

MACRO-ECONOMIC EFFECTS OF INFLATION-INDUCED  
TAXES ON CAPITAL

by John Bossons\*

Abstract: One important side-effect of inflation has been to increase effective tax rates on income from capital. This paper describes the extent of these inflation-induced increases at both the personal and corporate level. It also discusses the effect of these tax increases on aggregate savings and investments. Overall macroeconomic effects of indexing corporate capital cost allowances are estimated using the Institute for Policy Analysis FOCUS model.

1. Increases in personal income taxes on capital

Taxes on capital which are levied at the personal level have increased substantially over the past decade. There are two principal components of this increase: (1) the introduction of the capital gains tax enacted as part of the 1971 income tax reform package and (2) the effect (unanticipated in 1971) of the substantial increase in inflation that occurred during the past decade. Additional relevant changes include revisions in the dividend tax credit and changes (both upwards and downwards) in the real amount of savings which may be invested in tax-deferral schemes such as RRSPs.

Because I am focusing on the macroeconomic effects of tax changes, the relevant way to specify tax rates is in terms of the difference they make to anticipated returns on investment assets. Consequently,

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the relevant rate of inflation is that expected over the longer term by marginal investors in the market. Analysis of long-term government bond yields indicates (1) that the marginal tax rate implicit in current yield differentials is close to zero, and (2) that the anticipated average rate of inflation over the next twenty years has risen from 3% in 1971 to 11% in 1981.

The components of effective ex ante tax rates on accrued capital gains imposed by the current (1981) capital gains tax are shown in Table 1 for typical examples of different investment assets. All assume no leverage, and so ignore the tax consequences of borrowing. It should be noted that most loans borrowed by individuals are obtained either directly or indirectly (through non-sheltered intermediaries) from other individuals, so that in examining taxes at the personal level it is appropriate to regard the tax consequences of borrowing as redistributive among individuals, thus having no effect on average effective tax rates on personal wealth.

As Table 1 indicates, there is substantial variation in effective ex ante tax rates on capital gains accrued on different personal investment assets. For investments not made through tax shelters, this variation reflects differences in (1) the ratio of real capital gains to inflation-induced (nominal) capital gains, and (2) the normal duration of holding periods for different investments. Assumptions underlying Tables 1 and 2 are listed in Table A-1; for more details see Bossons (1981). The tax rates calculated in Table 1 are for an individual in the 56% tax bracket; it is noteworthy that effective ex ante tax rates on accrued capital gains now exceed 56% on three out of four of the unsheltered asset types shown in this table.

What is relevant to an analysis of personal savings and its allocation is of course the total effect of all taxes and not just changes in one particular tax. Changes in the effects of all personal income taxes are shown in Tables 2 and 3. Table 3 summarizes the impact of all tax changes on real after-tax rates of return, assuming for the purposes of this table that anticipated pretax real returns remain unchanged.

## 2. Effects of tax changes at personal level

The nature of the allocative impact of tax changes depends on the extent to which they are capitalized in asset prices. It is noteworthy that capitalization of the tax changes affecting assets other than principal residences is limited by two important factors: (1) the importance of non-resident investors, who are generally not affected by Canadian capital gains taxes, and (2) the growth over the past decade in the relative importance of tax-sheltered funds administered by institutions. It would appear reasonable to assume that, with the important exception of principal residences, virtually no capitalization has occurred, so that the impact of the tax changes has been not on the cost of capital to firms but rather on the after-tax real rates of return accrued by Canadian individuals. Consequently, the average after-tax real rate of return on unsheltered savings has dropped significantly.

This conclusion is reinforced by what has happened to prices of owner-occupied housing. While urban housing markets differ in demand growth and inherent or regulation-induced scarcity conditions on the supply side, it would appear that in most large urban housing markets the tax advantage of investing in a principal residence which arises from its exemption from the unindexed capital gains tax is fully capitalized in prices. Given currently expected inflation rates, the present value of this tax advantage is about 30% of current housing prices; see Bossons (1980).

