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the November 12, 1981 Budget

Effects of the Investment Income Deduction
on the Comparison of Investment Returns

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While investment returns available in the capital markets are quoted in terms of pre-tax rates, it is the after-tax rate of return with which the individual investor must be concerned in choosing one form of return over another. Since the various forms of investment return are taxed in different ways and since these returns may be eligible for the \$1,000 investment income deduction,¹ the appropriate choice presents a problem for the relatively small investor with limited resources available for investment and, perhaps, at least part of the \$1,000 investment income deduction still available. For example, such an investor currently faces returns on interest-bearing securities of about 19% and yields on preferred shares of about 12%. Capital gains might be expected to range from a low rate on some preferred shares to a high rate on some common shares. Abstracting from the problem of the individual's risk preferences which requires an adjustment that only the individual can make, the investor should make a choice of the form of return which will provide him with the maximum after taxes on the amount available for investment.

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¹Income Tax Act, Section 110.1.

This paper attempts to address the following question. Which of the three basic returns of Canadian-source interest, taxable dividends or taxable capital gains from the disposition of Canadian securities should an individual investor favour if he has not fully utilized the deduction for such income provided in section 110.1 of the Income Tax Act and if these returns will be taxed annually?

This paper will first examine how the question has been addressed and the deficiencies in that analysis. It will then present an analytical approach designed to overcome these deficiencies and to calculate comparative rates of return which account for important tax effects. It should be emphasized at the outset that none of the analysis of comparative rates of return in this paper explicitly accounts for the risk preferences of an individual. As previously indicated, an adjustment for such risk preference can only be made by the individual investor.

Previous Research

In an earlier paper,² the authors presented an analytical approach to help rank a given dollar return from each of the three basic forms of return comprising interest, taxable dividends and capital gains. That approach "established that \$1 of capital gains should always be preferred to \$1 of interest income and that \$1 of dividend income should always be preferred to \$1 of interest income."³ The approach also

² Lawrence I. Gould and Stanley N. Laiken, "The Effect of Income Taxation on Investment Priorities: The RRSP", (November-December 1977), XXV Can. Tax J. 658-76.

³ Ibid., 661.

provided a means of ranking \$1 of taxable dividend income and \$1 of capital gains through the use of a table which presented federal marginal tax rates at which an individual investor should be indifferent between \$1 of taxable dividend income and \$1 of capital gains.⁴

Since the table presented in the earlier paper was based on the pre-1978 levels of dividend gross-up and tax credit, a new set of calculations was performed with the current rate of gross-up and the tax credit proposed in Resolution 100 of the "Notice of Ways and Means Motion to Amend the Income Tax Act " of the November 12, 1981 Budget. The results are presented in Table 1. Note that this table presents break-even rates of federal marginal tax for an individual choosing between \$1 of taxable dividends and \$1 of capital gains given the investor's expected rate of return on his investments and his expected holding period for the securities owned. If the individual's federal marginal tax rate is higher than that shown in the table, he should select the capital gains producing security and if the tax rate is lower, he should select the taxable dividends producing security.⁵

The following decision rules would result from the use of Table 1.

⁴Ibid., 663.

⁵These results were found to be insensitive to the various provincial rates of tax applied to the federal rates shown in Table 1.

Table 1

Federal Marginal Tax Rate for Selected
Holding Periods and Selected Dividend or Growth Rates
at which Investor is Indifferent Between a \$1 Dividend or
Capital Gain*

Selected Holding Periods Years	Selected Dividend or Growth Rates			
	5%	10%	15%	20%
1	.34	.34	.34	.34
6	.33	.32	.31	.30
11	.32	.30	.29	.28
16	.31	.29	.27	.27
21	.30	.28	.26	.26
26	.29	.27	.26	.25
31	.29	.26	.25	.25
36	.28	.26	.25	.25
41	.28	.26	.25	.24
46	.27	.25	.25	.24
.				
.				
.				
99	.25	.24	.24	.24
.				
.				
.				
150	.24	.24	.24	.24

*These results are based on the use of a dividend tax credit equal to 34% of the dividend as proposed in the November 12, 1981 Budget.

