

Dividend taxation and equity value: the Canadian tax changes of 1986

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Abstract. The 1986 Canadian federal budget, which increased the tax rate on dividends vis-à-vis capital gains, provides a natural experiment for examining the relationship between taxation and asset values. We employ a stock market event study to investigate the differential impact of this tax change on high- and low-dividend securities. To control for other new information contained in the budget, we focus on companies that issue both preferred (high-dividend) stocks and common (low-dividend) stocks. We find that abnormal returns are negatively related to dividend yields, which provides support for the hypothesis that taxes affect stock prices.

Imposition des dividendes et valeur des actifs: les changements dans la fiscalité canadienne de 1986. Le budget fédéral canadien de 1986, qui a augmenté le taux d'imposition sur les dividendes par rapport aux gains de capitaux, fournit un laboratoire naturel pour examiner les rapports entre la fiscalité et les valeurs des actifs. Les auteurs emploient une étude d'un événement dans le marché financier pour analyser l'impact différentiel de ce changement dans le taux d'imposition sur les valeurs mobilières à faibles et à forts dividendes. Afin de normaliser pour tenir compte de toute autre information contenue dans le budget, les auteurs s'intéressent à des sociétés qui émettent à la fois des actions préférentielles (à hauts dividendes) et des actions ordinaires (à faibles dividendes). Il appert que des rendements anormaux sont inversement co-réligés aux taux de dividendes, ce qui supporte l'hypothèse que la fiscalité affecte le prix des actions.

I. INTRODUCTION

Considerable attention has been devoted to examining the relationship between taxation and asset values. Of particular interest has been the impact of the differential taxation of dividends and capital gains on share prices. The 1986 Canadian federal

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budget, which increased the tax rate on dividends vis-à-vis capital gains, provides a natural experiment for addressing this issue. In this paper we employ event study analysis to examine the impact of this tax change.

Two predominant schools of thought characterize the existing literature – the ‘tax relevance view’ and the ‘tax irrelevance view.’ The tax relevance view, primarily associated with Brennan (1970), Auerbach (1979), and Bradford (1981), argues that since present and future taxes are capitalized into the market value of securities, the taxation of dividends and/or capital gains should have an impact on stock prices. Proponents of the tax irrelevance view, such as Miller and Scholes (1978, 1982), argue that taxes should not affect the market value of securities because of various nuances in the tax code. This is because some investors can take advantage of provisions that allow them to convert dividends into capital gains; others (such as income traders) do not face a capital gains / dividend tax differential at all; while still others can effectively escape taxation on income from equity altogether. The conclusion is that tax differentials on savings ‘can be effectively laundered’ at the margin (Hamada and Scholes 1985, 197) and are therefore irrelevant. Another view, particularly relevant to Canada, is the small open economy hypothesis, which suggests that domestic taxes will not have an impact on domestic security prices because the after-tax rate of return on all assets is determined by international financial markets (see, e.g., Boadway and Bruce 1991).

The empirical evidence to date has been mixed. For example, Black and Scholes (1974), Gordon and Bradford (1980), Miller and Scholes (1982), Lakonishok and Vermaelen (1983), and Chen, Grundy, and Stambaugh (1990) provide support for the tax irrelevance hypothesis, while Elton and Gruber (1970), Litzenberger and Ramaswamy (1979, 1980, 1982), Morgan (1980), Booth and Johnston (1984), and Poterba and Summers (1984) provide support for the tax relevance hypothesis. As such, the issue of whether the differential taxation of dividends and capital gains affects share prices has not been satisfactorily resolved.

One way to approach the question is to examine how modifications to the tax law affect asset returns by employing event study analysis. There have been relatively few event studies in this area. Poterba and Summers (1985) use this approach to analyse various changes in the British tax code. They find that abnormal stock market returns corresponding to dividend tax reductions are positively related to dividend yields, providing support for the tax relevance view. Two studies have analysed Canadian tax changes. Amoako-Adu (1983) uses monthly data to examine the impact of the 1971 Tax Reform and its 1977 amendments. He finds that changes in the relative taxation of dividends and capital gains had differential impacts on high- and low-dividend yield portfolios, as predicted by the tax relevance view. Amoako-Adu, Rashid, and Stebbins (1992) perform a similar analysis of changes in Canadian capital gains taxation in 1985 and 1987. As discussed below, however, interpretation of these Canadian studies is complicated by the nature of the events chosen.

