INDEXATION AND THE TAXATION OF BUSINESS AND INVESTMENT INCOME

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ABSTRACT

This paper reviews the issues raised by inflation and the taxation of business and investment income under an income tax Some evidence on the tax-induced distortions caused by inflation are presented. This includes estimates of the marginal real tax rates on new investment and the user cost of capital for the various categories of taxable corporations given different assumptions about the rate of inflation and proportion of the investment financed by debt.

Comprehensive indexation of business and investment income is considered in the paper as a solution to the problems caused by inflation-induced tax distortions. For business income, this would encompass an indexation of capital consumption allowances, the cost of goods sold, and interest income and expenses. For investment income, it would involve the indexation of capital gains on all financial and real assets and the indexation of interest income and expense. In this context, the new accounting standards of the CICA designed to reflect changing prices are reviewed and the preliminary experience with these standards is assessed. Another related issue that is addressed is the choice of an index. The benefits and cost of comprehensive indexing are considered. The paper concludes its overview of comprehensive indexation with some comments on the experience of other countries, and a review of the U.S. Treasury Department's recent proposals for indexation.

A more detailed analysis of the indexation of business income is also included in the paper. Evidence on the impact of indexation, if it were to be adopted, on the real effective tax rate and user cost of new investment is presented for the various categories of taxable corporations given different assumptions about the rate of inflation and the proportion of the investment financed by debt. The reduction in the variance of the real effective tax rate and user cost across categories resulting from indexation is compared with the reduction resulting from the elimination of tax preferences.

The difficulties likely to be encountered in any effort to index capital consumption allowances, inventories, and debt are surveyed. Several proposals for partial indexation of business income put forward by John Bossons, the Canadian Manufacturers' Association in Canada and by Auerbach and Jorgenson in the United States are discussed.

The paper also contrasts the current capital gains tax

with an ideal system based on accrual taxation of real gains and highlights the distortions involved in the current tax treatment of capital gains. The government's proposals for a Registered Shareholder Investment Plan and the Lortie Committee's

conclusions and recommendations are reviewed. The ensuing Indexed Security Investment Plan is described and analyzed. Estimates of effective tax rates for securities held within and outside of an ISIP are compared. Statistics indicating the poor public acceptance of ISIPs are cited. Some explanations are offered.

The issues arising from inflation and interest income are also covered in the paper. This includes a discussion of the White Paper's proposal for indexed term loans and deposits and the reasons that it was rejected by the Lortie Committee.

The paper ends with my conclusions that, given the recent decline in inflation, indexation of the taxation of business and investment income should not be a tax reform priority. It should only become a priority in two circumstances. The first would be if inflation resurges to double-digit levels and inflation-induced distortions again become a more serious problem. The second would be if the Treasury Department proposals for indexation of business and investment income are implemented in the United States and it becomes advantageous to index to preserve the current degree of tax harmonization between Canada and the United States. If inflation continues to decline, however, there is no reason to introduce indexation in Canada regardless of whether indexation is adopted in the United States. It would just add another unnecessary element of additional complexity to the tax system.

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1 INTRODUCTION

Indexation has been an issue on the Canadian tax policy agenda since the early 1970s when inflation became such a serious problem that its distorting effects on the tax system could not be ignored. At 10 per cent or more inflation, distortions are major and indexation initiatives are given priority consideration.
At 5 per cent inflation, even though the distortions still exist,
indexation is not a priority issue. Below 2 per cent inflation, indexation would cease to be a concern.

Tax indexation is clearly only a partial and second best solution to the widespread problems posed by inflation. Financial reporting is distorted by inflation. Decisions are made on the basis of inadequate and faulty information resulting in a misallocation of resources. If the inflation is unanticipated, the situation is compounded. Various forms of indexing such as wage and price indexing and financial indexing attempt to get around the problem of uncertainty over nominal magnitudes by contracting in real terms. Tax indexing seeks to minimize the distorting impact of inflation on tax rates and thus to reduce the misallocations of resources attributable to inflation-induced and unintended non-neutralities in the tax system.

The first best solution to the resource allocation problems caused by inflation is to eliminate inflation.
Indexation is only attractive to the extent that the cost in terms of lost output and unemployment of fiscal and monetary policies sufficiently restrictive to eradicate inflation is prohibitive. Now with much of the cost of the recent dose of monetary and fiscal restraint in the past and with a reasonable expectation of a benefit of declining or at least stable inflation in prospect, indexation loses much of its earlier attraction. However, in the unlikely event that monetary and fiscal policy remain on a staunchly anti-inflationary course and inflation breaks out for reasons beyond the control of the monetary and fiscal authorities, then the case for further tax indexation becomes stronger.

Over the 1970s the Canadian government has taken a number of steps to index the tax system. Personal income tax exemptions and brackets were indexed to the consumer price index starting in 1974. This prevented the rapid inflation of the mid-to-late 1970s

from raising real tax burdens by pushing taxpayers into higher tax brackets. A $1,000 deduction for interest was also introduced in 1974 and subsequently extended to dividends and capital gains. A rationale for this measure was to shelter from taxation the inflation premium component of interest income for lower income taxpayers.

The impact of inflation on the taxation of business and investment income has also lead to a number of initiatives. It was a factor behind the introduction of the two-year write-off for manufacturing machinery and equipment and the investment tax credit. In 1977 the government moved to provide some measure of relief from the taxation of inflationary inventory profits through the introduction of income tax deduction equal to 3 per cent of the value of opening inventories. In June 1982 the Minister of Finance issued a paper for consultation on Inflation and the Taxation of Investment Income. The proposals in this paper for a Registered Shareholder Investment Plan and for indexed term deposits and loans were referred for study to a Ministerial Advisory Committee, chaired by Pierre Lortie. Upon the Lortie Committee's recommedation a renamed Indexed Securities Investment Plan was implemented and the proposals for indexed instruments were dropped.

The Lortie Committee recognized that the effect of inflation on the taxation of business and investment income was a broad issue going well beyond its terms of reference which was to examine the desirability of one specific set of proposals to remedy some of the problems. It thus recommended that the government undertake a comprehensive study of the issue. This recommendation was sympathetically received by the Minister of Finance Marc Lalonde, but no such study was ever launched prior to the government's defeat. A dramatic decline in inflation reduced the priority that the government attached to the consideration of further indexing initiatives.

This paper reviews the issues raised by inflation and the taxation of business and investment income under an income tax in Section 2. Some evidence on the tax-induced distortions caused by inflation are examined. This includes some estimates of the marginal real tax rates on new investment and the user cost of capital for the various categories of taxable corporations given different assumptions about the rate of inflation and proportion of the investment financed by debt.

Comprehensive indexation of business and investment income is considered as a solution in Section 3 of the paper. For business income, this would encompass an indexation of capital consumption

allowances, the cost of goods sold, and interest income and expenses. For investment income, it would involve the indexation of capital gains on all financial and real assets and the indexation of interest income and expense. In this context, the new accounting standards of the CICA designed to reflect changing prices are reviewed and the preliminary experience with these standards is assessed. Another related issue that is addressed is the choice of an index. The benefits and cost of comprehensive indexing are considered. The paper concludes its overview of comprehensive indexation with some comments on the experience of other countries.

A more detailed analysis of the indexation of business income follows in Section 4. Evidence on the impact of indexation, if it were to be adopted, on the real effective tax rate and user cost of new investment is presented for the various categories of taxable corporations given different assumptions about the rate of inflation and the proportion of the investment financed by debt. The reduction in the variance of the real effective tax rate and user cost across categories resulting from indexation is compared with the reduction resulting from the elimination of tax preferences.

The difficulties likely to be encountered in any effort to index capital consumption allowances, inventories, and debt are surveyed. The section on business income concludes with a discussion of a number of proposals for partial indexation of business income put forward by John Bossons, the Canadian Manufacturers' Association in Canada and by Auerbach and Jorgenson in the United States.

Investment income is treated in Section 5. The current capital gains tax is contrasted with an ideal system based on accrual taxation of real gains and the distortions are highlighted. The government's proposals for a Registered Shareholder Investment Plan and the Lortie Committee's conclusions and recommendations are reviewed. The ensuing Indexed Securities Investment Plan is described and analyzed. Estimates of effective tax rates for securities held within and outside of an ISIP are compared. Statistics indicating the poor public acceptance of ISIPs are cited. Some explanations are offered.

The issues arising from inflation and interest income are also covered in Section 5. This includes a discussion of the White Paper's proposal for indexed term loans and deposits and the reasons that it was rejected by the Lortie Committee.

The final Section of the paper sets out my conclusions on

indexation and the taxation of business and investment income.

2 THE PROBLEM OF TAX-INDUCED DISTORTIONS CAUSED BY INFLATION

2.1 General Statement of Problem

The basic problem is quite simple. Taxes are based on nominal income. When inflation causes real income to diverge from nominal, real effective tax rates are altered in unintended ways that modify the pattern of after-tax returns, thus distorting saving and investment decisions.

For business income, the sources of distortions are the divergence between historical and replacement cost for both depreciation charges and cost of goods sold and the difference between nominal and real interest expenses. Since taxes are levied on reported income rather than real income , inflation causes real effective tax rates to vary widely across firms and industries. This causes the real after-tax rates of return also to vary thus distorting investment decisions.

For investment income, there are two sources of distortions. The first is the difference between nominal and real interest income and expense, which is attributable to the inflation premium necessary to compensate lenders for the erosion of the real value of their principal. The second is the discrepancy between nominal and
real capital gains. The impact of this second source of distortion is aggravated by the particular form of the capital gains tax. Accentuating factors are limitations on losses, taxation on a realization basis, and exemptions for gains on principal residences.

Worth noting is that these distortions only arise with an income tax. In the case of a consumption tax savings and investment are deductible and only consumption is subject to tax. This in effect eliminates the necessity to measure real income to calculate taxes.

The question of distortions has been raised at both the macroeconomic and microeconomic levels. At the macroeconomic level the debate has focussed on the impact of inflation on the aggregate effective corporate income tax rate. On the one side of the argument, Abraham Tarasofsky and Bert Waslander have contended using Department of Finance data that inflation seemed to have lead to an upward shift in average effective tax rates. The statistics cited show the real effective tax rate in the non-farm, non-financial sector rising from 37.2 per cent in 1963-65 to 44.3 per cent in 1978 and in the manufacturing

sectors from 42.6 per cent to 47.2 per cent.[1] Using other data prepared by John Bossons based on a sample of 152 firms drawn from the (Financial Post) database Waslander has noted that the actual real tax rate rose considerably over the 1966 to 1978 period and exceeded the statutory nominal rate in 1975-77.[2]

On the other side of the argument, Michel Proulx has questioned Tarosofsky and Waslander's interpretation of the Department of Finances' data and suggested that if corporations in a loss position are excluded from the sample then there is no upward trend in the effective tax rate for the non-resource sector as a whole or for manufacturing.

A philosophical point which emerges in this debate is the extent to which the tax incentives introduced over the course of the 1970s can be considered a general policy response to inflation. If so, it is less clear that inflation has raised effective tax rates. If not, the case is much stronger in favour of inflation increasing effective tax rates. Some of the incentives such as the 3 per cent inventory deduction are more closely linked to inflation than others.

In spite of differences of opinion concerning the impact of inflation on the aggregate effective tax rate, there is general agreement that inflation has distorted tax rates across firms and industries penalizing those with large stocks of long-lived depreciable assets and rewarding those with lots of debt. The following section presents the results of some analysis of the impact of inflation on the user cost of capital and effective tax rates for various industry groups and categories of investment asset given different assumptions about debt financing.

2.2 Some Evidence

An indicator of the impact of inflation on investment is the user cost of capital. As defined by Jorgenson, it is equal to the price of investment goods multiplied by the sum of the real interest rate (assumed to be 10 per cent) and the depreciation rate . The calculation also incorporates a number of adjustments to put the user cost on a before tax basis. These reflect the corporate tax rate, capital consumption allowances, and the investment tax credit. The differential tax impact of debt financing was also incorporated in the calculation.

The various industry groups were selected to correspond to the categorization of firms for tax purposes. These groups are shown on table 1 along with the applicable corporate tax rate, and

investment tax credit rate. The relevant distinctions are among large manufacturing and non-manufacturing firms (subject to tax rates of 40 and 46 per cent respectively) and small manufacturing and non-manufacturing firms (subject to tax rates of 20 and 25 percent). Another important distinction is for investment in the Atlantic and Gaspe regions where the investment tax credit is 20 per cent instead of 7 per cent. With respect to the type of investment the most important distinctions are between machinery and equipment, and non-residential construction and between manufacturing and non-manufacturing investment. As a general rule abstracting from the many categories of assets for purposes of capital consumption allowances, investment in machinery and equipment qualifies for a 20 per cent declining balance write-off except in manufacturing where the write-off is 50 per cent straight line for production machinery and equipment. Investment in non-residential construction qualifies for a 5 per cent declining balance write-off. An important qualification is that only a half year write-off is allowed in the first year. It is worth noting that the capital consumption allowances rates utilized are greater than the rates of economic depreciation which are estimated to be 7.89 per cent for machinery and equipment and 3.45 per cent for non-residential construction.[3]

As can be seen from chart 1, assuming 5 per cent inflation the user cost ranges from 22.8 per cent for machinery and equipment investment for large non-Atlantic region non-manufacturing corporations to 17.2 per cent for machinery and equipment investment by large Atlantic region manufacturing corporations. The user cost is lower for non-residential construction because of the lower rate of depreciation except in the case of large Non-Atlantic region manufacturing.

Charts 2 and 3 show the impact of inflation and debt financing on user cost for manufacturing and non-manufacturing respectively. It is interesting to note the extent to which the tendency of inflation to raise the user cost by reducing the present value of capital consumption allowances is more than offset by the advantage resulting from the deductibility of the inflation premium in interest payments. For debt financing ratios of 25 per cent or more inflation actually causes the user cost to drop.

The real effective tax rate for the same industry groups and types is a revealing indicator of the impact of inflation and the tax system on the incentive to invest. This real effective tax rate is calculated by dividing the present value of real tax payments by the present value of real inflation-adjusted income. The discount rate utilized in the calculations is 10 per cent. This is the same as the assumed before-tax rate of return. Economic depreciation is assumed to be the same as in the user cost calculations.

The real effective tax rates by industry groups and type of investment calculated assuming a 5 per cent rate of inflation are displayed in chart 4. Real effective tax rates are in all cases substantially lower than statutory rates. Indeed for machinery and equipment the real effective tax rates are negative for large Atlantic region manufacturing corporations and small manufacturing corporations.

Charts 5 and 6 show the impact of inflation on the real effective tax rate for manufacturing and non-manufacturing investment given different assumptions about the extent to which the investment is debt financed. An increase in the rate of inflation from 5 per cent to 10 per cent raises the real effective tax rate for both both types of manufacturing and non-manufacturing investment if the investment is not debt financed. However, if the investment is 25 per cent or more debt financed, the increase in inflation would actually lower the effective tax rate. In fact, if the investment were 50 per cent debt financed, the effective tax rates would in all cases be translated into hefty subsidies by the increase in inflation.

A conclusion which can be drawn from this analysis is that, although inflation distorts the real effective tax rate on new investment, it has probably not increased it on average. The tendency of historic cost capital consumption allowances to push up real effective tax rate has probably been neutralized in the aggregate by the deductibility of the inflation premium on interest payments. The introduction of investment incentives at least in part to compensate for any possible adverse effect of inflation on investment has probably tipped the tax system on balance in favour of promoting investment.