- (a) An investor whose federal marginal tax rate is $22 \frac{2}{3}\%$ ⁶ or lower should always prefer \$1 of taxable dividend to \$1 of capital gains irrespective of the expected rate of return and the expected holding period for the securities.
- (b) An investor whose federal marginal tax rate is over $22 \frac{2}{3}\%$ must base the choice on his federal marginal tax rate, his expected rate of return and his expected holding period for the securities. Given a specification of these three variables or even an approximation of these variables, it is possible to determine from Table 1 the proper choice for any individual investor. Generally, it can be seen from the table that the higher the expected rate of return and the longer the expected holding period, the lower the federal marginal tax rate can be for the individual to benefit from the choice of a \$1 capital gain over a \$1 taxable dividend. Note that at the proposed top federal marginal tax rate of 34% the investor with a one-year holding period would be indifferent between \$1 of capital gain and \$1 of taxable dividend.

It should be noted that Table 1, in part, summarizes a number of tables that tax practitioners and investment advisers often produce and use to compare after-tax returns per dollar of investment income in the form of interest, taxable dividends or capital gains.⁷ However, Table 1 provides a somewhat more realistic comparison between taxable dividends and capital gains in that it allows for comparisons beyond a one-year holding period which is usually a limitation of other

⁶ $22 \frac{2}{3}\%$ is the mathematical lower limit because at this rate the tax on the grossed-up dividend equals the dividend tax credit. Note, however, that this limit is not quite reached even with the extremely long holding period shown in Table 1.

⁷ See, for example, Lyman MacInnis, Personal Money Guide, Richard De Boo Limited and Financial Times of Canada, Toronto, 1981, 1B-49.

tables in use. It also shows that when longer holding periods are considered, capital gains might be favoured by individuals in lower tax brackets. This is often not emphasized when the one-year approach is presented.

Deficiencies in Approaches Used and Possible Alternatives

Unfortunately, Table 1 and other tables which compare after-tax returns per dollar of investment income are of rather limited use primarily because investors are seldom faced with the choice among \$1 of interest income, \$1 of taxable dividends and \$1 of capital gains on comparable investments. As illustrated at the outset of this paper, market rates of return on securities providing these forms of income are not equivalent at a given point in time with pre-tax interest rates being significantly greater than pre-tax dividend yields and with pre-tax capital gains ranging from very low to very high. Table 1 and other such tables are also based on the assumption that the investor has investment income in excess of that which produces the \$1,000 investment income deduction.⁸ This is not always a realistic assumption for many investors who may not have completely exhausted this deduction in a year.

However, Table 1 can be used realistically in comparing the return from \$1 of taxable dividend with \$1 of stock dividend paid by a public corporation and, hence, ultimately taxed as a capital gain⁹

⁸ Gould and Laiken, op.cit., 663.

⁹ The amount of a stock dividend paid by a public corporation is not taxable on receipt by virtue of the subsection 248(1) definition of "dividend" which excludes such a dividend from being considered a taxable dividend, but the stock received is considered to have an adjusted cost base of nil by virtue of paragraph 52(3)(a).

when the individual's \$1,000 investment income deduction has been exhausted. Some public corporations provide their shareholders with this choice directly by the issue of two classes of shares, one paying a taxable cash dividend and the other paying an equivalent stock dividend. In such a case the shareholder should use Table 1 and the decision rules established for its use in this paper to make the appropriate choice of the class of shares in which to invest. This may be one of the few realistic situations in which the table can be used because of the choice between equal amounts of investment return. However, the importance of the situation warrants the presentation and discussion of Table 1.

In an attempt to address the central question posed in this paper with respect to the choice between a given rate of interest and a given, usually lower, rate of taxable dividend yield, many tax practitioners and investment advisers suggest that the pre-tax interest rates must be at least some specified multiple of the pre-tax dividend yield to place the individual investor in the same after-tax position. This factor ranges from 1.45 to 1.58 depending on the individual's province of residence and tax bracket.¹⁰ Note, however, that this approach only accommodates a comparison of interest and taxable dividends, but not interest and capital gains or taxable dividends and capital gains. Also, the approach does not explicitly account for the possible effect of the \$1,000 investment income deduction if all or part of that deduction is available to the investor.