While there is considerable controversy over the magnitude of the elasticity of personal saving with respect to after-tax real rates of return, there is little disagreement as to its sign. The decline in after-tax real rates of return implies a reduction in aggregate personal saving, relative to what it would otherwise be. Over the past decade, the impact on personal savings of the decline in real after-tax rates of return has been offset by two factors: (1) the increase in availability of tax-sheltered savings plans (including RRSPs, employee pension plans, and recently personal company shareholder pension plans), and (2) the positive short-run effect on savings of unanticipated increases in the rate of inflation which temporarily increase savings rates to

rebuild inflation-eroded real liquid assets. These two factors are of declining importance. On the one hand, the availability of sheltered investments is being reduced by the inflation-induced reduction in real RRSP contribution limits. On the other, the transitory increase in personal savings rates due to unanticipated inflation will continue only if inflation continues to accelerate. Consequently, assuming a stable or declining inflation rate over the next decade, the reductions in the after-tax rates of return on investments outside tax-shelter schemes will result in a declining rate of personal savings (unless offset by significant expansion in the availability of RRSPs and similar tax shelters).

Beyond this potential impact on aggregate savings, the tax changes that have occurred in the past decade have had a material effect on the allocation of savings, inducing increases in real investment in residential structures and decreases in the flow of funds from Canadian individuals into direct investments in common stocks.

### 3. Increases in corporate income taxes

I have elsewhere\* reported on the effect of inflation on effective corporate tax rates, and so will review this only in very summary terms. At the corporate level, the change in effective tax rates occurs not because of the introduction of a new tax but rather because the existing tax on capital (the corporation income tax) is not indexed.

The change in effective tax rates that has occurred is indicated by the numbers shown in Table 4 for a sample of 149 large firms for which detailed financial accounts could be reconstructed on an inflation-corrected basis. These changes in effective tax rates include the effects of legislated tax changes as well as the effects of inflation.

The effects of inflation are separated out from the effects of legislated changes in Table 5. As this table indicates, the nominal reductions only offset 60 percent of the inflation-induced increase. As a result, real corporate taxes were increased by more than 20 percent in spite of the nominal reductions.

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\*Bossons, Tarasovsky, and Waslander (1980); Bossons (1980).

#### 4. Effects on business investment

The inflation-induced increases in corporate taxes change the anticipated after-tax real rate of return on new business investment not directly but through their effect on the real present value of future tax reductions resulting from capital cost allowances. In order to evaluate this impact, I assume that an inflation-accounting scheme for tax purposes is implemented by indexing capital cost allowances, providing for inventory revaluations, and also taking into account inflation-induced gains on debt, with the latter implemented essentially as recommended by the Ontario Committee on Inflation Accounting. The debt adjustment is in effect implemented by restricting the indexing of capital cost allowances to the equity-financed portion of investments. To be able to simulate the effect of implementing this proposed change in corporate taxation, I have assumed that, on average, 50% of new investments are financed by debt.

In an earlier paper (Bossons (1980)), I simulated the effect of indexing capital cost allowances by implementing an investment tax credit with the same real present value. To do this without affecting current revenues from corporate taxes, it was necessary to accompany the tax credit with an increase in corporate tax rates.

Since that paper was done, the FOCUS model has been revised to permit direct simulation of the effects of indexing capital cost allowances. Indexing CCA's differs from the equivalent tax credit in that its effects on tax revenues are delayed. Consequently, markedly different effects flow from imposing the same policy constraint as before (i.e., no reduction in total revenues from the corporate income tax in the first two years after implementing indexation). In particular, in the first two years after implementing indexation, the direct effects of indexation on tax revenues are relatively small, and are more than offset by the indirect effects on corporate tax revenues of the increases in profitability engendered by the increase in aggregate demand caused by the additional investment induced by indexing capital cost allowances. It consequently turns out that no offsetting increase in tax rates is necessary.

The result of implementing a 50 percent indexation of capital cost allowances on new investment (starting in 1981) have been simulated under several different sets of assumptions. These results are summarized in Tables 6 to 9. In all cases, the supply of money is assumed unchanged.

The initial effect of 50% indexing of CCA's is to increase business investment in plant and equipment, by about 2.5 percent in 1981, rising to about 7 percent in 1983. This in turn induces increases in consumption and imports; the net effect is an increase in real GNP and a demand-induced increase in prices in the first few years.

The subsequent effects depend on the balance of payments adjustments to the imports induced by the additional investment. The FOCUS model has relatively inelastic capital flows, so that some devaluation of the Canadian dollar is required to generate offsetting exports in spite of increased interest rates. This can be seen in the second column of Table 6. Comparable results for a different version with more elastic short-term capital flows are shown in Table 7; the exchange rate is less affected in this case. The smaller demand increase in 1983 resulting from the different balance of payments adjustments implies lower corporate profits, which in turn causes a somewhat lower investment in plant and equipment. This is even more the case if a fixed exchange rate policy regime is imposed, as is shown by Table 8.