A recent study by Robin Boadway, Neil Bruce, and Jack Mintz covering the 1963 to 1978 period sheds some additional light on the issue of the impact of inflation on effective tax rates.[4] Their finding was that, in spite of the lack of indexing, inflation reduced the effective tax rate (including corporate and personal income tax combined) on land, had little effect on machinery and buildings, and raised the tax on inventories. The corporate income tax taken alone subsidized the holding of land and machinery, but taxed buildings and especially inventories. On this basis, they concluded that the corporate tax structure itself does not much affect the marginal investment decision except for inventories.

3 COMPREHENSIVE TAX INDEXATION

3.1 The Components of Comprehensive Tax Indexation

If tax-induced distortions in the allocation of resources are caused by mismeasurements of income due to inflation, then an obvious solution to the problem is to base taxes on income adjusted to correct for inflation. There is general agreement about the form of the adjustments required. The adjustments for business income are three:

- the indexation of the undepreciated capital cost of assets by the rate of inflation.

- the indexation of the cost of sales.

- the removal from interest expense of an inflation premium (calculated as the rate of inflation times the nominal value of debt).

The adjustments for investment income are also three:

- the exclusion from interest income of the inflation premium.

- the same exclusion from interest expense for borrowers.

- the indexation of the cost base of investment assets other than debt for purposes of calculating capital gains.

The White Paper on Inflation and the Taxation of Personal Investment income notes that these adjustments might necessitate other changes in the tax system. Provisions which would have to be re-examined include accelerated capital consumption allowances, the 3-per-cent inventory allowance, the $1,000 investment income deduction, and certain capital gains preferences.[5]

3.2 Accounting Issues in the Measurement of Income

There are two accounting methods for reporting the effects of changing prices. The first is current cost accounting. It seeks to evaluate the assets of a business including inventories, and property, plant and equipment, and the costs associated with these assets such as cost of goods sold and depreciation charge at the current prices most applicable to the particular assets and costs. The second is general price level accounting. It measures costs in terms of real purchasing power as measured by a

general price index such as the consumer price index or the implicit price index for gross national expenditure. The adjustments for business income necessary to correct for inflation noted above fall under this rubric.

Because a general price index is utilized and the differential impact of relative price changes on asset values are ignored, general price level accounting does not measure the effect of inflation on the particular financial position of an individual firm as accurately as current cost accounting. However, general price level accounting does not require as much judgement as current cost accounting and is simpler to apply. Moreover, for many purposes it may provide an adequate approximation of the impact of inflation on a firm.

The Canadian accounting profession and its official representative, the Canadian Institute of Chartered Accountants (CICA), have gone through a long formal process of debate on the merits of these two approaches in an effort to arrive at the best set of accounting standards for Canada to account for the effect of changing prices. The process involved the publication of exposure drafts on proposed standards and culminated in the issuance in 1982 of "Reporting the effects of changing prices" as Section 4510 of the CICA Handbook. This section contained a new accounting standard to apply in fiscal years beginning on or after January 1, 1983.

The new accounting standard calls for supplementary information in annual reports on the effects of changing prices to be presented for large publicly held enterprises (with inventories and property, plant and equipment of $50 million or more, or total assets of $350 million or more). Pending further consideration the standards do not apply to income producing real estate assets and banks, trust companies and insurance companies.

The two capital maintenance concepts of operating capability and financial capital are reflected in the standard and both current cost and general price level accounting information are recommended.

The current cost information includes:

- the current cost of goods sold and the depreciation, depletion, and amortization of property, plant and equipment, or the amounts of the current cost adjustments for these items;

- the amount of changes during the reporting period in the

current cost amounts of inventory and property, plant and equipment;

- the carrying value of inventory and property, plant and equipment
on a current cost basis at the end of the reporting period;

- net assets after restating inventory and property, plant and equipment on a current cost basis at the end of the reporting period;

- the amount of the financing adjustment (calculated by applying the proportion of net monetary liabilities on a current cost basis to the aggregate of shareholders' equity on a current cost basis and net monetary liabilities to the current cost adjustments made to income for the period).

The specific constant dollar information to be disclosed can be calculated using either the consumer price index or the implicit price index for gross national expenditures. This information includes:

- the "general inflation component" of changes in the current cost amounts of inventory and property, plant and equipment;

- the general purchasing power gain or loss resulting from holding
net monetary items; and

- comparative figures restated for changes in the general purchasing power of the dollar.

The current cost guidelines have now been in effect for almost two years. Most companies covered have issued an annual report to which they should have applied. Of the 263 annual reports reviewed by the CICA,[6] only 57 or 22 per cent presented the recommended supplementary information. Another 10 firms supplied some information on the effect of inflation, but did not conform to guidelines. A total of 196 firms or 75 per cent did not present any information at all. Of these, 28 gave some reasons for not complying, the most common of which were the high cost of preparing the disclosure in relations to the benefits and the subjectivity, complexity, and lack of utility of the inflation adjusted information. Another reason for business resistance to inflation accounting, which was not cited, is a reluctance to disclose lower income to shareholders. The benefits to be derived from inflation accounting quite obviously decline with the rate of inflation, as does the degree of support for the concept.

There does not seem to be much independent interest in the information on the impact of relative price changes provided by current cost accounting.

A factor that may have influenced some firms not to prepare the information was a statement released by the Ontario Securities Commission notifying firms that current cost information did not have to be included in documents filed with the Commission. It is significant that many of the firms that disclosed the recommended information were those who also report to the Securities and Exchange Commission in the United States where supplementary inflation-adjusted information is mandatory.

The longer experience with inflation accounting in the United States and United Kingdom has also been unsatisfactory. The problem in these countries is that the information once prepared at great cost in time and effort has been put to little use. This has been a source of growing dissatisfaction with the standards. As of yet, however, no consensus has developed concerning what would be a more suitable and useful inflation accounting method.[7]

The cool reception of inflation accounting based largely on current costs indicates a lack of acceptance of the basic principles on which comprehensive tax indexation are based. This stems from a failure to understand fully the concepts involved and a general dislike of what is viewed as unnecessary complexity. If large companies are reluctant to cope with the complexities of inflation accounting, imagine the reaction of smaller companies.[8]

If comprehensive tax indexation were to be adopted and accepted, it would probably have to be based on general price level accounting. The advantage of general price level accounting is that it is somewhat less complex. It also requires the application of less judgement and would be easier to audit. But even so it is doubtful that the business community could be induced to accept comprehensive indexation unless inflation was running at a very high level and indexation was accompanied by large enough tax cuts to offset its perceived disadvantages in added complexity.

3.3 The Choice of an Index

An issue that arises in any consideration of tax indexation comprehensive or otherwise is the choice of an index. The possibilities range from the use of many individual prices and

special indexes such as are used in current cost accounting to the use of a general price index such as the consumer price index or gross national expenditure deflator. Individual prices or special indices are likely to be more accurate in measuring depreciation charges or the cost of goods from inventories. However, income measured on a comprehensive basis can best be gauged using a general price index. The most logical price index for use in indexation is the consumer price index. It is widely known and available on a timely and monthly basis. It is also, unlike the GNE deflator, the other broad measure of overall inflation that could be used, not subject to revision. The consumer price index is already being utilized to index social security benefits and personal exemptions and tax brackets under the Income Tax Act.

It has been argued by some that the consumer price index is inadequate for use in indexation for several reasons related to macroeconomic policy. First, it does not reflect changes in consumption patterns except through changes in weights which only occur every four years. Second, it may reflect relative price changes against the effect of which the economy can not be insulated and to which it must adjust. These include increases in import prices, food prices and energy prices. As a result, some have suggested that the most appropriate index would be the consumer price index excluding food and energy and imports. The exclusion of food and energy would be a relatively simple matter because they are components of the CPI. The exclusion of the impact of import price increases would be more difficult as the cost of imports form part of the total price of many individual components. Further possible exclusions on stabilization policy grounds might be for indirect taxes, or interest rate changes. If the government raises indirect taxes or tightens monetary policy to restrain the economy, it would not necessarily be desirable to have tax indexing introducing offsetting tax reductions.

While the Lortie Committee concluded that the consumer price index is the only feasible price index to use for inflation adjustments of the personal income tax, the Committee was sufficiently concerned about the issues raised by the choice of an appropriate index for various inflation adjustments that it suggested that "it would be prudent to establish an independent body to examine regularly the design of an appropriate set of price indices for various purposes and confirm the integrity of these indices."[9]

The choice of an index for indexing is a significant issue, but not one of overriding importance. The cumulative difference between any two general price indexes is likely to be minor

relative to cumulative inflation.

3.4 Experience in Other Countries

Comprehensive indexing of the income tax has not been adopted by any of the major industrialized countries. Some South American countries suffering from hyper-inflation such as Argentina, Brazil, and Chile have implemented fairly comprehensive indexing schemes.[10] Some industrialized countries have limited forms of indexing such as LIFO inventory accounting in the U.S., distinctions between real and inflationary gains in Israel, and the indexation of certain gains in the United Kingdom.[11] Since the beginning of the slowdown in inflation in 1982 no industrialized country (with the exception of Ireland) has implemented further indexation incentives.

3.5 The Recent United States Treasury Department Proposals

The United States Treasury Department has recently issued a report proposing an ambitious package of tax reforms.[12] An important part of these proposals deals with the taxation of income from business and capital in order to eliminate inflation-induced distortions. In particular, it is proposed that inflation adjustments be made in the calculation of capital consumption allowances, the cost of goods sold from inventories, capital gains, and interest income and expense. These adjustments are to replace the current ad hoc adjustments for inflation incorporated in the investment tax credit, accelerated write-offs of depreciable property, and the partial exclusion of long-term capital gains.

The adjustments to capital consumption allowances would be the indexation of the cost base of depreciable assets to the consumer price index. The investment tax credit would be repealed. Capital consumption allowances would be determined on the basis of economic depreciation on the indexed cost base.

For inventories, firms would be given the option of employing indexed FIFO, instead of the currently allowed LIFO or unindexed FIFO. Indexed FIFO measures income more accurately during a period of inflation than LIFO, which only defers inflationary gains until inventories are reduced or liquidated.

The tax treatment of capital gains would be adjusted for inflation by indexing the basis of capital assets for the inflation which has occurred since purchase of the asset or January 1, 1965, whichever was later. This would result in nearly

complete adjustment for inflation, while at the same time limiting the size of the table of inflation adjustment factors. Inflation-adjusted gains would be taxed as income on a proposed reduced schedule of individual rates, and the current exclusion of 60 per cent of capital gains would be terminated.

A given fraction of interest income based on an estimate of the inflation premium in nominal interest rates would be excluded from tax. This same fraction would be applied to reduce the deduction of interest expense (in excess of the sum of mortgage interest attributable to the principal residence of an individual taxpayer and $5,000). The fraction of interest income and expense to be excluded in calculating interest income and expense would be announced each year. This approach is said to offer only a rough adjustment for inflation, but to avoid the undesirable complexity of a more exact scheme.

3.6 Benefits and Costs of Comprehensive Indexing

In an inflationary environment a comprehensive indexation of the taxation of business and investment income would remove the tax distortions impeding the efficient allocation of investment and savings. It would also reduce the risk associated with future variations in effective tax rates due to inflation. This would contribute to a better allocation of resources provided that the rationale for comprehensive indexation was understood and the public responded to the new signals given by inflation-adjusted after-tax rates of return. The better allocation of investment would tend to promote real growth.

It is not clear on balance, however, whether investment would be higher or lower. This would depend among other things on the nature of the other tax changes required to compensate for the revenue loss from comprehensive indexation. It would also depend on the distribution of the tax changes between corporations and investors. The cost of capital in Canada is tied quite closely to that in the United States by international capital markets and capital flows. Thus, while corporations would benefit from indexation of capital cost allowances and inventories, they would experience an increase in the after tax cost of capital as a result of the cessation of the deduction of the inflation premium on interest payments.

Investors, on the other hand, would receive greater after-tax returns on debt since they would no longer be taxed on the inflation premium. This would encourage savings and lead to capital outflows. Only to the extent that capital markets are imperfect would greater savings result in a significant decrease

in before-tax rates of return and the cost of capital to corporation thus offsetting the disincentive of reduced interest deductibility. The only area where this offset is likely to be most significant concerns the cost and availability of new equity funds to business. Equity capital is probably less mobile between the U.S. and Canada particularly for smaller firms.

The reasons why the cost of capital to firms is so important for investment is that firms are the key decision-makers when it comes to investment decisions. Modern business organization has effectively separated the savings and investment decisions.

The integrated tax rate of the corporation and investor combined is not a prime consideration underlying investment decisions for widely held corporations.

The financial implications of comprehensive tax indexation would be considerable even at 5 per cent inflaton. For example, in 1981 capital consumption allowances were $24.2 billion. Five years indexation at 5 per cent on such a base would raise CCA by $6.7 billion and would reduce total government revenues by around $2.6 billion, about 71 per cent of which would be federal and 29 per cent provincial. In 1981 the 3 per cent inventory allowance cost $791 million. To increase the inventory deduction to compensate for an assumed 5 per cent rate of inflation would cost an additional $527 million. In 1981 interest income of corporations was $46.3 billion and interest expense was $55.3 billion, adding up to a net interest expense of $9.0 billion. Inflation averaged 12.5 per cent in 1981 and short-term interest rates 17.8 per cent. If the inflation premium were excluded, net interest expense would be reduced by about $6.4 billion in 1981. This is the same order of magnitude as five years indexing of CCA at 5 per cent. Thus, assuming 5 per cent inflation the costs of indexing corporate income taxes would roughly cancel out after five years. In the shorter-run, however, the non-deductibility of the inflation premium would raise substantially more corporate tax revenue than would be lost through the indexation of capital consumption allowances and inventory cost.

It is at the level of the personal income tax where comprehensive tax indexation would involve a major revenue loss to the government treasury. In the federal government's (Taxation Statistics) for 1981 interest income of $19.5 billion is reported. Of this at most only $4.9 billion was sheltered by the interest, dividend and capital gains deduction. At the 1981 level of interest rates and inflation, the inflation premium in the remainder amounts to more than $10 billion. Assuming a 40 per cent marginal tax rate, exempting the inflation premium of

personal investment income would cost the federal government alone more than $4 billion.

Estimating the revenue cost of indexing the capital gains tax for inflation is a very complicated exercise. Suffice it to note that in 1981 net taxable gains were $2.4 billion and that the largest part of these gains was inflationary. Assuming a 40 per cent marginal tax rate the revenue from capital gains taxation would be around $1 billion. The cost of indexing capital gains could build up towards this order of magnitude after indexing had been in effect for a number of years.

The magnitude of these gross revenue changes and the corresponding redistribution of the tax burden would give rise to large windfall gains and losses with the accompanying revaluations in asset values. These can not be ignored. Especially hard hit would be heavy borrowers who would no longer be able to deduct the inflation premium on interest payments. Concern to minimize windfall gains and losses have lead to suggestions that indexation should be limited to new assets and liabilities.

Comprehensive indexation would also have important international implications. U.S. subsidiaries are taxed on their Canadian income when it is repatriated. This tax is calculated based on U.S. tax definitions, and credit is given for Canadian taxes paid up to a maximum of U.S. tax payable. If comprehensive indexation were to raise Canadian taxes above U.S. taxes, U.S. corporate investment in Canada would be discouraged. If it were to lower Canadian taxes, some additional U.S. investment in Canada might be encouraged, but some tax revenue could also be transferred to the U.S. Treasury. Neither discouraging U.S. investment or transfering tax revenues to the U.S. would be particularly desirable from a Canadian point of view. On the other hand, if the U.S. were to implement comprehensive indexation as proposed, these same arguments would suggest that Canada should do likewise.