In this study we examine the impact on stock market prices of the dividend tax increase contained in the 1986 Canadian budget. During the last two decades there

have been five major changes to the taxation of dividends and/or capital gains in Canada – the 1986 budget and the four tax changes examined in the studies discussed above. Upon close examination, however, it turns out that all four of the previously studied events involved offsetting changes to the tax system. In 1971 capital gains taxes were introduced, but at the same time the effective tax rate on dividends was increased. In 1977 the effective tax rate on dividends fell, but capital gains were included in the \$1,000 dividend and interest exemption. In 1985, the \$500,000 capital gains exemption was introduced, but the ability to write off up to \$2,000 of capital losses against other non-capital income was removed. In 1987 the capital gains exemption was reduced and the capital gains tax rate increased, but the \$1,000 dividend and interest exemption was eliminated. In these cases it is difficult to predict the extent of the change in the *differential* taxation of dividends and capital gains. The 1986 budget, on the other hand, increased the effective tax rate on dividends by approximately 9 percentage points, while the tax treatment of capital gains remained unchanged. The prediction of the tax relevance hypothesis is clear in this case – the price of high-dividend yield stocks should drop relative to the price of low-dividend yield stocks. The valuation effects of this event have not been examined in previous studies.

A potential problem encountered in event study analysis is that it is often difficult to control for other new information which coincides with the event of interest. This is a particularly important issue for the analysis of tax changes because they are often contained in federal budgets or broader tax reform packages that include many other important announcements. The concurrent release of new information unrelated to the taxation of dividends may bias the results if this information is related to firm-specific characteristics that are correlated with dividend yields. It is possible to control for some of these effects. For example, Amoako-Adu (1983) controls for industry effects by comparing high- and low-dividend yield portfolios for the same industries. In this paper we employ a unique approach that goes one step further. We take advantage of the fact that a number of Canadian companies issue both common and preferred stock. Preferred stocks tend to have high-dividend yields relative to common stocks. In fact, in our sample of firms the dividend yields of preferred shares all are greater than the yields of their common-stock counterparts. Analysis of high- and low-dividend securities issued by the same companies enables us to estimate the relationship between abnormal stock market returns and dividend yields while controlling for other new information contained in the budget.

11. METHOD OF STUDY

The abnormal return to security (or portfolio) i at time t , ar_{it} , is defined to be the prediction error of a model that includes both the return to the market index and an interest rate variable:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \gamma_i int_t + \delta_i D_t + \epsilon_{it}, \quad (1)$$

where r_{it} is the return to security i at time t , r_{mt} is the return to the market portfolio, int_t is the interest rate, D_t is a dummy variable equal to one during the event window and zero otherwise, and ϵ_{it} is a stochastic error term, assumed to have a zero mean and variance σ_i^2 that is constant over time. The β_i coefficient reflects the sensitivity of security i to changes in overall market conditions while the γ_i coefficient reflects the sensitivity to changes in interest rates. By augmenting the market model with an interest rate variable, we take account of the fact that preferred shares may be more sensitive to interest rate changes than common shares, owing to their similarity to bonds.¹ The coefficient, δ_i , on the event dummy variable represents the abnormal return.

We employ two approaches to examine the relationship between abnormal returns and dividend yields. First, we estimate the abnormal returns to a portfolio of preferred stocks and to a portfolio of their common stock counterparts. It is difficult to predict the magnitudes (or signs) of the abnormal returns to the individual portfolios because other aspects of the budget announcement may be reflected in the abnormal returns. This other news is likely to be reflected in both portfolios because they include the same firms. By focusing on the difference between the abnormal returns to the two portfolios, we are able to control for other new information contained in the budget announcement. According to the tax relevance hypothesis, the increase in the effective tax rate on dividends should have a larger negative impact on high-dividend securities (preferred shares) than on relatively low-dividend securities (common shares). The t -statistic for the difference between the abnormal returns to the preferred and common portfolios is given by

$$t = \frac{\delta_p - \delta_c}{\sqrt{\text{Var}(\delta_p) + \text{Var}(\delta_c) + 2\text{Cov}(\delta_p, \delta_c)}}.$$