¹⁰See, for example, MacInnis, op.cit., 1B-50. These multiples must be adjusted for the Budget proposal which would reduce the dividend tax credit from 37.5% of the dividend to 34% of the dividend. The result is a reduction of these multiples from the range under the current legislation of 1.53 to 1.79. Note that in a province with a personal tax rate less than 47%, the multiple will be under 1.5 which is not possible under the current legislation.

An approach that would address the central question posed for a given individual investor by accounting for all of the important factors unique to that individual's case would involve calculations of the after-tax returns for each choice available to the individual. One method of approaching the problem in this way would be to do a complete tax calculation for an individual assuming for each such calculation different investment returns from different types of securities. This would allow a comparison of after-tax returns from the various investments. However, a fairly large computer simulation might be necessary to compare a sufficiently broad range of amounts of return and type of return.

Another, more manageable method of addressing the problem involves an analytical approach. Formulating algebraically key relationships in the problem can reduce the amount of calculation in the analysis such that it can be performed on a hand calculator rather than by a large-scale computer simulation.

An Analytical Approach to the Question Posed

1. Interest as the Basis of Comparison

Consider the case of an individual in the 30% federal marginal tax bracket living in the Province of Ontario with its 48% personal tax rate for 1982. This individual can earn a return of 19% in the form of Canadian-source interest (henceforth referred to as interest) on funds available for investment. What return must this individual earn in (a) Canadian-source taxable dividends (henceforth referred to as dividends) or (b) capital gains taxed annually from Canadian securities (henceforth referred to as capital gains) to earn the same after-tax rate of return as the after-tax return in interest?

Table 2 presents an equivalent pre-tax rate of return in dividends and capital gains to a 19% pre-tax rate of return in interest. These results were computed from a set of general relationships derived algebraically and presented in Table A1 of the appendix to this paper. Note that the equivalent returns shown in the table are dependent on the amount that the individual has available for investment and the amount of the \$1,000 investment income deduction that remains unused at the time of the choice. The amounts of unused deduction shown in Table 2 were chosen arbitrarily for purposes of illustration. The unused deduction and the amount available for investment can be set at any level in the appropriate formula provided in the appendix.

From Table 2, it can be seen that the individual with less than \$3,421 to invest and \$650 of his investment income deduction still available requires only 12.64% in dividends to be in an equivalent after-tax position to 19% in interest. Similarly, it can be seen that the individual with more than \$5,155 to invest and \$350 of his investment income deduction still available requires 13.58% in capital gains to be in an equivalent after-tax position to 19% in interest.

If the amount invested falls between the upper and lower limits shown in the table for any amount of unused investment income deduction, an equivalent rate of return can be found by the use of a formula presented in the appendix. Since the spread between the upper and lower limits for the interest and dividend comparison is not very large in the Province of Ontario when the dividend tax credit proposed by the November 12, 1981 Budget is used, use of the formula in comparison 1 of Table A1 of the appendix is not essential in this case. However, in provinces such as Newfoundland with its higher provincial rate of personal tax, the spread between the limits is greater and the formula will be useful.

Table 2

Equivalent Pre-Tax Returns for an Individual in the 30%
Federal Marginal Tax Bracket ¹¹

Province of Ontario

Pre-Tax Interest Rate: 19.00%

Amount Available Unused S.110.1 Deduction	Dividends		Capital Gains	
	Below	Above	Below	Above
\$350	\$1,842	\$1,849	\$1,842	\$5,155
650	3,421	3,434	3,421	9,574
1,000	5,263	5,283	5,263	14,729
Equivalent Pre-Tax Return	12.64%	12.62%	19.00%	13.58%

¹¹ These results are based on the use of a dividend tax credit equal to 34% of the dividend as proposed in the November 12, 1981 Budget.

To provide an example of the use of such a formula, if the individual had \$5,000 to invest and \$650 of investment income deduction unused, he would require 16.34% in capital gains to be in an equivalent after-tax position to 19% in interest. This rate was computed from the formula presented in the bottom segment of comparison 2 of Table A1 of the appendix.