Comprehensive indexation would be a sufficiently radical modification to the Canadian tax system that tax treaties would have to be renegotiated. More fundamentally such a different system in Canada than in other countries would certainly not facilitate tax harmonization. It would make corporations uncertain of the tax consequences of investment in Canada. Again, if the U.S. were to implement comprehensive indexation, it would be necessary to do likewise in Canada to preserve the current degree of tax harmonization.

A stabilization policy consideration would be that non-deductibility of the inflation premium could exacerbate the effects of tight money and high interest rates on firms. This could be a particular problem as long as the United States does not index its tax system. With the deductibility of nominal interest payments allowed in the U.S., the Federal Reserve Board may have to raise interest rates to higher levels to curtail demand. The repercussions of such a policy in Canada would be magnified by an indexed tax system.

Last but not least on any balance sheet of costs and benefits, given the current priority attached to simplifying the tax system, would be the required complexity of any system of comprehensive indexing and the related administrative costs. The degree of complexity would be greater if windfall losses were to be minimized through transitional arrangements. These would have to deal with the complicated questions of the scope of the debt adjustment and the definition of corporate entities. Administrative costs for taxpayers would stem from the requirement of additional accounting records. Experience with the new CICA standards suggests this can not be dismissed lightly. The revenue authorities would also have to expend more resources in processing and auditing inflation-adjusted tax returns if the integrity of the tax system were to be maintained.

The review of the benefits and costs of comprehensive tax indexation can not be summarized in a bottom line figure. But at current rates of inflation, and barring the adoption of comprehensive tax indexation in the United States, there is not much to commend it as a desirable and practical short-term policy option. However, if the United States were to adopt comprehensive tax indexation as proposed in the recent Treasury Department report, then comprehensive tax indexation would become a much more attractive, or indeed irresistible, option for Canada as well. Furthermore, in the longer-run, if inflation is not successfully curtailed , comprehensive tax indexation will have to be seriously considered for Canada on its own merits regardless of whether the U.S. tax system is indexed.

4 BUSINESS INCOME

4.1 The Effect of Indexation of Business Income on Real Effective Tax Rates

Indexation of business income would eliminate inflation-induced distortions in the taxation of business income. The real effective tax rate would no longer be affected by inflation. An appreciation of the impact of indexing on the real effective tax rate can be gained by recalculating the effective tax rates presented in charts 4 to 6 assuming that business income were to be indexed. Since the effective tax rates are for income from new investment, it makes no difference to the analysis whether the indexation is comprehensive or is only applicable to new assets and liabilities. The indexed real effective tax rates are shown in chart 7 for the case where inflation is assumed to be 5 per cent and investment is equity financed. The indexed effective tax rates are significantly lower than those shown in chart 4 because inflation no longer erodes the real value of capital consumption allowances. The pattern across industry groups and investment types remains largely unchanged reflecting the structure of taxation.

The impact of indexing on the effective tax rate of manufacturing investment can be seen more clearly in chart 8. If the investment is not debt financed, the impact on the effective tax rate for machinery and equipment is less than for non-residential construction. This is so because the 50 per cent capital consumption allowance rate on machinery and equipment allows the cost of the investment to be written off much sooner than the 5 per cent rate on non-residential construction, thus preventing its real value from being eroded as much by inflation. In the case of debt financing, indexing raises the real effective tax rate significantly. The increase is quite striking if the share of the investment that is debt financed is as high as 50 per cent.

The impact of indexing on the effective tax rates for non-manufacturing investment is given in chart 9. The impact the effective tax rate on investment in non-residential construction is similar to that in manufacturing because the capital consumption allowance rates are the same. The impact on the effective tax rate on investment in machinery and equipment, however, is greater if the investment is equity financed since lower capital consumption allowances mean more time for erosion by inflation. On the other hand, the impact is somewhat less if the investment is debt financed because the effect of indexing capital consumption allowances offsets the impact of indexing

debt.

A useful indicator of the extent of the reduction in distortions which would result from indexing is the decrease in the variance of real effective tax rates across the various cases considered. These cases encompass the six industry groups, the two types of investment, and the three assumptions with respect to debt financing. The standard deviation of real effective tax rates declines from 27.5 per cent without indexing to 20.1 per cent with indexing. This is a fairly significant reduction, but it is much less than the reduction which would occur if capital consumption allowances were made to correspond to economic depreciation and the investment tax credit were abolished. In this event the standard deviation of the real effective tax rate would decline to 14.6 per cent. If on top of this the tax system were indexed, the standard deviation of the real effective tax rate would fall to 10.0 per cent.

The implication of this analysis is that, if the main objective of tax reform is to improve resource allocation by reducing distortions in real effective tax rates, a higher priority should be put on rationalizing the structure of tax incentives than on introducing indexation. However, the two approaches to tax reform could be pursued in a complementary manner. The rationale for doing so would be particularly strong if the tax incentives were introduced originally to compensate for high inflation and were no longer considered to be necessary because of the return to lower inflation. If the indexing could be implemented at the same time as the current structure of tax incentives was made more neutral, the reductions in distortions would be correspondingly greater. On the other hand, if the tax inentive were introduced to promote industrial and regional development objectives and were working as intended, it may be desirable to leave them in place.

4.2 Indexation of Cost of Goods in Inventory

As Boadway, Bruce, and Mintz pointed out, over the 1963 to 1978 period inflation significantly raised the effective tax rate on inventory holdings thus inducing an under-investment in inventory stocks.[13] This disincentive was transformed in the March 1977 budget with the introduction of a deduction equal to 3 per cent of opening inventories. While this deduction does not fully compensate for the impact of inflation on inventories given that it is capped at 3 per cent, combined with the deductibility of nominal interest payments on inventory loans it can constitute a net incentive to invest in inventories.[14]

If comprehensive indexation were to be introduced, any bias for or against inventory investment would be eliminated. With an inventory deduction already in place, this could be accomplished relatively simply by removing the 3 per cent limit on the present deduction.

4.3 The Treatment of Interest

The treatment of net interest expense is always the main point of contention in any discussion of the desirability of the indexation of business income. Businessmen and their accountants strongly resist the notion that the inflation premium on interest payments should not be an allowable deduction. This is because total interest expense is a cash outflow to the firm which must be met. In contrast, the decline in the real value of outstanding debt is an accrual item that is not associated with a cash inflow and can only be realized by taking on additional debt. Most businessmen are understandably reluctant to borrow more money, particularly if it is just to pay taxes.

While businessmen are not comfortable with the concept of indexation as evidenced by the poor compliance with the CICA inflation accounting guidelines, self-interest would probably suffice to convince them of the merits of indexing capital consumption allowances and inventories. No such motivation would be operative for debt indexation and their natural degree of resistance would consequently be reinforced.

The reality which must be faced is that indexation would raise taxes for many corporations. The indexation of debt interest is the revenue generating side of indexation.

A difficulty with indexing debt is that the tax increases would be heaviest for the corporations with the greatest debt burdens. This of course is appropriate from an allocative point of view since it is these corporations that derive the most benefit from the full deductibility of debt. Unfortunately, it is also these firms that are in the weakest financial positions and are least able to withstand tax increases. Indeed, some of these firms could even be forced into bankruptcy by the disallowance of the inflation premium portion of interest expense.

The full deduction of interest expense provides a powerful incentive to undertake debt-financed investment. The corollary to this is that the implementation of interest indexation would, other things being equal, depress investment spending.

An important consideration in deciding upon the appropriate tax

treatment of business interest expense is the tax status of the corresponding interest income counted as investment income. The current situation has been complicated by the growing importance of tax exempt lenders and tax sheltered interest income. Pension funds and registered savings plans are important sources of demand for corporate debt issues. They would become much more important if the new government decides to go ahead with the previous government's plans to increase the limits for tax assisted retirement savings. The $1000 investment income deduction also shelters much interest income.

Some observers have said that with the proliferation of tax exempt savings vehicles the income tax was being transformed into an ad hoc expenditure tax. Indexation of debt interest would halt this trend by ensuring that at least the inflation premium of interest income was taxed before being distributed by the corporation.

The partial non-deductibility of business interest expense resulting from indexing could pose some problems for stabilization policy. The full deductibility of interest expense in the United States gives the Federal Reserve Board more latitude to tighten monetary policy if inflation were to accelerate. If the Bank of Canada were to follow the U.S. lead, the increase in the after-tax cost of capital would be much greater as would the impact on business investment. There is a strong case on stabilization policy grounds for treating business interest expense the same as it is treated in the U.S. The non-deductibility of interest on consumer and mortgage loans was a factor making the recession deeper in Canada than in the U.S.

By the same token, if the Treasury Department proposals for comprehensive tax indexation were to be implemented in the United States, there would be an advantage on stabilization policy grounds in indexing the taxation of interest in Canada. It is the differential deductibility of interest that causes problems for stabilization policy, not the deductibility of real versus nominal interest payments.

4.4 Partial Indexation Schemes

The difficulties likely to be encountered in any comprehensive indexation of business income have encouraged a search for less ambitious ways to provide some of the same benefits. These proposals range from from simple suggestions that more ad hoc incentives be introduced and that LIFO inventory accounting be adopted to schemes for comprehensive indexing at the margin.

The Canadian Manufacturers' Association has put forward a proposal to index equity. This proposal would allow a deduction from income equal to the product of inflation and the equity of a business expressed in terms of the tax values of assets. The alleged advantage of this proposal is its simplicity. Its main drawback is that it does not get to the root of the problem of eliminating distortions due to the differential impact of inflation on real debt costs and fixed asset costs between types of assets and firms.[15]

Alan J. Auerbach and Dale W. Jorgenson advanced a proposal for inflation-proofing the depreciation of assets in the United States. This proposal would provide the firm with the complete depreciation deduction at the time the asset was purchased. This one-time deduction which would replace the investment tax credit and ordinary depreciation would be calculated as the present value of economic depreciation. Such a scheme would be neutral in impact across asset classes as long as the economic depreciation rates and the discount rate is accurate. An advantage of this proposal to a firm is that it supplies up-front cash to defray the costs of an investment. From the point of view of a government trying to reduce an outsized deficit this would be viewed as a disadvantage.[16]

John Bossons has long been the leading Canadian proponent of further initiatives to index the taxation of business income. As a way of avoiding many of the transitional problems associated with comprehensive indexation, he has proposed that the indexation only be applied to "new" assets and debts. Such assets would be defined so as to make it difficult to transform old assets into new assets, although Bossons does acknowledge that some rules may be necessary to restrict the transfer of assets and liabilities between associated companies and between corporations and shareholders.

Old debt would be defined as an allowance equal to the amount of debt on which the taxpayer was eligible to deduct carrying charges as of the start-date. The allowance would be reduced by say 5 per cent per year until it disappeared after 20 years. Taxpayers would be permitted to deduct carrying charges on outstanding debt up to a limit equal to the product of the allowed debt limit and the average interest on outstanding debt. On debt in excess of the limit only the real component of interest would be deductible.[17] Similar treatment was proposed for interest bearing investment assets.

A similar distinction between old and new assets would be made. It would be based on an arbitrary limit determined by the

undepreciated capital cost in each asset class as of the announcement date of the proposal. Only undepreciated capital cost in excess of the limit would be indexed. Under the proposal inventories would not be indexed.

Bossons argues that his proposal would produce most of the benefits of comprehensive indexation since most decisions of importance would be concerned with changes in new assets (investment) and new debt. At the same time it would minimize transitional problems. Transitional windfall gains and losses would be minimized. The aggregate tax revenue cost to the government would also be minimized. And finally, the tax changes would probably be small enough to be absorbed by the international tax minimization procedures of multinational companies and would thus not result in any significant transfer of revenues to foreign treasuries. The main criticism of Bosson's proposal has been on administrative grounds.[18] Any tax measure that requires the taxpayer to keep and report information on the levels for various depreciable asset classes, interest earning assets and debt as of a particular date and to write these levels down over time would necessarily introduce a major additional element of complexity into the tax system. Next to this, the much criticized complexity of the cumulative deduction account looks relatively straightforward. In effect, a double set of books would be required for the affected assets and liabilities. This would make it much more difficult for taxpayers, especially small businesses, to prepare their tax forms and for Revenue Canada to process them. Enforcement and audit would also be rendered more difficult. Any additional rules to restrict the transfer of assets and liabilities would only worsen the situation.

Bossons acknowledges that his proposal would add to the complexity of the tax system but he regards that to be a necessary by-product of correcting the tax system for inflation without windfall gains and losses and reductions in tax revenues.

If inflation heads back up to double-digit levels, Bosson's proposal merits serious consideration. At current levels of inflation the increase in complexity it entails is probably not worth the gains in efficiency.

5 INVESTMENT INCOME

5.1 Capital Gains

Income tax is levied on realized increases in the capital value of listed assets. Half of the capital gain must be included in taxable income and is taxable at ordinary rates. The $1,000 investment income deduction can be used to shelter capital gains. Gains on a principal residence are exempt. Capital gains are deemed to be realized at the death of a taxpayer. Half of net capital losses are deductible from income up to a limit of $2,000. Unutilized losses can be carried back three years and forward indefinitely.

The capital gains tax has been characterized by John Bossons as a package of distinct taxes and subsidies. In addition to a tax on real accrued capital gains, other components of the package include "inflation-induced taxes on wealth, additional taxes levied on risky investments, subsidies to investors who do not trade their assets, subsidies of investments channeled through trust and insurance companies, and subsidies to individual households who invest in owner-occupied houses rather than other assets."[19] The effects of most of these other taxes and subsidies are exacerbated by inflation. The principal exceptions are the subsidies for investors that do not trade. The taxation of capital gains only on realization serves to mitigate inflation-induced increases in effective tax rates since the present value of taxes due in the future is less than that of taxes due in the present.

In theory the ideal neutral capital gains tax would be based on accrued real capital gains. Taxation could still be at half rates. This would generate the same degree of integration of the personal and corporate income tax as the current dividend gross-up and credit system produces. It would ensure that corporate source income would be taxed at the same rate regardless of whether taken as dividends in capital gains. Such balance is important because it would result in a uniform treatment of shares of companies with different payout ratios and would not distort the dividend payout decision. It also would avoid creating any incentives for surplus stripping, whereby corporate source income is realized as capital gains to minimize taxation.

The extent of the divergence of the actual capital gains tax from the ideal for different investment assets for a taxpayer facing a marginal tax rate of 50 per cent is shown in Table 2. (The assumptions made with respect to real capital gains and holding

periods for these different assets is given in Table 3.) The only asset for which the actual capital gains tax approximates the ideal is the Indexed Security Investment Plan (ISIP). The real effective tax rate for the ISIP is marginally than the 25 per cent ideal rate reflecting the slight advantage of deferral offered by the ISIP. The degree to which the advantage of tax deferral on other assets resulting from taxation only upon realization compensates for the tax raising impact of inflation without indexing is shown in Table 2. The corollary to this is that the combination of taxation on realization and inflation accentuates the lock-in effect that hampers the more efficient redeployment of investment resources. Inflation-induced tax increases are highest for urban rental property, farm land, and common stock of large public corporations. These tax increases reinforce the incentive in favour of principal residences and other tax sheltered investments. This diverts savings into residential construction and fosters the institutionalization of savings.

An additional source of distortion not revealed in Table 2 stems from the full and immediate deduction of nominal interest on debt incurred to finance investments in appreciated assets. To varying degrees this can offset the impact of inflation and lead to a more neutral overall taxation of capital gains. Indeed it is argued in a 1980 green paper reviewing the taxation of capital gains that " for capital properties financed predominantly by borrowing, the current tax system provides full offset at all forseeable rates of inflation. In fact, the current system overcompensates in a significant range of cases."[20] Full interest deductibility can thus constitute a powerful incentive to undertake risky investments yielding capital gains.

