditional view. The sign on the tax coefficient is wrong and the standard errors are high. This suggests that taxes do not appear to have been a significant determinant of dividend policy in Canada.

CHAPTER 6:

CONCLUSIONS

6.1 OVERVIEW

Financial economics evaluates corporate financial decisions faced by corporations. Recently, the topic of the dividend puzzle has received considerable attention. A number of theories have emerged trying to explain the reasons why when retained earnings are taxed at a lower rate than dividends for shareholders, corporations continue to distribute profits in the form of dividends?

This paper tries to test some of the theories behind the dividend puzzle in a Canadian context. Empirical approaches suggested by Hines (1996) and Poterba (1987) were employed to investigate alternative theories of dividend policy.

The first theory dealt with the signaling power of dividends. Hines' (1996) results are consistent with the signaling theory behind dividends because his results showed that foreign after-tax profits stimulate more dividends than an equal amount of domestic after-tax profits. The second theory, which was tested by Poterba (1987), dealt with dividend tax theory. Poterba found that US corporations exhibited characteristics associated with the traditional view of dividend taxation.

When testing the idea that corporations view dividends as a signal to shareholders, Canadian firms gave similar results. The linear regression, which allowed

foreign after-tax profits and domestic after-tax profits to enter separately, yielded an $\eta >$ 1. This means that foreign after-tax profits stimulate more dividends than an equal amount of domestic after-tax profits for Canadian firms. In fact, the ratio was about 3 to 1; that is, an extra dollar in foreign after-tax profits stimulated three times more dividends than an equal amount of domestic after-tax profits. Hines (1996) reported similar results with respect to the value of η. The value of η estimated for US firms ranged from 2.49, estimating equation (1), to 4.1, estimating equation (6), both significantly greater than one. Furthermore, when firm size was added as an explanatory variable the value of η remained greater than one. Moreover, using cross-sectional data showed that new firms, as well as, mature established firms believe in using dividends to signal investors that their company is profitable in both domestic and foreign markets.

The results associated with dividend tax theory gave very different results for Canadian firms than the results obtained by Poterba (1987) with US firms. The tax parameter was the wrong sign and insignificant from the perspective of the traditional view of dividend taxation. This suggests a rejection of the traditional view and leans towards either the tax irrelevance view or the "new" view of dividend tax theory.

These results can be attributed to a number of reasons. A critical difference between the US and Canada is the tax system. In the US and to some extent in Canada, the tax system with respect to dividends has a two-tier structure. Taxes are imposed once at the corporate level and again on shareholders as corporate profits are distributed in the form of dividends. However, in Canada shareholders receive a dividend tax credit

around 17%. This tax credit is applied to the amount given by the dividend payout. This dividend tax credit was introduced to eliminate the corporate tax paid by corporations to the dividends received by shareholders. The integration of the Canadian tax system means that the tax penalty on dividend distribution is not as high as it is in the US. As such, it may be more difficult to pick up tax effects.

The different results associated with dividend tax theory may also be attributed to the fact that the tax parameter was calculated for only one tax bracket. This tax bracket included Ontario residents in the top income bracket. This was done because of difficulty in obtaining data on the distribution of shareholders across provinces and different tax brackets.

6.2 IMPLICATIONS FOR INVESTMENT DECISIONS

The obvious step after interpreting these results is to take it a step further and see what implications these results have for corporate investment decisions. From the results obtained by Poterba (1987) and Hines (1996) for US data it would appear that US firms see it to be beneficial to use dividends as a signaling tool and therefore, trade-off the intrinsic benefits of paying dividends against the tax costs, as suggested by the traditional view of dividend taxation. This then leads to the discussion of the implications these results may have on the opportunity cost of financing facing the firm. Under the traditional view the dividend payout ratio is dependent on the tax rates of both dividends and capital gains. In particular, an increase in the dividend tax rate should lead to a

decrease in the dividend payout rate, as the tax cost of achieving the intrinsic benefits associated with dividends increases. It also implies that an increase in the tax rate on dividends will increase the opportunity cost of capital and therefore dampen investment.