Although it is not strongly evidenced in Table 2, the relationship between pre-tax interest and pre-tax dividends varies not only with the individual's provincial tax rate and federal marginal tax rate as suggested by tax practitioners and investment advisers, but also with the amount available for investment when the section 110.1 investment income deduction is considered, particularly, in provinces with higher rates of personal tax. Had similar tables for individuals in other tax brackets been presented, it would have been evident that the necessary multiples to convert pre-tax dividends to pre-tax interest increased with increasing marginal tax brackets.

It should be noted that relatively small differences in the amounts available for investment can result in considerable differences in the required dividend yield to be in an equivalent after-tax position to a given interest rate. For example, it could be shown with an analysis similar to that in Table 2, that an individual resident in Newfoundland in the 34% federal marginal tax bracket with all of his \$1,000 investment income deduction unused and up to \$5,263 to invest requires a pre-tax dividend yield of 12.36% while the same individual with over \$5,545 or only \$282 more to invest requires only 12.02% to be in the same after-tax position as he would be with a 19% interest return on these amounts. This is a difference of 34 basis points or between 1/4 and 1/2 of 1%. Comparing this result with Table 2 shows that this difference decreases with decreasing federal

marginal tax rates. This difference can be shown to be much greater under the current dividend tax credit.

Finally, note the substantial difference of almost 550 basis points in the required return from capital gains between an amount available for investment below the lower dollar limit and an amount above the higher dollar limit. This difference is due to the fact that below the lower limit both capital gains and interest would not attract tax falling completely under the section 110.1 deduction, but above the upper limit capital gains attract substantially less tax than interest. The more highly the individual is taxed, the greater is that difference in required rate of return on capital gains because of their more favourable tax treatment. Thus, the individual investor's choice of one form of return over another can be affected by the amount available for investment when after-tax returns are compared.

It is interesting to note that the difference between a required pre-tax return on dividends at about 12.6% and a 19% pre-tax rate of return in interest is approximately the difference currently observable for these yields in the market if long-term bonds are compared with preferred stock. The fact that a considerably lower yield from dividends on such stock is considered to be equivalent to the yield on bonds despite the higher risk of investment in stock suggests that pricing of these securities in the capital markets is consistent with the tax considerations being analyzed in this paper.

2. Dividends as the Basis of Comparison

A similar type of analysis to that presented in Table 2 can be done for the same individual considering an investment in preferred shares currently yielding 12%. What return must the individual earn in (a) interest or (b) capital gains to be in an equivalent after-tax position to 12% in dividends? Table 3 presents the equivalent pre-tax rates of return necessary to achieve the after-tax return of a 12% dividend return.

Table 3

Equivalent Pre-Tax Returns for an Individual in the 30%
Federal Marginal Tax Bracket¹²

Province of Ontario

Pre-Tax Dividend Rate: 12.00%

Amount Available to Invest Unused S.110.1 Deduction	Interest		Capital Gains	
	Below	Above	Below	Above
\$350	\$1,940	\$1,944	\$1,944	\$5,420
650	3,603	3,611	3,611	10,067
1,000	5,543	5,555	5,555	15,488
Equivalent Pre-Tax Return	18.04%	18.07%	18.04%	12.91%

¹² These results are based on the use of a dividend tax credit equal to 34% of the dividend as proposed in the November 12, 1981 Budget.

Again, if the amount invested falls between the upper and lower limits shown in the table for any amount of unused investment income deduction an equivalent rate of return can be found. For example, if the individual had \$6,700 to invest and \$650 of investment income deduction unused, he would require 14.35% in capital gains to be in an equivalent after-tax position to 12% in dividends. This result can be computed from the formula presented in the bottom segment of comparison 4 in Table A2 of the appendix.