Indexing of the capital cost of assets and debt interest and moving to an accrual basis of taxation would eliminate the inflation-induced distortions in the capital gains tax. Indexing of debt interest would help to reduce the magnitude of the incentive to convert non-deductible consumer and mortgage debt into deductible interest expense. This might make it easier to restrict deductible interest and to apply tracing or streaming rules relating interest expense to income producing investment assets in order to determine deductibility.[21] Other important distortions such as the exemption of gains on principal residences and other tax-sheltered assets and the limitations of the deductibility of losses would remain.

While indexing the capital gains tax and related interest expense is desirable on equity and efficiency grounds, there are a number of problems that must be considered. First, the indexing calculation itself would be complicated and would require information on the level of the consumer price index on the acquisition and sales dates. It would be difficult for taxpayers to correctly make the necessary calculation and would be difficult for the tax authorities to review. Second, depending on how the indexing was introduced there could be valuation day problems similar to those associated with the introduction of capital gains in 1972. Third, the indexation of debt would be necessarilly complex, particularly if debt interest was to be indexed in such a way as to minimize the transitional gains and losses resulting from an immediate full withdrawal of the deduction for the inflation premium component of interest expense on loans to acquire indexed assets. If the indexation of assets was not comprehensive, an additional dimension would be added to the tracing problem. It could require that individual taxpayers file detailed statements of their assets and liabilities each year. Fourth, the indexation of capital gains on shares of private corporations would make possible a de facto indexation of asset values. This would be undesirable in the absence of a comprehensive indexation of business income. Reasons that small business would be reluctant to accept comprehensive indexation have already been mentioned.

5.2 Indexed Securities Investment Plan (ISIP)

In a consultation paper released with the June 1982 budget entitled (Inflation and the Taxation of Personal Investment Income), it was proposed that a Registered Shareholder Investment Plan (RSIP) be established to provide for a limited form of cost base indexation for individuals investing in listed common shares of corporations taxable in Canada. The cost base of contributions to this plan would be indexed by the rate of inflation. Gains would be taxed on an accrual basis and would not qualify for the $1,000 investment income deduction. Losses would not be subject to the $2,000 ceiling on deductibility. Carrying charges on funds borrowed to invest in RSIPs would not be deductible.

The RSIP proposal was referred to a committee of prominent individuals under the Chairmanship of Pierre Lortie for study and recommendations. The Committee recommeded that a modified RSIP for listed common shares be adopted as a partial approach to exempting the inflation component of capital gains from taxation. The modifications suggested were: deferral of taxation of accrued gains; broadened eligibility for assets to include other types of publicly traded or quoted equity securities; extension of

eligible RSIP holders to include estates; and the inclusion of mutual and other pooled funds in the RSIP.[22]

Minister of Finance Marc Lalonde announced in acceptance of the Lortie Committee's recommendations on the RSIP in his statement of October 1982. Draft legislation implementing an Indexed Securities Investment Plan (ISIP) as of October 1, 1983 was tabled with the April 1983 budget.

A simplified example of how ISIP works is provided in Table 4. The cost base of the plan is determined by the initial contribution of $10,000 on January 1 to purchase shares. This base is indexed monthly by the increase in the CPI. In the example the rate of inflation is assumed to be 5 per cent per year or .4 per cent per month. As a result of indexing at this rate, the indexed cost of the ISIP portfolio is increased to $10,457 by December 31. If over the same period the portfolio appreciates by 20 per cent, its fair market value as of December 31 will be $12,000, yielding a real gain of $1,543 over the course of the year. Of this 25 per cent or $386 will be recognized as a capital gain and half of which or $193 will be taxable. The recognition of only 25 per cent of capital gains on an accrual basis is the most important modification of the original government proposal recommended by the Lortie Committee.

In year 2 the opening cost ($10,843) is equal to the fair market ($12,000) value less the deferred gain ($1,157). Alternatively, it is equal to initial cost ($10,000) plus the sum of the accumulated inflation adjustment ($457) and the recognized gain ($386).

This is the essence of the ISIP calculation. For an actual portfolio the arithmetic is more complicated. The indexing base of the ISIP is increased as securities are purchased or transferred to an ISIP. It is reduced as securities are sold. Cash balances in the account are not indexed. ISIP losses are not subject to the $2,000 limit on deductibility against ordinary income. While the ISIP is simple in theory, it is much more complicated in practice. The legislation implementing the ISIP runs to 50 pages specifying such details as qualified securities,authorized administrators, procedures for terminating a plan, and rules for transferring securities.

The advantage of an ISIP can be illustrated by comparing the real effective tax rate on an ISIP portfolio with a non-ISIP portfolio given different assumptions for the inflation rate, the real growth of the portfolio, the holding period, and the marginal tax rate of the investor. The first figure on Chart 10 shows how the

effective tax rate for a non-ISIP portfolio approaches 100 per cent as inflation rises from 2 to 15 per cent. In contrast, the effective tax rate for an ISIP portfolio remains just below the 25 per cent that is consistent with the accrual taxation of real capital gains.

The second figure in Chart 10 demonstrates the impact of the magnitude of real gains on the effective tax rate. The differential between ISIP and non-ISIP portfolios narrows as the real gain increases. The tax benefits of deferral get greater the higher the rate of real growth of the portfolio. This is the lock-in effect which accrual taxation is designed to mitigate. An ISIP is a good investment vehicle for high dividend yielding stock exhibiting low real gains. It is less desirable for low dividend yielding stocks with high real gains. An exception is if the stock is high risk. Then the full loss offset feature of the ISIP is attractive.

The third figure in Chart 10 shows that the effective tax rate for a non-ISIP portfolio is greatly reduced by an increase in the holding period, whereas the effective tax rate for an ISIP portfolio is only reduced slightly. This reflects the much greater degree of deferral permitted outside of an ISIP. Nevertheless, even with a holding period as long as 15 years, the effective tax rate is still much higher on capital gains earned outside of an ISIP and is well above the 25 per cent associated with the accrual taxation of capital gains.

The first figure in Chart 11 provides graphic evidence of the degree to which the benefits to be derived from an ISIP rise with the marginal tax rate of the investor.

The second two figures in Chart 11 illustrate a different important characteristic of an ISIP. It arises from the non-deductibility of interest on debt incurred to finance investment in an ISIP. The second figure shows that as a percentage of the non-ISIP portfolio financed by debt rises to the full extent allowed by existing margin regulations the tax advantage of an ISIP turns into a disadvantage. The switchover occurs when more than 25 per cent of the non-ISIP portfolio is debt financed. At a 50 per cent debt financing ratio the effective tax rate on a non-ISIP investment is actually negative, indicating a tax subsidy. The third figure on Chart 11 testifies to the dramatic way in which debt financing reduces the real effective tax rate in a non-ISIP portfolio as the rate of inflation increases.

Considering all the time and effort that went into the process

whereby the ISIP was proposed, discussed, revised and implemented, the number of ISIPs opened have been disappointingly few. A rough estimate of their number, which can be used until the Investment Dealers Association releases the results of its recent survey, is about 5,000 accounts. Assuming an average holding of $10,000 to $15,000 each, the total amount invested in ISIPs can be estimated to be only around $50 to 75 million. Compared with the total value of listed securities outstanding of about $30 billion the amount invested in ISIPs approaches insignificance

There are several possible explanations for the poor acceptance of ISIPs. The simplest is that lower inflation has reduced the tax advantages of investing through an ISIP. Nevertheless, even at 5 per cent inflation there is still a substantial tax advantage to be gained from an ISIP. For an investor with a 50 per cent marginal tax rate and a 5 year holding period, a portfolio with a 3.5 per cent real capital gain would have an effective tax rate of 24.1 per cent in an ISIP compared to 52.1 per cent outside.

The tax advantage associated with debt financing outside an ISIP may be an explanation. Yet despite the prohibition on interest deductibility for ISIPs proper, an ISIP can be still used as collateral for other investment loans, thus circumventing many of the disadvantages arising from the non-deductibility of interest expense.

The fact that the gain is not eligible for the $1,000 investment income deduction is another possible explanation. However, the incentive to utilize fully the $1,000 investment deduction is probably not a binding constraint for most stock market investors.

An important reason for the lack of acceptance of the plan is probably its complexity and inadequate understanding of its advantages among investors. Many securities salesmen are said not to understand the plan. The level of ignorance is even higher among the wider investing public. Perhaps it will just take more time for investors to catch on to ISIPs, or maybe it will require inflation to pick up.

Various suggestions have been made to improve the popularity of ISIPs. The Investment Dealers Association has recommended that the administrative costs of ISIP should be made fully deductible rather than only half deductible as at present. Their other recommendation is that ISIP gains be eligible for inclusion in the $1,000 investment income deduction.

Some problems with ISIPs have been identified. The most serious is the preferential treatment it accords publicly traded or quoted equity securities over other assets. Concern has been expressed about the effect of this preference on the ability of other companies to raise equity capital. C.K. Marchant has observed that out of 300 thousand enterprises in Canada with assets in excess of $250,000 or sales in excess of $500,000 only about 1,700 or less than 1 per cent of the total number of companies were listed on the five Canadian stock exchanges.[23] The Lortie Committee itself was concerned not to discriminate against private corporations and recommended that "consideration be given to the possibility of providing relief for taxation of inflation-induced illusory gains on the disposal of common shares of private corporations held for five years or more."[24]

Another problem that ISIP creates in the absence of more comprehensive indexation is the potential for tax arbitrage. Debt can be incurred to finance non-ISIP holdings of investment assets. If necessary, ISIP securities can be pledged as collateral. The current rules for tracing or streaming deductible debt and investments are relatively loose, and would not prevent such a use of an ISIP as long as the ISIP itself was purchased without incurring additional debt. This puts the investor in a position where he can have his cake and eat it too. By effectively financing ISIP investments with deductible debt, an investor could benefit from both indexing of capital gains and the full deductibility of nominal interest.[25] For such tax arbitrage to become a pressing problem ISIPs would have to become much more prevalent.

In summary, in theory ISIPs should largely eliminate the inflation-induced increases in the taxation of common shares. In practice, ISIPs have not yet caught on sufficiently to have any appreciable effect. In a sense, the simple availability of ISIPs as an option satisfies the equity issue raised by the taxation of inflationary capital gains. If individuals pay a higher effective tax on capital gains due to inflation, it is because they choose not to take advantage of ISIPs. On efficiency grounds, the effects of the ISIP are ambiguous, although as long as the ISIPs do not become more widespread they are not likely to be significant. On the one hand, the ISIP reduces the distortions in the taxation of capital gains in common shares. This should reduce the tax advantage of investing in owner occupied housing and other tax sheltered investments. It should also encourage savings and make more equity capital available to firms. The beneficial effect on the availability of funds, however, is mitigated by the extent to which the cost of capital is determined on international capital markets. On the other hand,

the ISIP discriminates against other assets that do not benefit from indexation, the most important of which is shares in private corporations. The ISIP also makes it possible to utilize fully deductible debt to finance the purchase of an indexed asset. This creates new opportunities for tax arbitrage.

5.3 Interest Income

There are two ways to index interest income. One is to allow taxpayers a deduction equal to the inflation premium portion of interest income as measured by the product of the value of outstanding principal and of the rate of increase in a general price index such as the consumer price index. Another is only to allow the tax indexation of indexed instruments. This latter approach was that proposed in the Green Paper on (Inflation and the Taxation of Personal Investment Income).

The specific proposal was to create a new type of debt instrument called an indexed term deposit (ITD). The inflation premium on income earned from ITDs was to be exempt from tax and the real return was to be taxed at ordinary rates. The funds raised through the issuance of ITDs was to be loaned out at low real rates as indexed term loans (ITLs) to borrowers who must be either purchasers of new homes, or farmers, fishermen, or small businesses purchasing new depreciable property. The low real rates were to be ensured by allowing widespread holdings of ITDs but limiting eligibility for ITLs. The inflation premium on ITLs was not to be allowed as a deduction to the borrower. However, since eligible borrowers were either non-taxable or subject to a low rate of tax, this was not expected to be a major drawback.

The Lortie Committee recommended that the government "not proceed with the Indexed Term Deposit and Indexed Term Loan proposal because of the economic distortions and other difficulties that would arise."[26] The specific objections cited were four:

- problems of resource allocation;

- mandatory use of real-term instruments to obtain tax benefits;

- problems for financial intermediaries;

- government intervention in resource allocation.[27]

The distortions in resource allocation identified were within eligible sectors, between eligible and non-eligible sectors, and among financial institutions. Within eligible sectors there was a bias in favour of new housing or new depreciable assets that

could depress the price of existing assets and blunt the incentive to make the best use of existing assets. The distortions between eligible and non-eligible sectors could result in the diversion of savings away from non-eligible sectors such as large corporations that account for most of the economy's investment. Certain classes of financial institutions would also be favoured by the proposal.

The Lortie Committee did not say it but the magnitude of the potential distortions was so large that the proposal once implemented would either have to be abandoned or expanded.

The Lortie Committee had serious reservations about making contracting in real terms the price of tax reform. Instead the Committee favoured an approach involving various steps to facilitate contracting in real terms.

The Lortie Committee was concerned about problems for financial intermediaries. One particular problem was the need to match indexed term loans and indexed term deposits. This would be difficult if as estimated the supply of indexed deposits were to exceed the demand for indexed loans by a wide margin.

Finally, the Lortie Committee voiced strong reservations about the way in which the proposal significantly extended direct government intervention in the allocation of credit.

The Lortie Committee did a great service in clearly and forthrightly setting out the key objections to the government's proposal for ITLs and ITDs. The government accepted the Lortie Committee's recommendation and dropped the proposal. A limited form of indexation of interest income was not to be.

The question remains as to the need for indexation. Much interest income is still subject to tax on its inflation premium component. However, the $1,000 investment income deduction provides an important shelter for interest income. Registered Pension Plans and Registered Savings Plans also shelter interest income. It was proposed by the old government that the limit on tax deductible contributions to retirement savings plans be increased to $10,000 in 1985 rising to $15,500 by 1988. If implemented by the new government, this would provide an important additional element of tax relief for interest income. Furthermore, a considerable easing of inflation has much shrunk the inflation premium component of interest income and lessened the need for indexation.

The consequences of indexing interest income are not all

beneficial. There is the loss of revenue to the government which would have to be made up elsewhere. If the indexation extended to interest expense as well as interest income, part of the revenue loss would be recouped. But there would still be interest income not linked with interest expense. This would flow from consumer, mortgage, and government debt. Also it would not be desirable to eliminate the deductibility of the inflation premium on corporate debt. Since the cost of capital to corporation is largely determined on international markets, this redistribution of tax burdens would raise the cost of capital and tend to discourage investment. Granted that savings would be stimulated, but real-after tax rates of return and savings are already high enough in the short-run. If anything, given current and prospective levels of unemployment, the economy would benefit from a decline in savings and the extra demand that this would entail.

6 CONCLUSIONS

If inflation were still at double-digit levels or were heading back quickly in that direction, the benefits to be derived from moving towards a comprehensive indexation of business and investment income would certainly outweigh the costs. If inflation slows further to the zero or 2 per cent range and thus disappears as a problem, there would from a domestic point of view be only the costs from indexation and no benefits. As long as inflation stays below 5 per cent as forecast by the Minister of Finance in his November 8 statement, indexation and the effect of inflation on the taxation of business and investment income should not be a priority concern. The sudden and dramatic slowing in inflation since 1982 is the main reason that the government has never acted on the Lortie Committee's recommendation for a comprehensive study of the issue.

If inflation breaks out again into the double-digit range for reasons beyond the control of the monetary and fiscal authorities -- an unlikely event given the powerful deflationary forces at work in the economy -- then further indexation should be considered for domestic tax policy reasons. The most attractive indexation option would be to index the capital consumption allowance on new capital investment and to remove the 3 per cent limit on the inventory reduction. This could be financed by some reduction in corporate tax preferences so as to achieve a more neutral distribution of the tax burden across asset types and industries.