The FOCUS model is neoclassical in its longer-term properties. In particular, product prices and productivity are both affected by changes in the capital/labour ratio, reflecting shifts in the aggregate supply function that are caused by increased capital formation. Consequently the cumulative supply-side effects on prices of the increased investment in plant and equipment gradually come to dominate the demand-side effects that initially caused prices to increase. In all four simulations reported in Tables 6 to 9, the 1990 capital stock (measured in 1971 dollars) is between 27 and 32 billion dollars higher as a result of the indexation-induced increase in investment. This represents a 2½ percent increase in the magnitude of the capital/labour ratio.

With prices and productivity reflecting this change in the capital/labour ratio, the magnitude of the consequent reduction in prices depends on the balance of payments adjustment model assumed. The biggest price

reduction occurs in the "intermediate" case summarized in Table 7 (this case is intermediate in terms of the variance of the exchange rate). This partly reflects the effects of a smoother increase in real GNP over the decade, with less variation in aggregate demand.

The "fixed-price" (fixed-markup) version of the model is not a plausible specification for analyzing the effects of a policy change that causes the capital/labour ratio to be altered. The results using this version are included in Table 9 because it corresponds to the pricing models built into a number of macroeconomic models. The results shown in Table 9 show the potential sensitivity of any longer-term simulation to the assumption of a pricing model that contains no longer-term factor price equilibration mechanism. The major effect of this misspecification given the assumed floating exchange rate is to (erroneously) make Canadian exports increasingly non-competitive and to drive up Canadian interest rates; this in turn causes real GNP to be understated.

While there are important differences in the results presented in Tables 7 - 8, there are also important changes common to all three simulations. Real GNP is increased by approximately 2 percent by the end of the decade. Prices are somewhat reduced. Unemployment is significantly lower, even though still above the "natural rate" at the end of the decade.

The fiscal effects of the 50% indexation of CCA's are summarized in Table 10. For all governments combined, a substantial net inflow of funds is generated over the decade for all simulations but the last. (The 1990 deficit in the last case is the result of the fall-off of GNP caused by the misspecified pricing model.) For the federal government, the positive net inflow experienced over the first half of the decade is not maintained in the second half; this reflects the higher share of corporate tax revenues (and hence of corporate tax reductions) allocated to the federal government.

In summary: The indexation of capital cost allowances causes some redistribution of tax revenues from the federal government to provincial governments in the longer term. Otherwise, however, the effect of

indexation is to reduce the deficit of all governments combined as well as to reduce both unemployment and prices. Real GNP is increased. The indexation of capital cost allowances is a clearly feasible way by which the federal government can both increase revenues and increase growth.

Table 1

COMPONENTS OF THE 1981 EFFECTIVE TAX RATES  
ON CAPITAL GAINS ACCRUED FROM DIFFERENT  
INVESTMENT ASSETS

	<u>Accrual-based taxation of 50% of real gains</u>	<u>Effect of deferral with zero inflation</u>	<u>Effect of lack of indexation</u>	<u>Effect of deferral on impact of inflation</u>	<u>Actual effective tax rate</u>
Real estate:					
Speculative renovation	28.0	-0.7	+44.1	-4.2	67.2
Income property	28.0	-0.6	+554.6	-242.0	340.0
Common stocks:					
Speculative new issues	28.0	--	+18.5	--	46.5
Large public company	28.0	-1.3	+186.0	-54.7	158.0
Principal residences and tax-sheltered investments	--	--	--	--	--

Note: Effective tax rates are calculated for an investor with a marginal tax rate of 56%. For the purpose of this table, expected pretax rates of return are assumed to be as specified in the appendix. For details of calculation, see appendix. All figures are expressed as percentages of real pretax income. In all cases, investments are assumed to be unlevered. The expected rate of inflation is assumed to be 11%.