Canadian data yields mixed results. On the one hand, applying Hines' methodology to Canadian firms suggests that these firms do signal "harder" on foreign profits. On the other hand, applying the Poterba approach suggests no impact of dividend taxes on dividend policy.

Unfortunately, it would appear that a strong statement on the impact of dividend taxes on investment will have to await further study.

APPENDIX A

CASH DIVIDENDS – COMMON

Units Millions of Dollars

This item represents the total dollar amount of dividends (other than stock dividends) declared on the common stock of the company during the year.

This item includes:

1. Cash paid in lieu of fractional shares
2. Dividends declared by a pooled company to acquisition in the year of the merger, including dividends on preferred stock of a merged company which was exchanged for common stock
3. Cash dividends to all classes of common stock by companies with more than one class of common stock
4. Other cash distributions to stockholders

This item excludes:

1. Consolidated subsidiary dividends
2. Dividends declared in stock of other companies
3. Dollar values of stock dividends

This item is common dividends paid for life insurance companies.

Source: COMPUSTAT

APPENDIX B

PURCHASE OF COMMON AND PREFERRED STOCK

Units Millions of Dollars

This item represents any use of funds which decreases common and/or preferred stock.

This item includes...

1. Conversion of Class A, Class B, special stock, and others, into common stock
2. Conversion of preferred stock into common stock
3. Purchase of treasury stock
4. Retirement or redemption of common/ordinary stock
5. Retirement or redemption of preferred stock
6. Retirement or redemption of redeemable preferred stock

This item excludes...

1. Purchase of warrants
2. Reduction in stocks of a subsidiary

This item is not available for banks, utilities, or property and casualty companies.

Source: COMPUSTAT

APPENDIX C

INCOME TAXES – FOREIGN

Units Millions of Dollars

This item represents the current amount of income taxes payable to foreign governments.

This item excludes deferred taxes.

For non - US companies, this item represents taxes payable to governments outside their country. This item is not available for banks

INCOME TAXES PAYABLE

Units Millions of Dollars

This item represents the accrued tax liability on income due within one year.

This item includes state and local taxes not classified by type.

This item excludes...

1. Other taxes (included in Current Liabilities – Other)
2. Deferred Taxes (included in Current Liabilities – Other)

This item is not available for banks, utilities, or property and casualty companies.

Source: COMPUSTAT

APPENDIX D

PRETAX INCOME – DOMESTIC

Units Millions of Dollars

This item represents the income of a company's domestic operations before taxes.

This item includes minority interest reported above taxes.

This item excludes equity in earnings reported below taxes.

This item is not available for banks, utilities, or property and casualty companies.

PRETAX INCOME – FOREIGN

Units Millions of Dollars

This item represents the income of a company's foreign before taxes as reported by the company.

This item includes minority interest reported above taxes.

This item excludes equity in earnings reported below taxes.

This item is not available for banks, utilities, or property and casualty companies.

Source: COMPUSTAT

APPENDIX E

TOTAL ASSETS

Units Millions of Dollars

This item represents current assets plus net property, plant, and equipment plus other noncurrent assets (including intangible assets, deferred items, and investments and advances).

Total liabilities and stockholders' equity represents current liabilities plus long-term plus other long-term liabilities plus stockholders' equity.