The indexation of interest income and expense would be more problematic. Granted that the indexation of interest income and expense would eliminate an important source of distortions in the allocation of resources. However, this would come at a high revenue cost to the government. Moreover, with capital highly mobile internationally, indexation of interest would raise the after-tax cost of capital to Canadian business. The current system of full nominal interest deductibility provides a generous incentive for debt-financed investment which could only be withdrawn at a risk of seriously depressing investment spending. The timing of any such withdrawal would thus have major implications for stabilization policy. A related consideration would be the important disadvantages from the point of view of stabilization policy in departing so radically from the tax treatment accorded interest in the United States.

For individual investors, the indexation of interest income would encourage savings. This, however, would not be an unmixed

blessing in an economy faced with the prospect of high unemployment lasting till perhaps the end of the decade. The case for indexing interest income on equity grounds would also not be that strong given that much interest income is already sheltered by the $1,000 investment income deduction and registered savings plans.

With respect to the tax treatment of capital gains in another renewed bout of double-digit inflation, the ISIP goes some way to satisfying the tax equity problems resulting from the interaction of the capital gains tax and inflation. It would be much more difficult to apply indexing to other assets. It would also not be equitable to extend the indexation of capital gains without offering comparable treatment to interest income. It is not clear that the country would necessarily benefit from a reduction in taxes on capital gains and investment income at the expense of increases in taxes on other income.

There are two situations in which a full-scale comprehensive tax indexation would be the best way to proceed. The first and most obvious situation would be if inflation were to take off well into the double-digit range and a hyper-inflation were to become a real possibility. Such a scenario, while highly improbable, would probably be triggered by the onset of a U.S. and maybe even worldwide hyper-inflation. In this event, most major industrialized countries would probably be forced to adopt comprehensive tax indexation, and many of the objections to a go-alone strategy of comprehensive indexation would thereby lose their validity.

The second and less clear-cut situation where it would be desirable to adopt something approximating a comprehensive indexation of the tax system would be if inflation were to remain near current levels or increase and if the recent Treasury Department proposals were to be implemented in the United States. The advantages to be gained from maintaining a certain degree of tax harmonization with the United States along with the allocative and equity considerations favouring comprehensive tax indexation would outweigh the disadvantages of the resulting increased complexity of the tax system.

If inflation continues to decline, however, there is no reason to adopt comprehensive indexation in Canada regardless of what is done in the United States. With low inflation there is little difference between the distribution of tax burdens for an indexed or unindexed system and inflation-induced distortions become insignificant.

The decline in inflation has taken comprehensive indexing off the top of the Canadian agenda for tax reform. If comprehensive tax indexing were implemented in the United States, there would inevitably be renewed interest in indexing in Canada that would put it back on top. Barring this, however, it will take a much higher level of inflation than expected in the medium-term to generate much support for comprehensive indexation. If inflation indeed stays down, we are much better off with a simpler unindexed tax system than with a more complicated indexed tax system.

TABLES

TABLE 1
TAX PARAMETERS USED IN CALCULATING THE USER COST OF CAPITAL AND EFFECTIVE TAX RATES FOR VARIOUS INDUSTRY GROUPS AND CATEGORIES OF INVESTMENT, 1984

	Corporate Tax Rate	Investment Tax Credit Rate	Capital Consumption Allowance Rate
1. Large, Non-Atlantic region, Non-Manufacturing			
1.1 Machinery and Equipment	46	7	20
1.2 Non-Residential Construction	46	7	5
2. Large, Atlantic region, Non-Manufacturing			
2.1 Machinery and Equipment	46	20	20
2.2 Non-Residential Construction	46	20	5
3. Large, Non-Atlantic region, Manufacturing			
3.1 Machinery and Equipment	46	7	50
3.2 Non-Residential Construction	46	7	5
4. Large, Atlantic region, Manufacturing			
4.1 Machinery and Equipment	40	20	50
4.2 Non-Residential Construction	40	20	5
5. Small, Non-Atlantic region, Non-Manufacturing			
5.1 Machinery and Equipment	25	7	20
5.2 Non-Residential Construction	25	7	5
6. Small, Non-Atlantic region, Manufacturing			
6.1 Machinery and Equipment	20	7	50
6.2 Non-Residential Construction	20	7	5

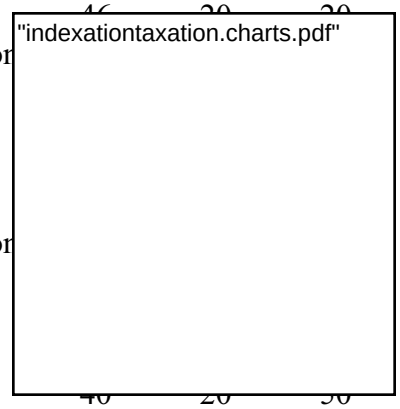


TABLE 2
EXAMPLES OF VARIATIONS IN THE COMPONENTS OF THE 1984 EFFECTIVE TAX RATES ON CAPITAL GAINS ACCRUED FROM DIFFERENT INVESTMENT ASSETS FOR A TAXPAYER WITH A 50 PER CENT MARGINAL TAX RATE

ASSET	Accrual-based taxation of 50% of real gains	Effect of Lack of indexation	Effect of Deferral	Actual real effective tax rate
Real estate				
Speculative renovation	25	18.6	-1.8	41.8
Urban rental property	25	238.1	-64.5	198.6
Farm Land	25	119.0	-58.0	86.0
Common Stocks				
Speculative new issues	25	7.9	-	32.9
Large public company	25	47.6	-12.7	59.9
ISIP - Large public company	25	-	-1.0	24.0
Principal residences and other tax sheltered investments	25	-	-	0.0

Notes: These calculations are based on those presented in John Bossons,"Economic Effects of the Capital Gains Tax," *Canadian Tax Journal*, vol. 29, no. 6 (November-December 1981), p.812 and pp. 830-833. Figures shown for each asset type are basedon typical pre-tax rates of return, income composition, and holding periods; the specific assumptions for each asset are listed in Table A-1 in the appendix of Bossons, *op cit*, pp. 830-833. Figures are expressed as a percentage of real pre-tax income. Investments are assumed to be equity financed. The rate of inflation is assumed to be 5 per cent.

TABLE 3
REAL RATES OF RETURN AND HOLDING PERIODS
FOR DIFFERENT INVESTMENT ASSETS

	Annual Rate of Accrual of Real Capital Gains (%)	Holding Period in years
Real Estate		
Speculative renovation	6.4	2
Urban rental property	.5	15
Farm Land	1.0	25
Common Stocks		
Speculative new issues	15.0	1
Large public company	2.5	8
ISIP - Large public company	2.5	8
Principal residences and tax sheltered investments	1.5	30

Source: Assumptions, except for ISIP, are taken from John Bossons, "Economic Effects of the Capital Gains Tax," *Canadian Tax Journal*, vol. 29, no. 6 (November-December 1981), p. 831.

TABLE 4
EXAMPLE OF ISIP INDEXING

YEAR 1	
Securities Purchased - January 1	$10,000
Accumulated Inflation Adjustment - December 31 (1)	457
Indexing Cost - December 31	10,457
Fair Market Value - Decembver 31 (2)	12,000
Real Gain	1,543
Deferred Gain - 75% of $1,543	1,157
ISIP Gain - 25% of $1,543	386
Taxable ISIP Gain - 1/2 of $386	193
YEAR 2	
Opening Fair Market Value - January 1	12,000
Less Deferred gain	1,157
Indexing Cost	10,843

(1) 5% per year or .41% from February through December.

CHARTS

CHART 1

USER COST OF CAPITAL
FOR 6 INDUSTRY GROUPS AND 1 CASES
ASSUMING 5 PERCENT INFLATION

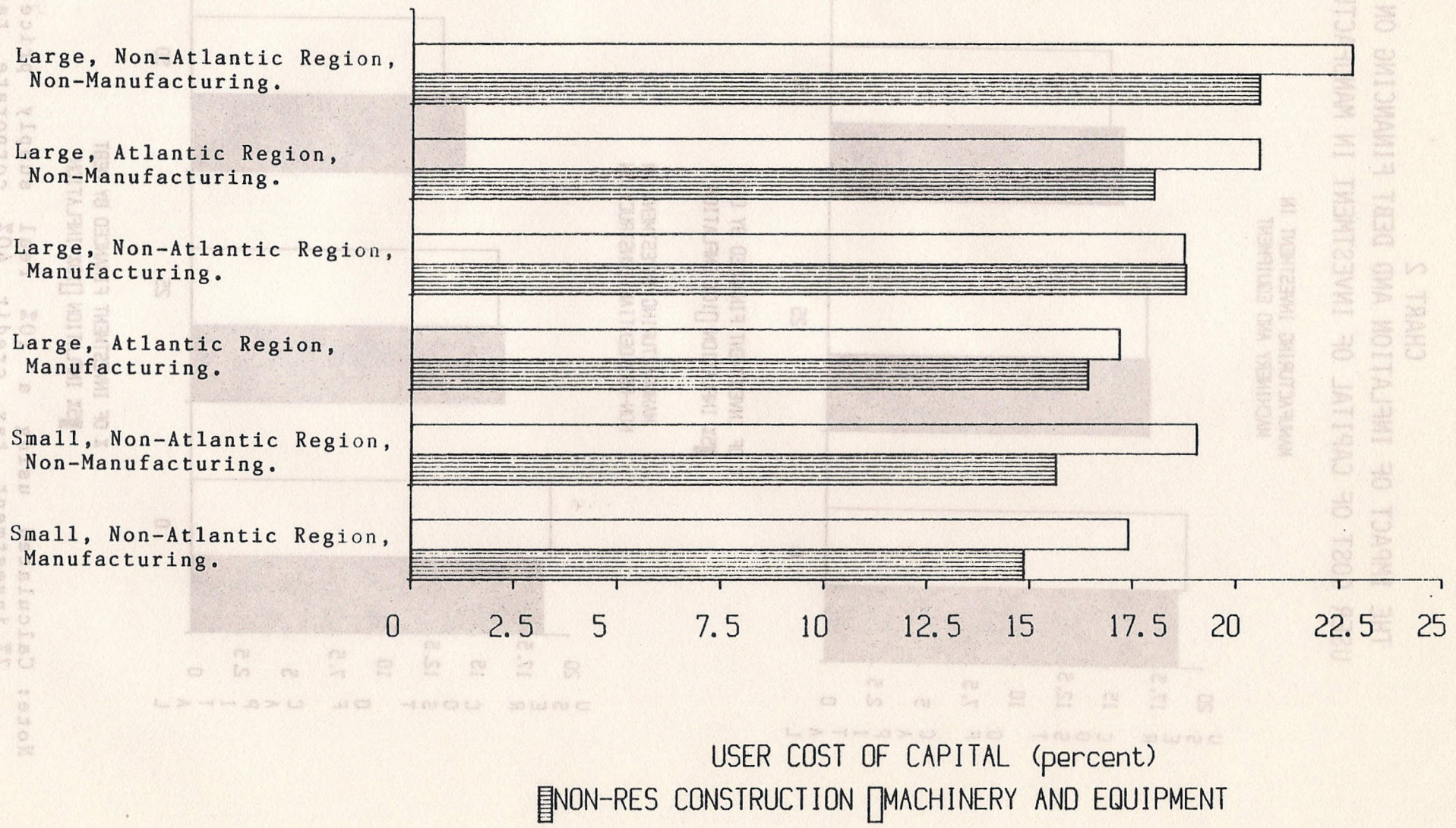
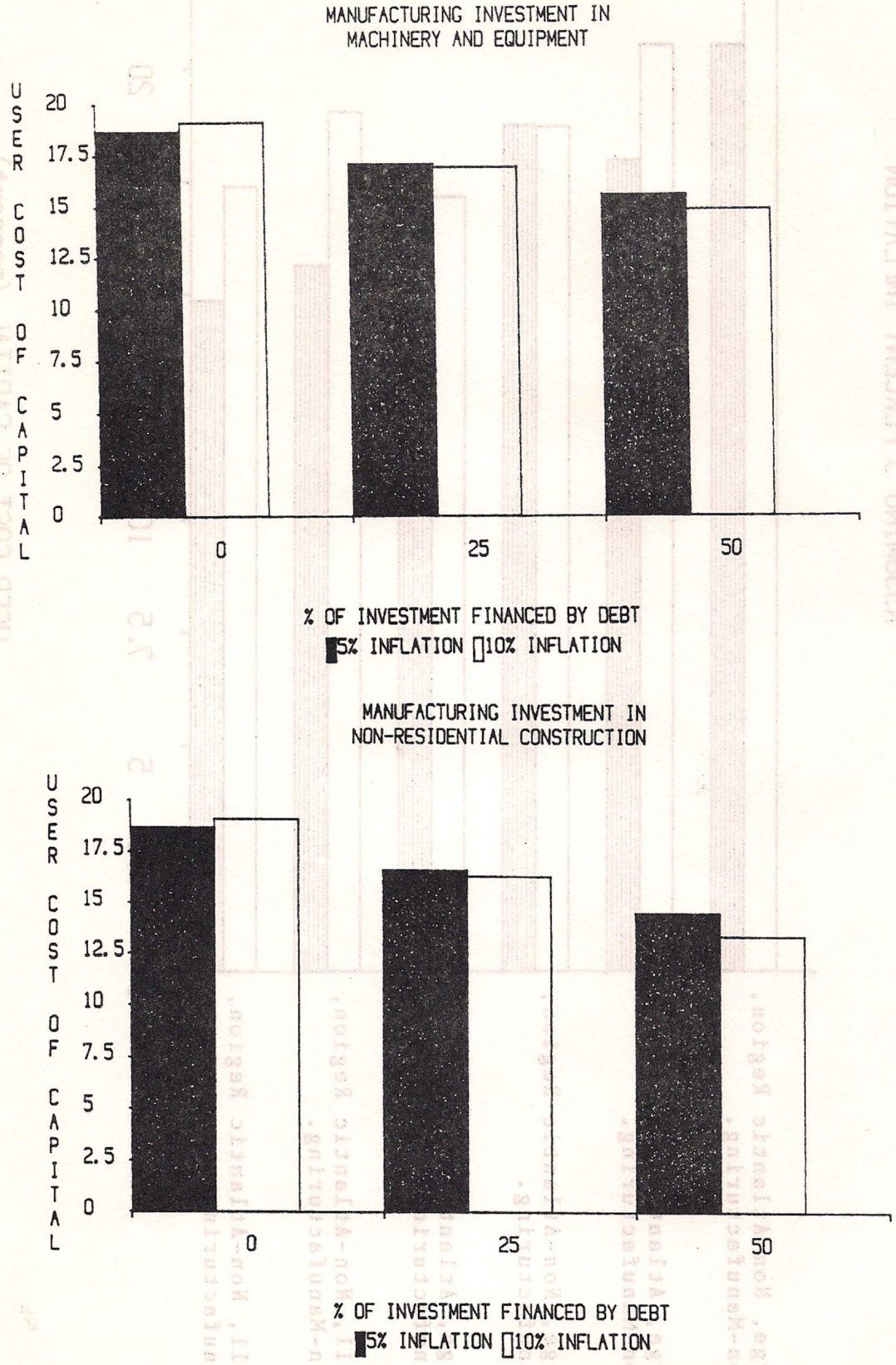