Table 2

CHANGES IN EFFECTIVE TAX RATES ON  
DIFFERENT INVESTMENT ASSETS, 1971-81,  
FOR INVESTOR IN 56% TAX BRACKET

	<u>Effective tax rate in 1971</u>	<u>1971-81 changes</u>		<u>Effective tax rate in 1981</u>
		<u>Effect of 1971 tax reform</u>	<u>Subsequent changes</u>	
Principal residence and tax-sheltered savings	--	--	--	--
Real estate:				
Speculative renovation	11.3	+31.5	+11.0	53.8
Income property	50.0	+18.6	+15.8	84.4
Common stocks:				
Speculative new issues	--	+33.5	+13.0	46.5
Large public companies	27.0	+26.7	+21.8	75.5
Long-term bonds	96.0	--	+118.3	214.3

Notes: This table shows the effects of the tax changes introduced by the 1971 Tax Reform Act and the subsequent changes in the dividend tax credit and the ability to defer taxable realization of capital gains. It also reflects the increase in the expected rate of inflation (assumed to be 3% in 1971 and 11% in 1981). Taxes are calculated assuming a 56% marginal tax rate. For the purpose of this table, expected pretax rates of return are assumed unchanged over the entire period. For other assumptions and details of calculations, see Appendix. All numbers in the table are expressed as percentages of pretax real income. In all cases, investments are assumed to be unlevered. Where a range of holding periods is shown in Table A-1 in the appendix, the shorter period has been used in 1971 and the longer period in 1981.

Table 3

EFFECTS OF THE TAX CHANGES ON REAL  
AFTER-TAX RETURN ON INVESTMENT,  
ASSUMING NO CHANGE IN REAL PRETAX RETURNS

<u>Type of investment</u>	<u>Pre-1972 tax system</u>	<u>Effect of 1971 tax changes</u>	<u>Effect of changes since 1971</u>	<u>Current tax system</u>
Principal residence	.05	--	--	.05
Equity investment in real estate:				
Speculative renovation	.071	-.025	-.009	.037
Income property	.025	-.069	-.0079	.0078
Equity investment in common stocks:				
Speculative new issue	.150	-.0502	-.0195	.0803
Large public company	.0438	-.016	-.0131	.0147
Long-term bonds	.0014	--	-.041	-.040
Tax-sheltered investments:				
Common stocks (large public cos.)	.06	--	--	.06
Mortgages and bonds	.035	--	--	.035

Notes: As in Table 2

Table 4

EFFECTIVE TAX RATES ON REAL PRETAX INCOME,  
1966-69 AND 1978-79  
(sample of 149 non-financial corporations)

	<u>1966-69</u>	<u>1978-79</u>	<u>Percent</u> <u>change</u>
	%		
Energy-mining sector (46 firms)	24.9	36.1	+45
Manufacturing sector (69 firms)	42.1	51.3	+22
Utilities/misc. sector (34 firms)	30.7	28.6	-7

Notes: Figures are average ratios of aggregate taxes accrued in each year on a flow-through basis (excluding deferred taxes) to aggregate pretax incomes, with the latter restated to be net of both depreciation calculated on a replacement cost basis and to include estimated inflation-induced gains on debt. See Bossons (1980).

Table 5

AGGREGATE REVENUE EFFECTS  
 OF 1969-79 CHANGES IN CORPORATE INCOME TAX  
 (millions of dollars, 1978-79 average)

	<u>Revenue effect</u>	<u>Percent of total revenue</u>
Tax increase attributable to effects of inflation	2,901	38.9
Plus: Effect of legislated tax increases on firms in energy sector	<u>397</u>	5.3
	3,298	
Less: Tax reductions:		
Reductions in corporate tax rates:		
General	700	
Additional for manufacturing and processing	400	
Accelerated writeoff for manufacturing and processing	425	
R and D incentives	<u>150</u>	
	<u>1,675</u>	22.5
Net increase in taxes	<u><u>1,623</u></u>	21.8

Source: Bossons (1980), Tables 6 and 7.

Table 6

MACRO CONSEQUENCES OF 50% INDEXING OF CAPITAL  
COST ALLOWANCES ON NEW INVESTMENT, STARTING IN 1987  
(unchanged FOCUS model)

	Percentage change in			
	1981	1983	1986	1990
<u>Real flows</u>				
Business investment				
In non-residential structures	2.5	7.1	2.0	5.3
In machinery and equipment	2.8	8.0	0.5	4.3
Other induced flows				
Consumption	0.1	0.9	0.9	1.4
Exports	0.1	0.8	-0.7	0.7
Imports	0.5	1.5	-0.3	0.6
Real GNP	0.4	1.6	0.6	1.8
<u>Labour market</u>				
Unemployment rate	-1.6	-9.4	-4.0	-10.3
<u>Prices</u>				
Annual wage rate	0.2	1.5	0.7	1.8
Consumer price index	0.3	1.2	-0.2	-0.1
Foreign exchange rate (C\$/US\$)	0.6	2.3	-0.2	2.9
Interest rate (1-3 year bonds)	1.3	3.8	2.1	4.2

Note: All changes are relative to a control solution tuned to DRI forecast.