This test statistic is calculated by estimating equation (1) for both portfolios within a system of seemingly unrelated regressions (SUR).²

Our second approach is to estimate the relationship between individual abnormal returns and dividend yields across all of the securities in the sample. Individual abnormal returns are specified to be a function of dividend yields and firm specific shocks that are common to both common and preferred shares of the same firm:

$$r_{ist} = \alpha_{is} + \beta_{is}r_{mt} + \gamma_{is}int_t + D_t(\delta_{0i} + \delta_1 div_{is}) + \epsilon_{ist}, \quad (2)$$

where $s = (\text{common, preferred})$ denotes the type of security, the term δ_{0i} , represents the impact of news specific to firm i during the event window, and δ_1 captures the relationship between abnormal returns and dividend yields. The prediction of the tax relevance hypothesis is that this coefficient will be negative.

- 1 We thank an anonymous referee for emphasizing this point. We also performed the analysis using the market model as the prediction equation. The results are very similar to those reported below.
- 2 The estimates are identical to ordinary least squares estimates, however, because the explanatory variables of the two equations are identical (see Theil 1971).

Equation (2) is estimated using both SUR and ordinary least squares (OLS) procedures. While both procedures allow the variances of the error terms to vary among securities, the former takes account of the fact that the error terms may be contemporaneously correlated because of unobserved shocks that are common to some of the firms in the sample. Thus, SUR estimators are potentially more efficient than OLS estimators. As illustrated by Rao (1974), however, if the errors are correlated because of omitted variables, SUR estimators are more sensitive to this specification error and less efficient than OLS estimators. We therefore present results based on both estimation procedures.

III. DATA

An important element of any event study is the determination of precisely if and when the market anticipated the event. A careful search of the financial press over the period surrounding the budget provided no evidence that the dividend tax increase was anticipated by the market; on the contrary, post-budget analyses indicated that the tax change was a surprise (see *Globe and Mail*, 28 Feb. 1986, B9). The budget was announced on the evening of 26 February 1986, after the stock markets had closed. Abnormal returns are therefore estimated for the day following the announcement, 27 February 1986. Approximately 20 per cent of the securities in our sample did not trade on the event day.³ Therefore, abnormal returns also are estimated for a two-day event 'window' that includes the day following the event day. This allows for the possibility that reaction to the budget announcement is reflected in security prices on the day following the event day for securities that did not trade on the event day.

The estimation period begins 9 June 1985 and ends on the last day of the event window. The beginning date was chosen so that the period would begin two weeks after the 24 May 1985 budget. This should provide enough time to insulate our estimates from the effects of the 1985 budget. Sensitivity analysis indicates that our results are robust to alternative estimation periods.

The stock market data used in the study are daily returns included in the TSE/Western database. Our original sample included all firms that had outstanding common and non-convertible preferred stock traded on the Toronto Stock Exchange during the estimation period and that were not in arrears or tax deferred.⁴ This process resulted in a sample of seventy-six firms. Unfortunately, many of the stocks in this sample were either traded very infrequently during the relevant time period or had a number of missing observations. We thus consider only those securities that had less than five missing observations and that were traded on at least 50

3 Infrequent trading may lead to an errors-in-variables problem in the estimation of the market model parameters. Our analysis was repeated using the technique suggested by Dimson (1979) to correct for this potential problem. This correction did not substantially alter the results presented below.

4 The information about tax deferral and arrears is listed in Financial Post Information Service (1985). If a firm issued more than one common or preferred stock during the sample period, the most frequently traded stock was chosen for the sample.