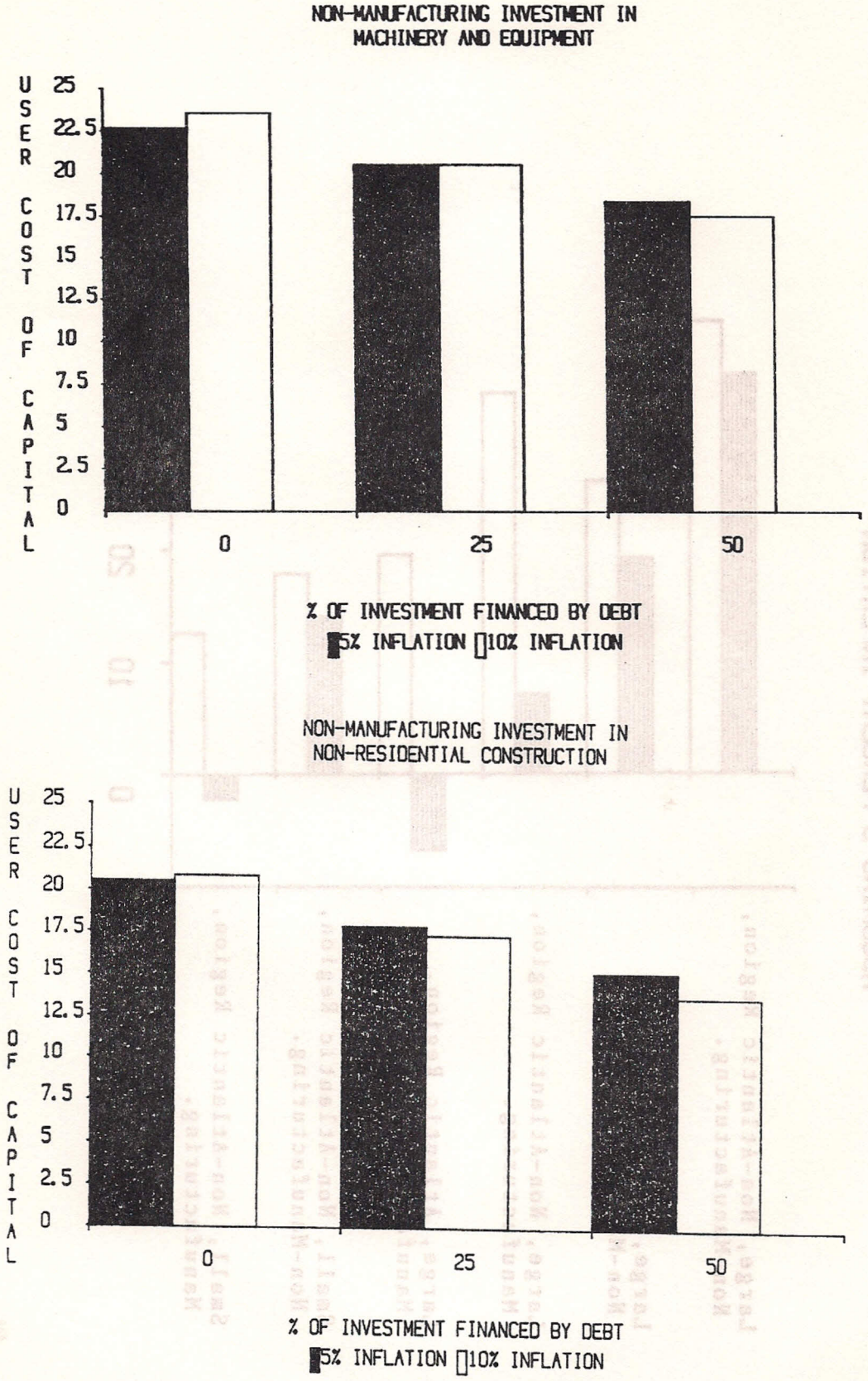
CHART 2
THE IMPACT OF INFLATION AND DEBT FINANCING ON THE USER COST OF CAPITAL OF INVESTMENT IN MANUFACTURING



Note: Calculated using a 10% real supply price of capital, 7% investment tax credit, 40% corporate tax rate, and a 50% straight line write-off for machinery and equipment and a 5% declining balance for non-residential construction.

CHART 3

THE IMPACT OF INFLATION AND DEBT FINANCING ON THE USER COST OF CAPITAL OF, INVESTMENT IN THE NON-MANUFACTURING SECTOR



Note: Calculated using a 10% real supply price of capital, 7% investment tax credit, 40% corporate tax rate, and a 50% straight line write-off for machinery and equipment and a 5% declining balance for non-residential construction.

CHART 4

THE REAL EFFECTIVE TAX RATE ON INVESTMENT BY INDUSTRY GROUP ASSUMING 5 PERCENT INFLATION

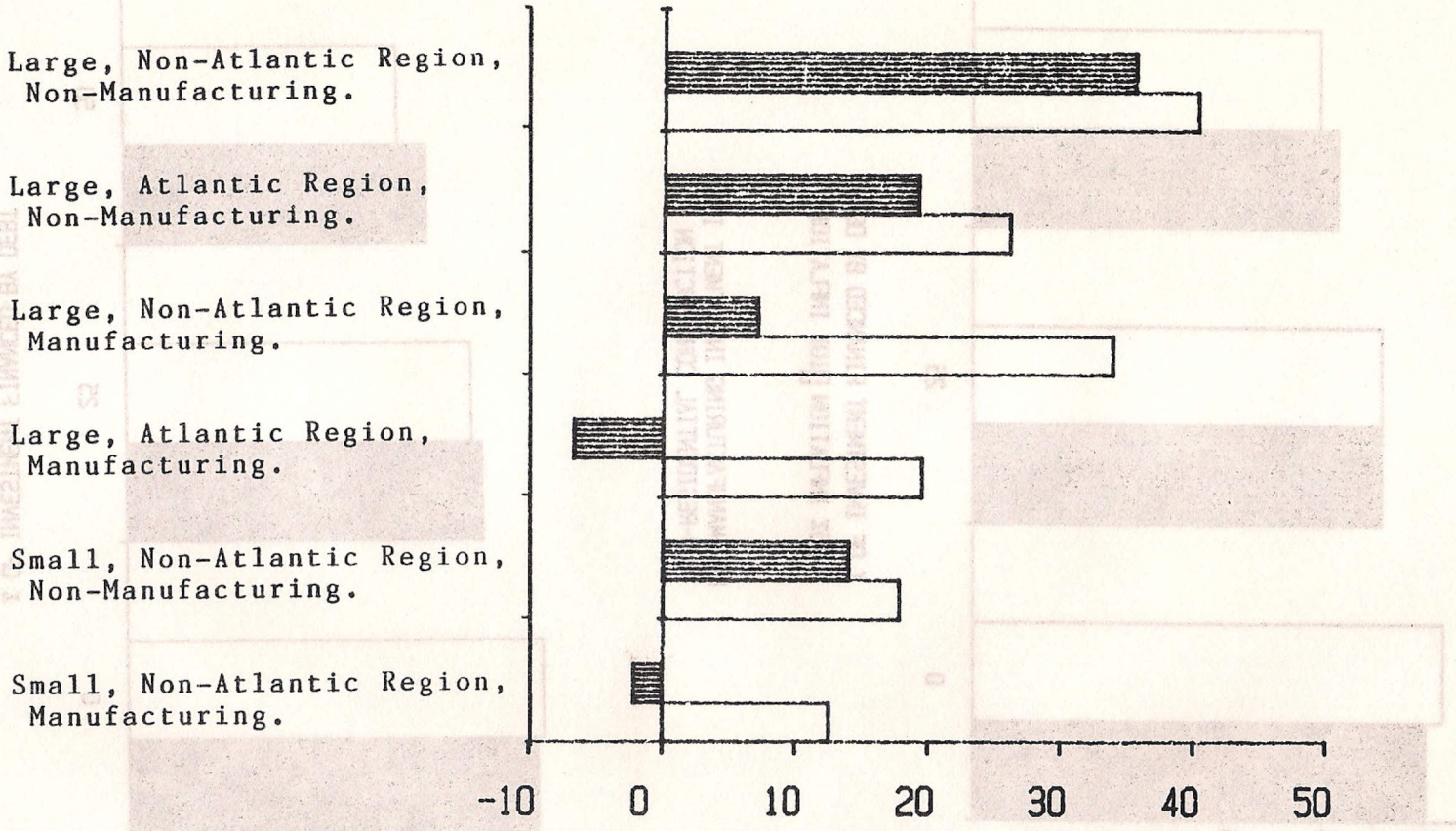
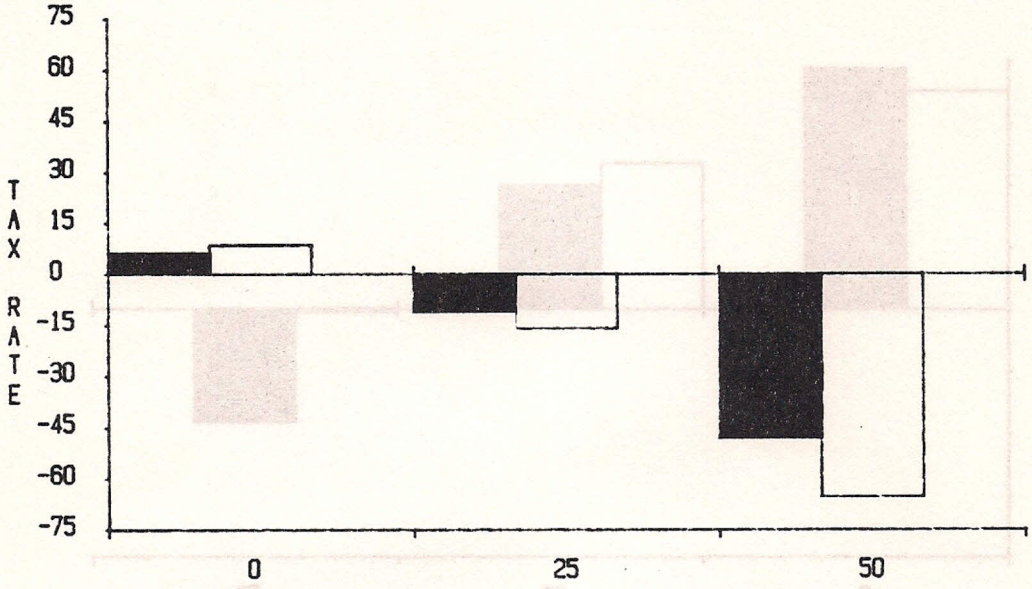


CHART 5

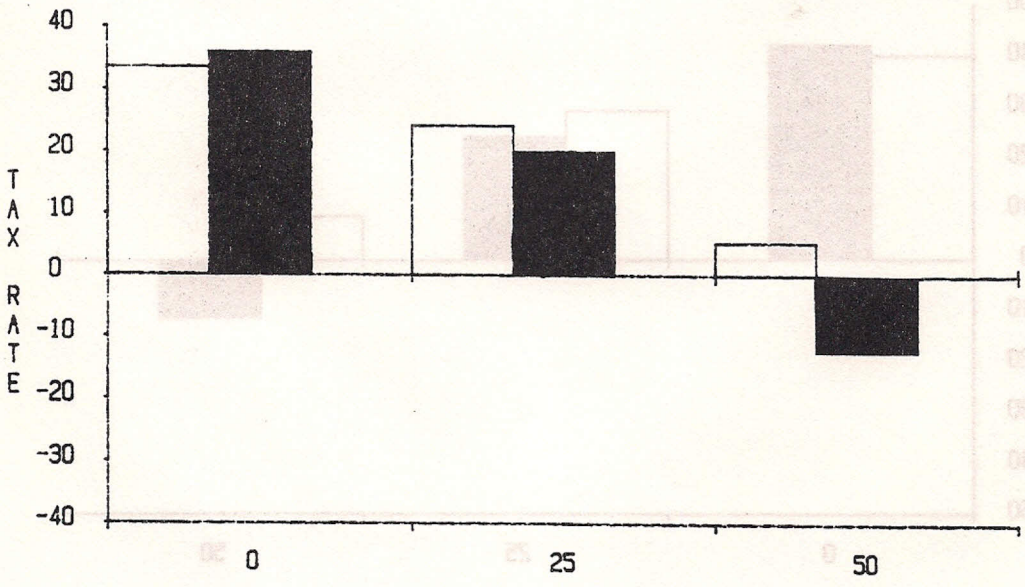
THE IMPACT OF INFLATION AND DEBT FINANCING ON THE REAL EFFECTIVE TAX RATE ON INVESTMENT IN MANUFACTURING

MANUFACTURING INVESTMENT IN
MACHINERY AND EQUIPMENT



% OF INVESTMENT FINANCED BY DEBT
■5% INFLATION □10%INFLATION

MANUFACTURING INVESTMENT IN
NON-RESIDENTIAL CONSTRUCTION



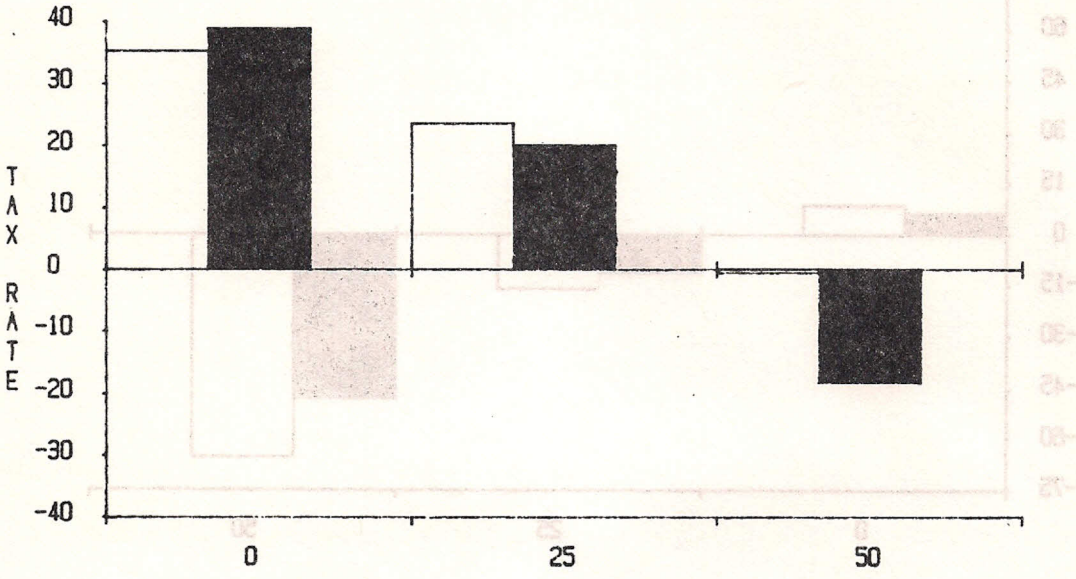
% OF INVESTMENT FINANCED BY DEBT
□5% INFLATION ■10% INFLATION

Note: Calculated using a 10% real supply price of capital, 7% investment tax credit, 40% corporate tax rate, and a 50% straight line write-off for machinery and equipment and a 5% declining balance for non-residential construction.