Note from Table 3 that when the amount available for investment in securities producing capital gains is below the lower limit shown, the pre-tax required rate of return from such capital gains must be substantially higher than the pre-tax dividend yield to put the individual on an equivalent after-tax basis. While capital gains are treated quite favourably, particularly with respect to the section 110.1 deduction, dividends subject to the section 110.1 deduction not only are not taxed but also provide a dividend tax credit which can be applied against tax on other sources of income. This latter effect is even more favourable than the effect of taxation on capital gains under section 110.1.

Note, also, that an individual in the 30% federal marginal tax bracket with an amount available for investment above the upper limits shown in the table requires a pre-tax rate of return on capital gains which is slightly higher than that for dividends, since in that tax bracket dividends are preferable by a small margin. This margin can be shown to be much greater in favour of dividends for

an individual in a much lower tax bracket. On the other hand, for an individual in the proposed top tax bracket, it can be shown that a pre-tax rate of return in capital gains can be equal to a pre-tax rate of 12% in dividends to place the investor in an equivalent after-tax position. These results are consistent with the ranking of dividends and capital gains which can be derived from Table 1. These results, however, provide the added information of how much pre-tax premium is required from one form of return over the other to place the investor in an equivalent after-tax position.

Again, note the considerable difference of 513 basis points in required rate of return from capital gains when compared with dividends between an amount available for investment below the lower limit and above the upper limit. Thus, the effects of the section 110.1 deduction in this comparison can be substantial.

3. Capital Gains as the Basis of Comparison

For the purposes of illustration and completeness, Table 4 provides the basis for a similar analysis of returns equivalent to a 20% pre-tax capital gain realized and, hence, taxed annually for an individual in the 30% federal marginal tax bracket in Ontario. The formulae in the bottom segment of comparisons 5 and 6 of Table A3 of the appendix could be used to compute, for example, the equivalent rates of return in interest and dividends to a 20% pre-tax capital gain if the individual had, say, \$5,000 to invest and \$650 of his section 110.1 deduction available. In this particular case, he would require 25.59% in interest and 16.99% in dividends.

Table 4

Equivalent Pre-Tax Returns for an Individual in the 30%
Federal Marginal Tax Bracket¹³

Province of Ontario

Pre-Tax Capital Gain Rate: 20.00%

Amount Available to Invest Unused \$.110.1 Deduction	Interest		Dividends	
	Below	Above	Below	Above
\$350	\$1,749	\$3,499	\$1,753	\$3,499
650	3,249	6,499	3,256	6,499
1,000	4,999	9,999	5,010	9,999
Equivalent Pre-Tax Return	20.00%	27.99%	13.30%	18.59%

¹³ These results are based on the use of a 34% dividend tax credit equal to 34% of the dividend as proposed in the November 12, 1981 Budget.

Conclusions

The primary purpose of this paper has been to present a method of addressing the question of which form of investment return will provide an individual investor having at least part of his \$1,000 investment income deduction unused and a given amount available for investment with the maximum rate of return after taxes. The forms of investment return considered in the analysis were: Canadian-source interest income taxed annually, Canadian-source taxable dividends taxed annually and capital gains from Canadian securities realized and taxed annually. Some examples of the application of this method were presented. Also, a set of formulae is provided in an appendix so that the method can be applied to the situation of any particular individual given any particular set of circumstances.

This form of analysis allows a more realistic comparison of pre-tax investment returns which vary in rate than other forms of analysis which compare a given rate of one type of return with the same rate of another type of return. The analysis also accounts for the effects of the \$1,000 investment income deduction which other forms of analysis often do not do. An implicit assumption of this analysis is that the additional income from investments under consideration does not result in a change in the investor's marginal tax rate. This assumption is realistic for individuals in the higher tax brackets which are quite wide. Where the assumption is not realistic, the marginal tax rate used should be the weighted average of the rates at which the incremental income from investments will be taxed.

It was shown that a proper comparison of the investment returns considered depends on the amount of the \$1,000 investment income deduction still available when the investment decision is being made and the amount that the individual has available for investment in addition to the

individual's tax bracket. The sensitivity of the comparison of investment returns to these variables was also noted.