TABLE 1
Dividend yields

	Preferred shares	Common shares
Mean	9.34	3.29
Standard deviation	1.96	1.97
High	13.39	6.78
Low	4.00	0.00
Correlation between dividend yields of stocks issued by the same firm: -0.132		

per cent of the days during the estimation period. Our final sample consists of fifty-three firms. Of these fifty-three firms, sixteen operate in manufacturing industries, thirteen in finance or real estate industries, twelve in mining, quarrying, or oil industries, and the remaining twelve firms operate in transportation, utilities, or retail industries. It is important to note that our sample does not include short-term preferred shares, since they involve private transactions and are not listed on the stock exchanges. These shares are held primarily by institutional investors who do not pay taxes on intercorporate dividends. They would therefore not be affected directly by dividend tax changes.⁵

The value-weighted portfolio of all of the stocks in the TSE/Western database is used as a proxy for the market index, and interest rates are represented by thirty-day commercial paper rates reported by the Bank of Canada.⁶ The dividend yield data are from the December 1985 issue of the *Toronto Stock Exchange Review*. As discussed above, all the dividend yields for the preferred shares in this sample are greater than the dividend yields for their common-share counterparts. As reported in table 1, the average dividend yield to common shares is 3.29 per cent, and the average yield to preferred shares is 9.34 per cent. It is interesting that the dividend yields of common and preferred stocks issued by the same firms are not significantly correlated.

IV. RESULTS

The portfolio-level results are reported in table 2. As expected, the coefficients of the prediction equation indicate that the common-share portfolio is more sensitive to market fluctuations and less sensitive to interest rate changes than the preferred-share portfolio. The negative coefficient of the commercial paper rate indicates that preferred-share prices, like bond prices, fall as interest rates rise. The abnormal return to the portfolio of common shares is not statistically different from zero for either of the event windows, while the abnormal return to the preferred shares is

⁵ These shares accounted for much of the growth in the preferred-share market in the 1980s, primarily because of their use as an inexpensive source of after-tax finance for tax loss firms.

⁶ We also performed the analysis using Treasury bill rates and found very similar results.

TABLE 2
Portfolio analysis

	Preferred portfolio	Common portfolio	Preferred - common	Correlation ^a
Constant	0.0063*	0.0009	-	-
Standard error	(0.0026)	(0.0021)		
Market index	0.1110*	0.8442**	-	-
Standard error	(0.0564)	(0.0450)		
Commercial paper yield	-0.0609*	-0.0076	-	-
Standard error	(0.0272)	(0.0217)		
One-day abnormal return	-0.0090*	0.0003	-0.0093*	0.336*
Standard error	(0.0037)	(0.0030)	(0.0046)	
Two-day abnormal return	-0.0066*	0.0005	-0.0071*	0.203
Standard error	(0.0027)	(0.0022)	(0.0033)	

^a Correlation between abnormal returns of common and preferred shares issued by the same firm.

* Significant at the 5 per cent level.

** Significant at the 1 per cent level.

negative and statistically significant at the 5 per cent level for both. As discussed above, it is difficult to interpret the abnormal returns to the individual portfolios, owing to other news that was released during the budget announcement. We therefore focus on the differential impact of the tax news on these two portfolios. The difference between the abnormal returns to the two portfolios is statistically significant at the 5 per cent level for both event windows. These results suggest that the increase in the dividend tax rate had a larger adverse effect on preferred shares (high-dividend yield securities) than on their common-share counterparts (low-dividend yield securities). These results are consistent with the tax relevance hypothesis.

As indicated in the last column of table 2, the abnormal returns to common and preferred stocks issued by the same firms are positively correlated. Since the dividend yields of these stocks are not positively correlated (see table 1), the correlation between the abnormal returns cannot be attributed to the dividend tax change and therefore must reflect other news released on the event day(s). This correlation is consistent with the hypothesis that the budget announcement had important firm-specific effects that are reflected in the abnormal returns and provides support for our approach that explicitly controls for these effects.

The relationship between abnormal returns and dividend yields is reported in table 3. The coefficient of the dividend yield variable is negative and statistically significant at the 1 per cent level for both event windows. This coefficient provides an estimate of the impact of the tax change on after-tax firm value per percentage point of dividend yield. For example, the OLS estimates for both windows imply that the tax change was expected to reduce the value of a given firm by approximately 0.13 per cent for every percentage point of its dividend yield.