Table 7

MACRO CONSEQUENCES OF 50% INDEXING OF CAPITAL  
COST ALLOWANCES ON NEW INVESTMENT, STARTING IN 1981

(FOCUS model altered to increase  
mobility of short-term capital flow)

	Percentage change in			
	1981	1983	1986	1990
<u>Real flows</u>				
Business investment:				
In non-residential structures	2.4	6.1	4.1	5.9
In machinery and equipment	2.7	6.8	3.8	4.8
Other induced flows:				
Consumption	0.1	0.6	0.9	1.5
Exports	--	-0.1	0.5	1.5
Imports	0.6	1.3	0.5	0.7
Real GNP	0.3	1.1	1.2	2.1
<u>Labour market</u>				
Unemployment rate	-1.3	-6.1	-6.4	-11.5
<u>Prices</u>				
Annual wage rate	0.1	0.6	-0.2	0.2
Consumer price index	0.2	0.2	-1.0	-1.6
Foreign exchange rate	0.1	0.4	-0.7	0.3
Interest rate (1-3 year bonds)	0.9	1.6	0.4	-0.1

Table 8

MACRO CONSEQUENCES OF 50% INDEXING CAPITAL COST  
ALLOWANCES ON NEW INVESTMENT, STARTING IN 1981

(altered FOCUS model with fixed exchange rates)

	Percentage change in			
	1981	1983	1986	1990
<u>Real flows</u>				
Business investment:				
In non-residential structures	2.3	5.8	4.9	5.4
In machinery and equipment	2.7	6.5	4.6	4.8
Other induced flows:				
Consumption	0.1	0.6	1.0	1.6
Exports	--	-0.2	1.1	2.1
Imports	0.6	1.3	0.8	1.2
Real GNP	0.3	1.0	1.5	2.1
<u>Labour market</u>				
Unemployment rate	-1.3	-5.3	-8.7	-13.2
<u>Prices</u>				
Annual wage rate	0.1	0.4	0.2	0.9
Consumer price index	0.1	--	-0.7	-1.1
Foreign exchange rate	--	--	--	--
Interest rate (1-3 year bonds)	0.8	1.3	1.7	2.7

Table 9

MACRO CONSEQUENCES OF 50% INDEXING OF CAPITAL  
COST ALLOWANCES ON NEW INVESTMENT, STARTING IN 1981  
(altered FOCUS model, "fixed price" version)

	Percentage change in			
	1981	1983	1986	1990
<u>Real flows</u>				
Business investment:				
In non-residential structures	2.3	6.0	4.5	4.0
In machinery and equipment	2.7	6.6	5.0	3.4
Other induced flows:				
Consumption	0.1	0.6	0.8	0.9
Exports	--	--	-1.2	-2.3
Imports	0.4	1.6	1.4	1.3
Real GNP	0.4	1.0	0.6	0.3
<u>Labour market</u>				
Unemployment rate	-1.2	-6.5	-7.6	-7.8
<u>Prices</u>				
Annual wage rate	0.1	0.5	1.1	2.7
Consumer price index	0.1	0.3	0.5	1.5
Foreign exchange rate	0.1	0.1	0.1	2.3
Interest rate (1-3 year bonds)	0.7	2.1	2.6	4.2

Note: The "fixed price" version of the FOCUS model imposes a constant markup pricing model with productivity change generated by trend extrapolation.

Table 10

FISCAL EFFECTS OF 50% INDEXING OF  
CAPITAL COST ALLOWANCES ON NEW INVESTMENT

(millions of dollars)

	Change in			
	1981	1983	1986	1989
<b>Corporate tax revenues - federal</b>				
Unchanged FOCUS model	282	156	-2,170	-3,376
Altered FOCUS model	199	-359	-1,588	-3,670
Altered model, fixed exchange rate	182	-445	-1,325	-3,337
Altered model, "fixed-price" version	149	-201	-1,575	-3,707
<b>Federal surplus</b>				
Unchanged FOCUS model	529	1,797	-1,067	283
Altered FOCUS model	388	505	-820	-1,370
Altered model, fixed exchange rate	360	243	-45	-196
Altered model, "fixed-price" version	309	733	-194	-1,106
<b>Government surplus, all levels</b>				
Unchanged FOCUS model	725	2,281	-929	1,637
Altered FOCUS model	535	750	-13	1,347
Altered model, fixed exchange rate	499	459	909	2,070
Altered model, "fixed-price" version	450	1,052	-181	-3,137

Appendix

CALCULATION OF EFFECTIVE TAX RATES  
ON PERSONAL INVESTMENTS

Effective tax rates are in all cases calculated as percentage changes in yields on investments (i.e., in rates of return). Pretax rates of return are assumed unchanged for the purpose of making these calculations.