Appendix: Formulae for Computation of Equivalent Investment Returns

The paper presented a number of specific examples of comparisons of investment returns in Tables 2, 3, and 4. These examples demonstrated how, given a pre-tax rate of one form of investment return available to an individual investor in a given tax bracket with a given amount of the \$1,000 investment income deduction unused and a given amount to invest, an equivalent pre-tax rate of another form of investment return can be found to put the individual in the same after-tax position.

Tables A1, A2 and A3 present the formulae that were used to compute the amounts shown in Tables 2, 3 and 4 of the paper. The following is a list of variables used in the tables of this appendix:

i = pre-tax rate of Canadian-source interest taxed annually

d = pre-tax rate of Canadian-source dividends taxed annually

g = pre-tax rate of capital gains from Canadian securities realized
and taxed annually

X = unused dollar amount of the \$1,000 investment income deduction
provided by section 110.1

A = dollar amount of funds available for investment by the individual

t_f = the individual's federal marginal tax rate

t_p = the provincial rate of personal tax applicable to the individual

Table A1

Formulae for Calculation of Pre-Tax Rate of Dividends
and Capital Gains Given a Pre-Tax Interest Rate

Comparison	1 *	2
Given Rate of	Interest (i)	Interest (i)
To Find Equivalent Rate of	Dividends (d)	Capital Gains (g)
For an Amount Invested(A) Below**	$\frac{X}{i}$	$\frac{X}{i}$
Equivalent Rate Given By	$d = \frac{i}{1 + .34 (1+t_p)}$	$g = i$
For an Amount Invested(A) Above †	$\frac{X\{1 - (1.5t_f - .34)(1+t_p)\}}{1.5i\{1 - t_f(1+t_p)\}}$	$\frac{X\{2 - t_f(1+t_p)\}}{i\{1 - t_f(1+t_p)\}}$
Equivalent Rate Given By	$d = \frac{i\{1 - t_f(1+t_p)\}}{1 - (1.5t_f - .34)(1+t_p)}$	$g = \frac{i\{1 - t_f(1+t_p)\}}{1 - .5t_f(1+t_p)}$
For an Amount Invested(A) Between Amounts Computed Above		
Equivalent Rate Given By ††	$d = \frac{i\{1 - t_f(1+t_p)\}A + Xt_f(1+t_p)}{\{1 + .34(1+t_p)\}A}$	$g = \frac{iA\{1 - t_f(1+t_p)\} + Xt_f(1+t_p)}{A}$

* These formulae use a dividend tax credit equal to 34% of the dividend as proposed by the November 12, 1981 Budget.

** In provinces with a personal tax rate of less than 47% this limit in comparison 1 is given by:

$$\frac{X\{1 + .34(1+t_p)\}}{1.5i}$$

†† In provinces with a personal tax rate of less than 47% this limit in comparison 1 is given by:

$$\frac{X}{i}$$

†† In provinces with a personal tax rate of less than 47% this rate in comparison 1 is given by:

$$d = \frac{iA - Xt_f(1+t_p)}{\{1 - (1.5t_f - .34)(1+t_p)\}A}$$

Table A2

Formulae for Calculation of Pre-Tax Rate of Interest
and Capital Gains Given a Pre-Tax Dividend Rate

Comparison	3*	4*
Given Rate of	Dividends (d)	Dividends (d)
To Find Equivalent Rate of	Interest (i)	Capital Gains (g)
For an Amount Invested(A) Below **	$\frac{X}{d \{1 + .34 (1 + t_p)\}}$	$\frac{X}{1.5d}$
Equivalent Rate Given By	$i = d \{1 + .34 (1 + t_p)\}$	$g = d \{1 + .34 (1 + t_p)\}$
For an Amount Invested(A) Above †	$\frac{X}{1.5d}$	$\frac{2X \{1 - .5t_f (1 + t_p)\}}{d \{1 - (1.5t_f - .34) (1 + t_p)\}}$
Equivalent Rate Given By	$i = \frac{d \{1 - (1.5t_f - .34) (1 + t_p)\}}{1 - t_f (1 + t_p)}$	$g = \frac{d \{1 - (1.5t_f - .34) (1 + t_p)\}}{1 - .5t_f (1 + t_p)}$
For an Amount Invested(A) Between Amounts Computed Above		
Equivalent Rate Given By ††	$i = \frac{d \{1 + .34 (1 + t_p)\} A - X t_f (1 + t_p)}{A \{1 - t_f (1 + t_p)\}}$	$g = \frac{d A \{1 - (1.5t_f - .34) (1 + t_p)\} + X t_f (1 + t_p)}{A}$

* These formulae use a dividend tax credit equal to 34% of the dividend as proposed by the November 12, 1981 Budget.