TABLE 3
Relationship between abnormal returns and dividend yields

	SUR	OLS
FULL SAMPLE		
Dividend yield (one day)	-0.1543**	-0.1300**
Standard error	(0.0404)	(0.0429)
Dividend yield (two day)	-0.1141**	-0.1341**
Standard error	(0.0298)	(0.0315)
PREFERRED		
Dividend yield (one day)	0.0516	-0.1300
Standard error	(0.0589)	(0.0755)
Dividend yield (two day)	-0.0186	-0.1672**
Standard error	(0.0441)	(0.0558)
COMMON		
Dividend yield (one day)	-0.3726**	-0.2516*
Standard error	(0.1118)	(0.1199)
Dividend yield (two day)	-0.2142**	-0.2116*
Standard error	(0.0825)	(0.0880)

* Significant at the 5 per cent level.

** Significant at the 1 per cent level.

A potential concern is that our results may reflect differences between common and preferred shares that are independent of dividend taxation. To address this issue, we estimate separately the relationship between abnormal returns and dividend yields for common and preferred shares. These tests are not as strong as those for the combined sample because the variation in dividend yields is smaller within the common and preferred subsamples. Moreover, it is not possible to control for the firm-specific effects of the budget announcement because there is only one stock per firm in each subsample. Instead, we control for industry effects by constraining the δ_0 coefficients to be the same for all stocks within each of the four broadly defined industry groups: manufacturing, finance, mining, and utilities. The results, presented in table 3, are none the less informative. The OLS estimates of the dividend coefficient for the preferred shares are negative and similar to the estimates for the combined sample. The SUR results, however, are insignificant and sensitive to the specification chosen.⁷ This is consistent with Rao's (1974) finding that SUR estimators are more sensitive to specification error than OLS estimators. For the common shares, both the OLS and SUR results indicate a negative and significant relationship between abnormal returns and dividend yields. We interpret these results as providing additional support for the tax relevance hypothesis.

It is interesting to compare our results to the 'back of the envelope' calcula-

⁷ For example, when the δ_0 parameters are not permitted to vary by industry, the SUR estimates of the dividend yield coefficient are *positive*, while the OLS estimates are similar to the OLS results reported in table 3.

tion typically conducted for tax changes of this type. The Canadian tax system is (partially) integrated using the 'gross up and credit' approach. This procedure involves grossing up dividends received by a factor g , calculating federal taxes on the grossed-up dividends at rate m , granting a federal tax credit at rate c on the gross-up, and then determining provincial taxes as a fraction p of federal taxes. The effective personal tax rate on dividends is thus $[m(1+g) - cg][1+p]$. The 1986 budget reduced the gross-up factor from 50 per cent to 33.3 per cent and reduced the dividend tax credit from 68 per cent to 66.67 per cent. For an investor in the highest tax bracket, facing federal and provincial tax rates of 34 per cent and 50 per cent, respectively, these changes resulted in a 9 percentage point increase in the effective personal tax rate on dividends, from approximately 25.5 per cent to 34.67 per cent.⁸ Assuming that dividends do not change, this implies a decrease in the after-tax value of dividends of approximately 12 per cent, which is very similar to our estimates of the dividend yield coefficients for the combined sample. The OLS estimates for the preferred sample are also quite reasonable, although the common-share estimates are rather high.

Our estimates are thus not only statistically significant, but also appear to be of an economically meaningful magnitude. The implied change in the tax rate suggests that the marginal tax clientele for our sample of firms was composed of Canadian investors in the highest tax bracket. In addition, our empirical estimates are consistent with the assumption that investors do not anticipate changes in dividend policy, at least in the short run.⁹ These results provide support for the hypothesis that taxes affect stock prices and lead us to reject the tax irrelevance and open-economy hypotheses, which predict that changes in the domestic taxation of dividends vis-à-vis capital gains should have no impact on the returns to high-dividend yield securities relative to low-dividend yield securities.

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⁸ The provincial tax factors, p , actually vary by province; 50 per cent is an approximate average.

⁹ As pointed out by a referee, these results do not necessarily imply that *dividend policy* can affect firm value. In the long run, firms may adjust their dividend policy to satisfy tax-based clienteles. In equilibrium, there is an optimal aggregate dividend policy, but the dividend policy of an individual firm may be irrelevant. For a discussion of this issue, see Black and Scholes (1974).

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