CHART 6

THE IMPACT OF INFLATION AND DEBT FINANCING ON THE REAL EFFECTIVE TAX RATE ON INVESTMENT IN THE NON-MANUFACTURING SECTOR

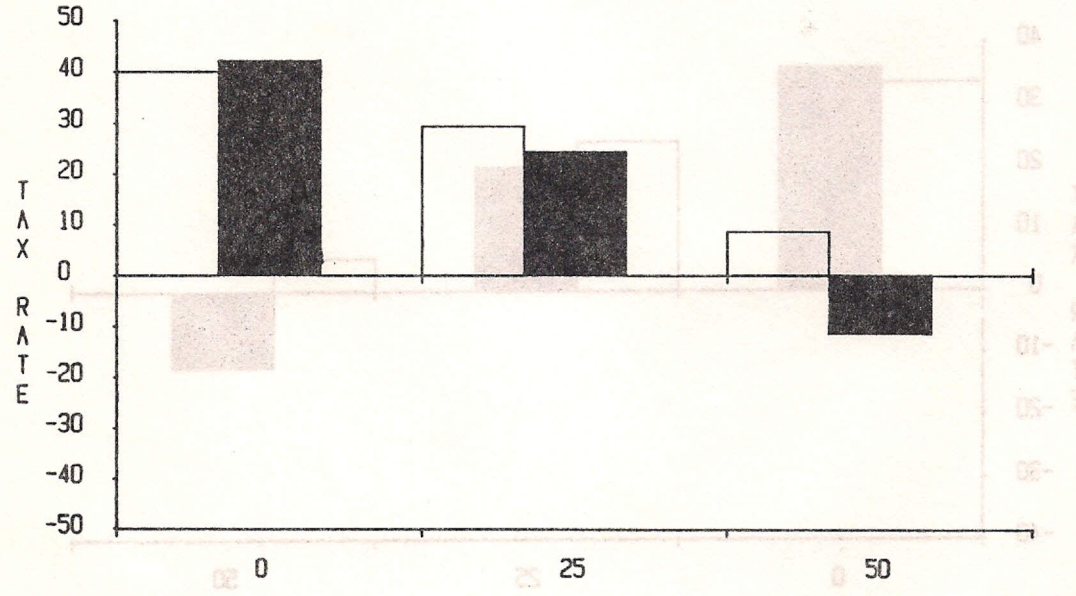
NON-MANUFACTURING INVESTMENT IN
MACHINERY AND EQUIPMENT



% OF INVESTMENT FINANCED BY DEBT

□5% INFLATION ■10% INFLATION

NON-MANUFACTURING INVESTMENT IN
NON-RESIDENTIAL CONSTRUCTION



% OF INVESTMENT FINANCED BY DEBT

□5% INFLATION ■10% INFLATION

Note: Calculated using a 10% real supply price of capital, 7% investment tax credit, 40% corporate tax rate, and a 50% straight line write-off for machinery and equipment and a 5% declining balance for non-residential construction.

CHART 7

THE REAL EFFECTIVE TAX RATE ON INVESTMENT BY INDUSTRY IF THE CORPORATE TAX WERE INDEXED

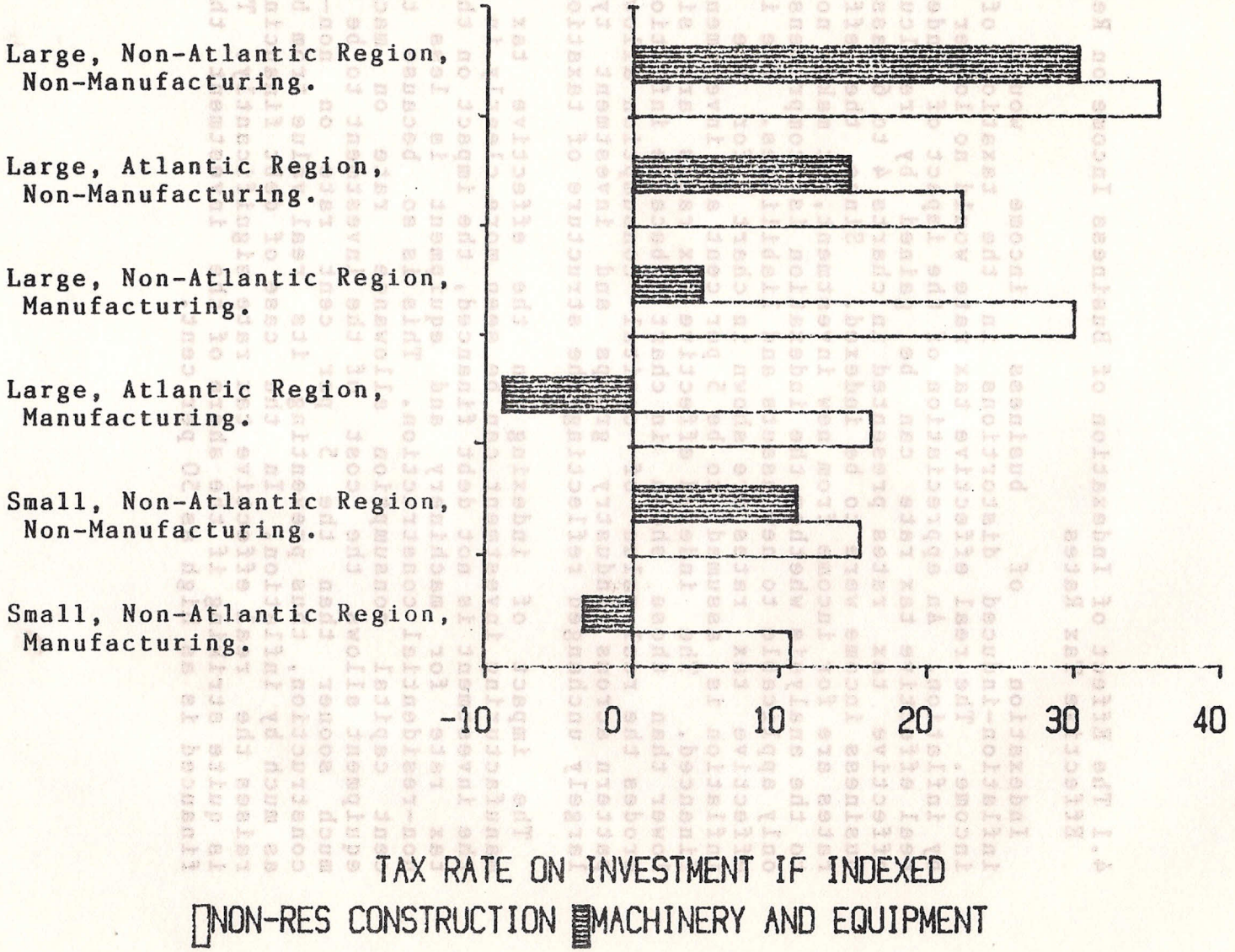
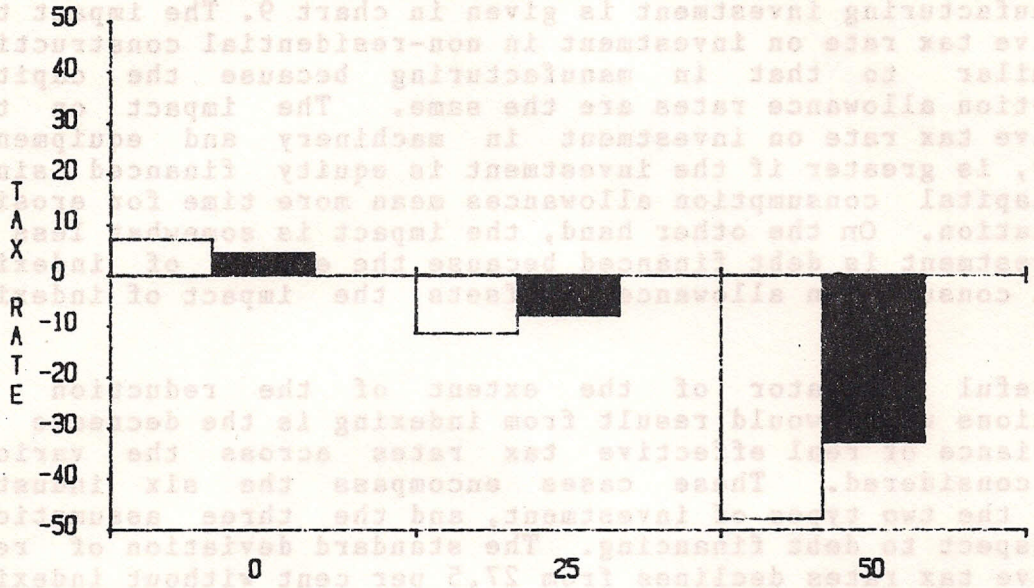


CHART 8
THE IMPACT OF INDEXING ON THE REAL EFFECTIVE TAX RATE ON INVESTMENT IN MANUFACTURING ASSUMING 5 PERCENT INFLATION

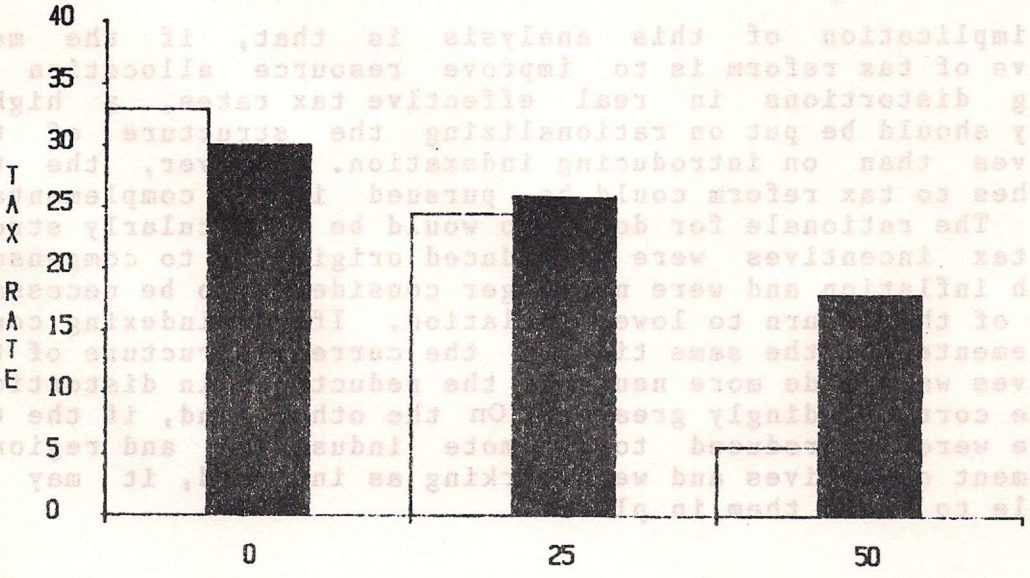
INVESTMENT IN MACHINERY AND EQUIPMENT



% OF INVESTMENT FINANCED BY DEBT

□CURRENT SYSTEM ■INDEXED SYSTEM

INVESTMENT IN
NON-RESIDENTIAL CONSTRUCTION

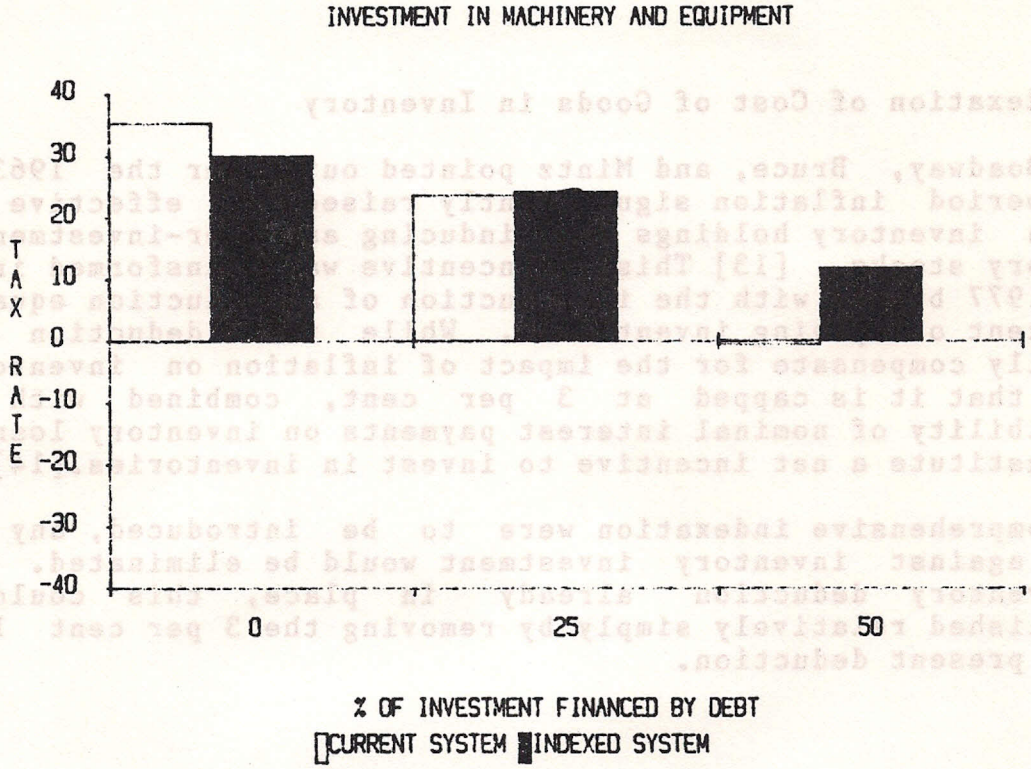


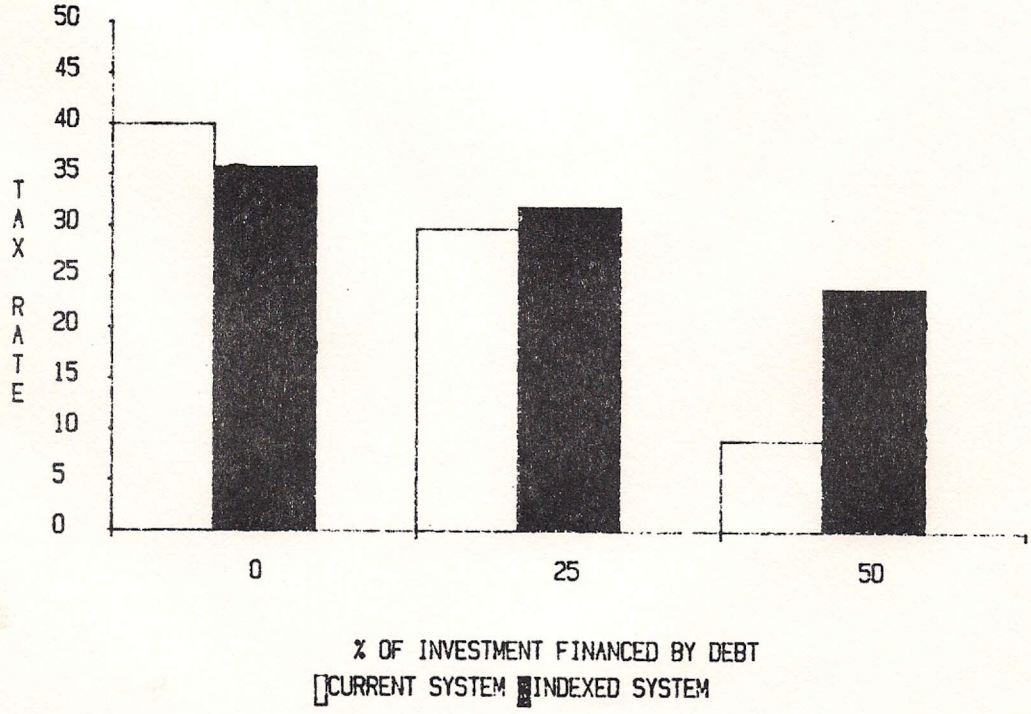
% OF INVESTMENT FINANCED BY DEBT

□CURRENT SYSTEM ■INDEXED SYSTEM

Note: Calculated using assumptions specified in previous tables except that capital consumption allowances are indexed.