** In provinces with a personal tax rate less than 47% this limit in comparison 1 is given by:

$$\frac{X}{1.5d}$$

† In provinces with a personal tax rate less than 47% this limit in comparison 1 is given by:

$$\frac{X \{1 - t_f (1 + t_p)\}}{d \{1 - (1.5t_f - .34) (1 + t_p)\}}$$

†† In provinces with a personal tax rate less than 47% this rate in comparison 1 is given by:

$$i = \frac{d A \{1 - (1.5t_f - .34) (1 + t_p)\} + X t_f (1 + t_p)}{A}$$

Table A3

Formulae for Calculation of Pre-Tax Rate of Interest
and Dividends Given a Pre-Tax Capital Gains Rate

Comparison	5	6 *
Given Rate of	Capital Gains (g)	Capital Gains (g)
To Find Equivalent Rate of	Interest (i)	Dividends (d)
For an Amount Invested(A) Below	$\frac{X}{g}$	$\frac{X\{1+.34(1+t_p)\}}{1.5g}$
Equivalent Rate Given By	$i = g$	$d = \frac{g}{1+.34(1+t_p)}$
For an Amount Invested(A) Above	$\frac{2X}{g}$	$\frac{2X}{g}$
Equivalent Rate Given By	$i = \frac{g\{1-.5t_f(1+t_p)\}}{1-t_f(1+t_p)}$	$d = \frac{g\{1-.5t_f(1+t_p)\}}{1-(1.5t_f-.34)(1+t_p)}$
Invested(A) Between Amounts Computed Above		
Equivalent Rate Given By	$i = \frac{gA - Xt_f(1+t_p)}{A\{1-t_f(1+t_p)\}}$	$d = \frac{gA - Xt_f(1+t_p)}{A\{1-(1.5t_f-.34)(1+t_p)\}}$

* These formulae use a dividend tax credit equal to 34% of the dividend as proposed by the November 12, 1981 Budget.

As an example of how these formulae can be used, consider the case of an individual investor in the 25% federal marginal tax bracket living in the Province of Alberta with its 38.5% provincial rate of tax. Assume this individual has \$250 of his investment income deduction still available and has \$1,450 available to invest. This individual is considering an investment in a bond which will return 17% in interest before tax. What pre-tax dividend yield on a preferred share is necessary to put the investor in the same after-tax position as he would be in by choosing the bond?

The necessary formulae for this comparison are found in Table A1 under comparison 1 involving a given rate of interest and an equivalent dividend yield. Since the provincial rate of personal tax is less than 47%, the lower limit on the amount invested is given in the footnote by:

$$\frac{X\{1 + .34 (1 + t_p)\}}{1.5i} = \frac{\$250\{1 + .34 (1.385)\}}{1.5(.17)} = \$1,442$$

Since the amount available for investment at \$1,450 is higher than this limit, the upper limit on the amount invested must be checked.

It is given by:

$$\frac{X}{i} = \frac{\$250}{.17} = \$1,471$$

Since the amount available for investment is between these two limits, the appropriate equivalent dividend yield is given by:

$$\begin{aligned} d &= \frac{iA - Xt_f(1 + t_p)}{\{1 - (1.5t_f - .34) (1 + t_p)\}A} \\ &= \frac{.17(\$1,450) - \$250(.25) (1.385)}{\{1 - (1.5 \times .25 - .34) (1.385)\}\$1,450} \\ &= .1159 \end{aligned}$$

Therefore, the investor in the case set out requires a pre-tax dividend yield of only 11.59% to receive the same after-tax return as that from a pre-tax 17% interest return.

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