1. Assumptions about pretax returns

Investments are characterized to reflect both "normal" and speculative investments. "Normal" investments are averages for relatively safe investments; for common stocks, these are based on estimates of average yields before personal tax calculated over a 60-year period by Shiller (1980).

The assumptions used are set out in Table A-1. Longer holding periods are assumed currently as a result of the impact of inflation on taxable capital gains which may be deferred.

2. Capital gains taxes with no inflation

Let  $R$  be the annual rate of accrual of real capital gains (col. 3 of Table A-1), and let  $H$  be the planned holding period (col. 4 of Table A-1). Then the after-tax capital gain realized after  $H$  years is (assuming no inflation)

$$RCG = \left[ (1+R)^H - 1 \right] (1 - .5T)$$

Table A-1

	<u>Expected real pre- tax rate of return</u>	<u>Fraction accrued as capital gain</u>	<u>Annual rate of accrual of capital gain</u>	<u>Planned holding period</u>
Principal residence	.05	.10	.005	30
Equity investment in real estate:				
Speculative renovation	.08	.8	.064	2
Income property	.05	.1	.005	10-15
Common stocks:				
Large public companies	.06	.25	.015	5-8
Speculative new issues	.15	1.00	.150	1
Long-term bonds	.035	--	--	10
Tax-sheltered investments:				
Mortgages and bonds	.035	--	--	15
Common stocks (large public companies)	.06	.25	.015	15

where  $T$  is the marginal tax rate applicable to the investor, defined to include provincial taxes at Ontario rates. Let  $y_1$  be the average after-tax real rate of return attributable to capital gains accrued by the investor. Then

$$(1 + y_1)^H = RCG + 1$$

so that

$$y_1 = [1 + RCG]^{1/H} - 1.$$

The effective tax rate on capital gains is defined as the tax-induced percentage reduction in the average yield generated by capital gains.

Let  $ETR_1$  denote this effective tax rate.

Then

$$ETR_1 = 1 - \frac{y_1}{R}$$

and the effect of the deferral of tax until realization is

$$ETR_1 = .5T,$$

### 3. Effect of inflation with no deferral

Let  $p$  denote the rate of inflation in the general price level.

It is assumed for the purpose of calculating the impact of inflation on effective tax rates that real pretax rates of return are unchanged.

Consequently, the nominal rate of accrual of capital gains is

$$g = (1 + p)(1 + R) - 1.$$

Let ACG be the after-tax real capital gain accrued in the current year assuming no deferral of tax. Then

$$ACG = \frac{1 + g(1 - .5T)}{1 + p} - 1$$

and the effective tax rate in this case is

$$ETR_2 = 1 - \frac{ACG}{R}$$

The effect of inflation with no deferral (as shown in Table 1) is then defined to be

$$ETR_2 - ETR_1.$$

#### 4. Effect of inflation together with deferral

In this case the nominal after-tax capital gain realized after H years is

$$NRCG = [(1+g)^H - 1] (1 - \text{ST})$$

The real after-tax capital gain is calculated by deflating this nominal gain (measured in dollars of H years hence) in order to restate it in current-year dollars. Denoting this real after-tax gain by RRCG, we then have

$$RRCG = \frac{1 + NRCG}{(1+p)^H} - 1.$$

As before, let  $y_3$  be the average after-tax real rate of return attributable to capital gains accrued over the holding period.

Then in this case

$$y_3 = [1 + RRCG]^{1/H} - 1.$$

The effective tax rate reflecting both inflation and deferred taxation is then

$$ETR_3 = 1 - \frac{y_3}{R}$$

The effect of the tax deferral in reducing the inflation-induced tax increase is then defined to be

$$ETR_3 - ETR_2.$$

5. Taxes on other components of income

Taxes on dividend income are variously calculated to reflect (1) the pre-1972 20% dividend tax credit, (2) the one-third gross-up and 28.8% dividend tax credit introduced in 1972, or (3) the current one-half gross-up and 36% dividend tax credit. (As in other calculations, Ontario provincial rates are assumed for the purpose of tax calculations.)

Taxes on rental income from unlevered investments in real estate are calculated assuming net accrued rental income to be fully taxable.