Source: COMPUSTAT

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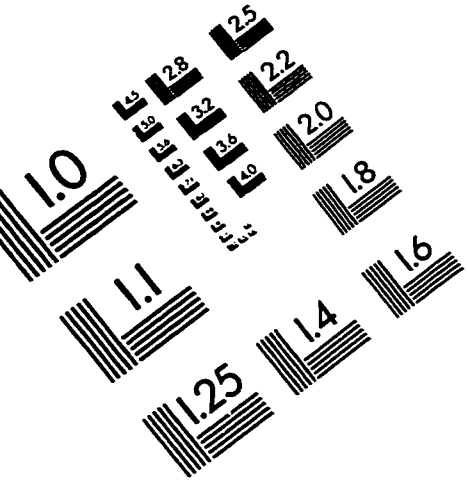
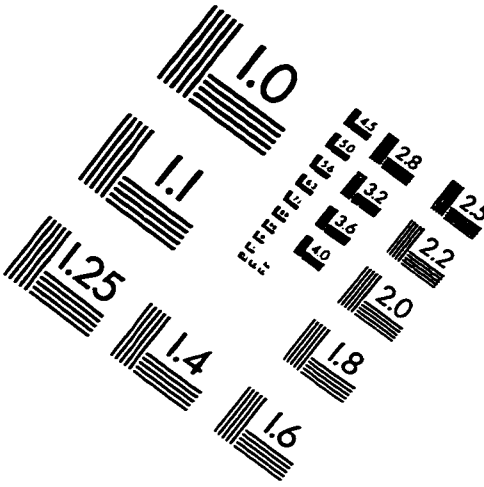
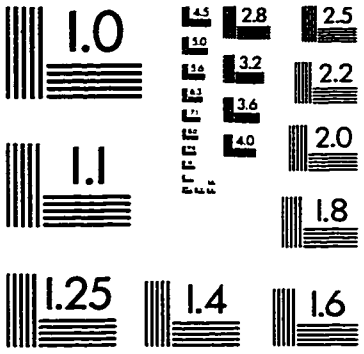
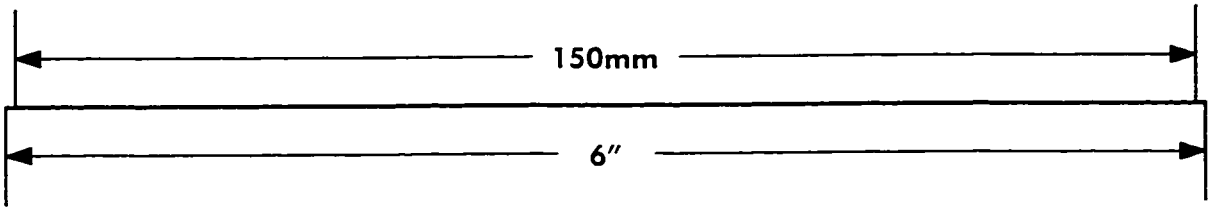
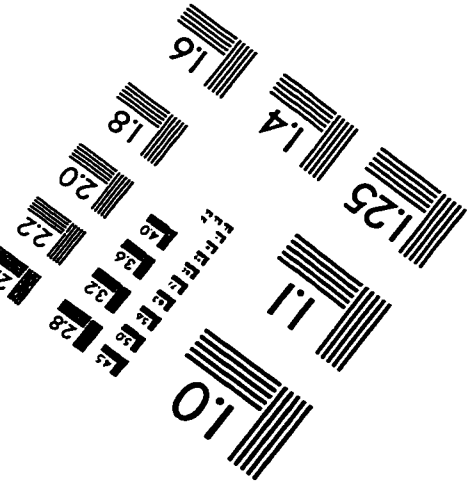
IMAGE EVALUATION TEST TARGET (QA-3)

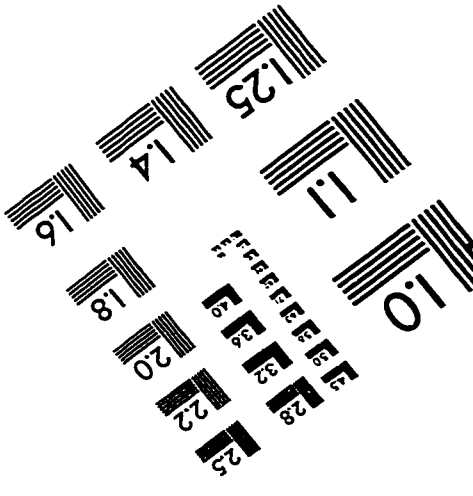












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989

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