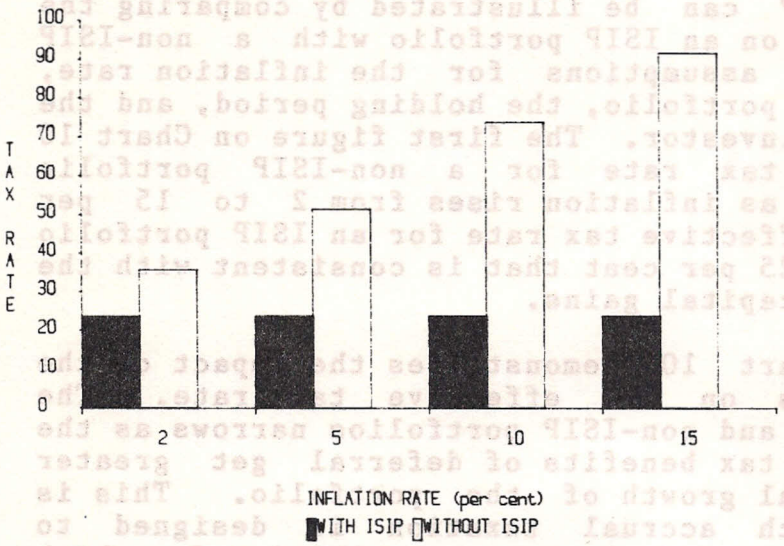
CHART 9
THE IMPACT OF INDEXING ON THE REAL EFFECTIVE TAX RATE ON INVESTMENT IN THE NON-MANUFACTURING SECTOR ASSUMING 5 PERCENT INFLATION



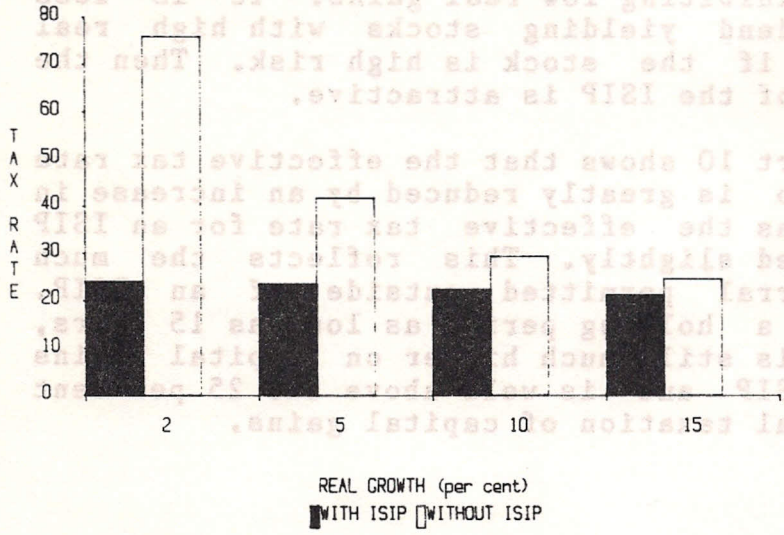


Note: Calculated using assumptions specified in previous tables except that capital consumption allowances are indexed.

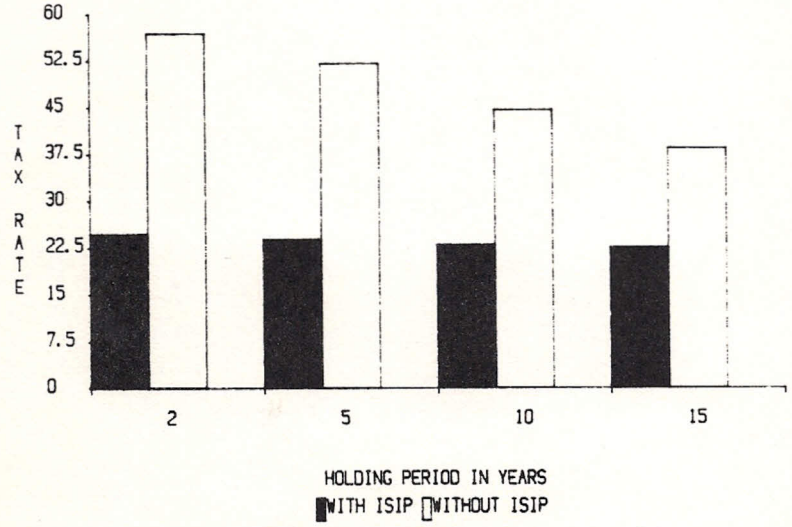
CHART 10
COMPARISON OF THE REAL EFFECTIVE TAX RATE WITH AND WITHOUT ISIP



Real Growth: 3.5%
Marginal Tax Rate: 50%
Years Held: 5

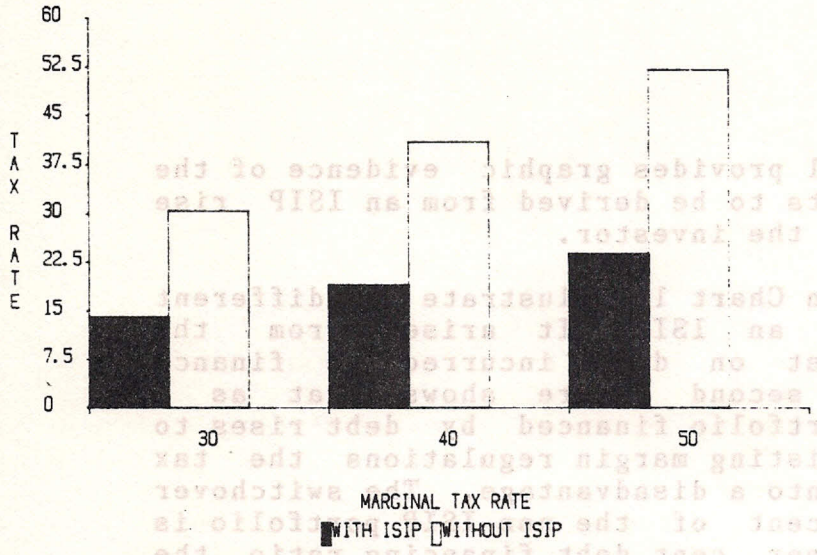


Inflation: 5%
Marginal Tax Rate: 50%
Years Held: 5

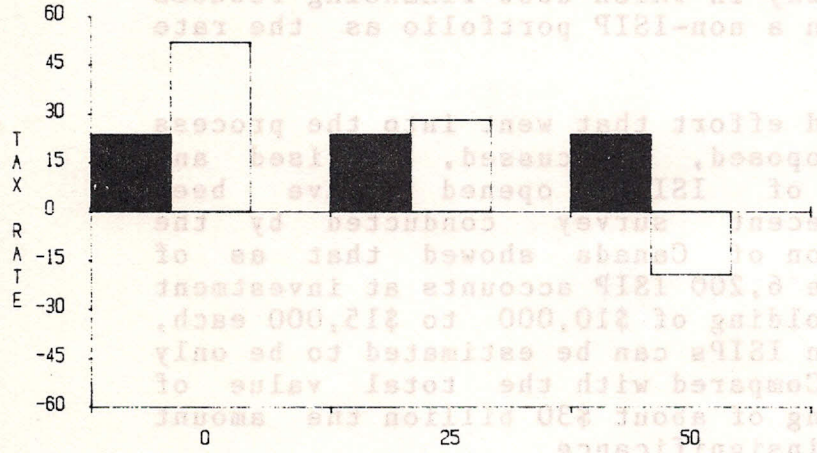


Real Growth: 3.5%
Inflation: 5%
Marginal Tax Rate: 50%

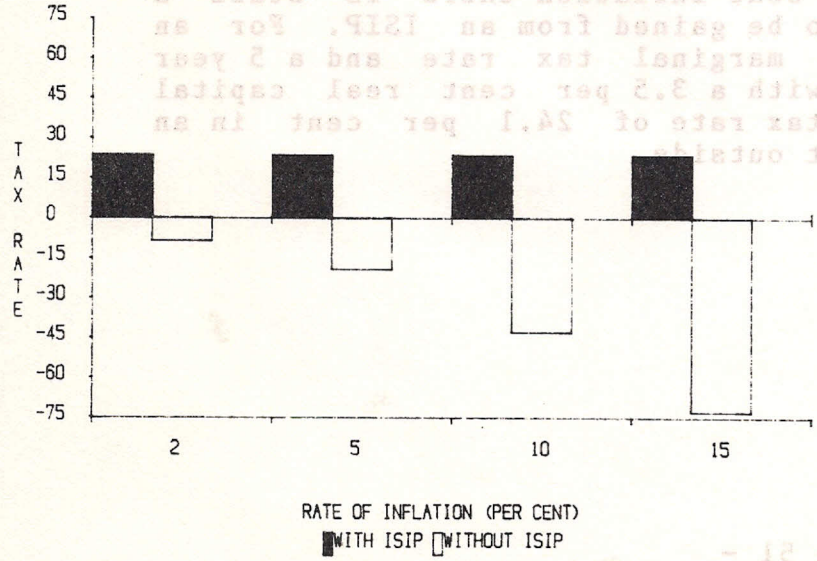
CHART 11
COMPARISON OF THE REAL EFFECTIVE TAX RATE WITH AND WITHOUT ISIP



Real Growth: 3.5%
Inflation: 5%
Years Held: 5



Real Growth: 3.5%
Inflation: 5%
Marginal Tax Rate: 50%
Years Held: 5



Real Growth: 3.5%
Marginal Tax Rate: 50%
Years Held: 5
Percentage of Non-ISIP portfolio debt financed: 50%

FOOTNOTES

1. Abraham Tarasofsky and H. Bert Waslander, "Inflation-Adjusted Rates of Return and Effective Tax Rates, By Aggregate and Industry Groups," in Patrick Grady (ed.), (Peering Under the Inflationary Veil),Proceedings of an Economic Council of Canada Conference on Inflation-Induced Distortions in Financial Reporting and Taxation, Toronto, October 15-16, 1981, pp.26-27.

2. Ibid,p.28.

3. Taken from "Sectoral Analysis of RDX2 Estimated to 4Q72," Bank of Canada Technical Report 6, (Ottawa:1977), p. 54.

4. Robin Boadway, Neil Bruce, and Jack Mintz,"Taxation, Inflation, and the Effective Marginal Tax Rate on Capital in Canada," *Canadian Journal of Economics*, XVII,no.1 (February 1984), pp.62-79.

5. Minister of Finance, *Inflation and the Taxation of Personal Investment Income*, June 1982, p. 14.

6. This information was provided by Mr. John Carchrae, the Research Manager of the CICA and is current as of October 19, 1984.

7. See Price Waterhouse Canada, Review and Perspective 1983-84 Accounting and Legislative Developments, December 1983, pp. 4-5.

8. A preview of the strongly negative nature of this reaction was provided by Irving L. Rosen in "Inflation Accounting and Small Business" in Patrick Grady (ed.) Peering Under the Inflationary Veil . Proceedings of a Conference on Inflation-Induced Distortions in Financial Reporting and Taxation, Toronto, October 15-16, 1981 (Ottawa: Economic Council of Canada, 1982).

9. Report of the Ministerial Advisory Committee on Inflation and the Taxation of Personal Investment Income, September 30, 1982, p. 70.

10. John Bossons, "Indexing for Inflation and the Interest Deduction," *Wayne Law Review*, vol. 30, no. 3 (1983), p. 961. Bossons observes that "A comprehensive indexation of business income for tax purposes was adopted in Chile in 1976 for companies with accounts in Chilean pesos." and that "inflation at that point had reached 500 percent."

11. A good international survey of inflation-adjustments is provided in A.E. John Thompson, "The Desirability and Feasibility of Indexing Business Profits for Tax Purposes," in *1982 Conference Report*, (Toronto: Canadian Tax Foundation, 1983), pp. 495-519.

12. Office of the Secretary, Department of the Treasury, *Tax Reform for Fairness, Simplicity, and Economic Growth* (Washington,D.C.: U.S. Department of the Treasury, November, 1984).

13. Boadway, Bruce, and Mintz, *Op.Cit*.

14. This point was made and supported by analysis in Robin Boadway, Neil Bruce, and Jack Mintz, "Corporate Taxation and the Cost of Holding Inventories," *Canadian Journal of Economics*, XV,no.2 (May 1982),p.292.

15. See James Tyrrell,"Views of the Canadian Manufacturers' Association," in *Peering Under the Inflationary Veil*, p.53.

16, Alan J. Auerbach and Dale W. Jorgenson, "Inflation-Proof Depreciation of Assets," *Harvard Business Review*, LXVIII (1980) pp. 113-118.

17. John Bossons, "Indexation After the Lortie Report," in *1982 Conference Report* (Toronto: Canadian Tax Foundation, 1983), pp. 489-91.

18. See Jerome Kurtz, "Comments on 'Indexing for Inflation and the Interest Deduction'," *Wayne Law Review*, vol. 30 (1984) pp. 969-972.

19. John Bossons, "Economic Effects of the Capital Gains Tax," *Canadian Tax Journal*, vol. 29, no. 6 (November-December 1981), p. 809.

20, Department of Finance, *A Review of the Taxation of Capital Gains in Canada*, November 1980, p. 39.

21. Tracing rules require the interest bearing debt to be incurred for the purpose of acquiring investment assets and streaming rules require the interest bearing debt to be incurred prior to the acquisition of the investment asset.

22. *Report of the Ministerial Advisory Committee on Inflation and*

the Taxation of Personal Investment Income, September 30, 1982, pp. 1-2.

23. C.K. Marchant, "Indexed Term Loans and Registered Shareholder Investment Plans: Impacts on Business Financing and Investment," in D.W. Conklin (ed.) *Inflation and the Taxation of Investment Income: an Analysis and Evaluation of the 1982 Reform Proposals* (Toronto: Ontario Economic Council, 1982), p. 134.

24. *Report of the Ministerial Advisory Committee on Inflation and the Taxation of Personal Investment Income,* September 30, 1982, p. 2.

25. The problem of interest arbitrage is raised in John Bossons, "Indexing for Inflattion and the Interest Deduction," *Wayne Law Review*, vol. 30, no. 3 (1984), pp. 966-968.

26. *Report of the Ministerial Advisory Committee on Inflation and the Taxation of Personal Investment Income*, September 30, 1982, p. 1.

27. *Ibid*, p. 30-31.

28. John Bossons,"Economic Effects of the Capital Gains Tax," *Canadian Tax Journal*, vol. 29, no. 6 (November-December 1981), p.812 and pp. 830-833.

APPENDIX A

Methodology Used to Calculate User Cost and Effective Tax Rates

A.1 User Cost

The formulas used to calculate the user cost of capital shown in Charts 1, 2, and 3 are as follows:

$$C=100*P*C1*C2*C3/(1-T)$$

$$C1=(R+DEP-(T*DEBT*(R+PDOT))$$

$$C2=1-ITC$$

$$C3=1-(T*Z)$$

where P is the price of capital goods set equal to 1;
R is the real supply price of capital equal to .1;
DEP is the depreciation rate equal to .0789 for machinery and equipment and .0345 for non-residential construction;
T is the applicable corporate tax rate from Table 1;
DEBT is the proportion of the investment that is debt-financed;
PDOT is the rate of inflation;
ITC is the investment tax credit rate from table 1; and
Z is the present value of capital consumption allowances calculated using the rates given in table 1.

A.2 Effective Corporate Tax Rates

The effective tax rates shown in Charts 4 through 9 were calculated by taking the ratio of the present value of taxes to the present value of real income expressed in current dollars. Present values were calculated using a discount factor equal to the product of 1 plus the real interest rate (assumed to be 10 per cent) and 1 plus the rate of inflation.

Real income expressed in current dollars was calculated as return on the investment minus real interest and indexed depreciation. Return on investment in year N was calculated as follows:

```
RETURN[N]=100*((1+PDOT)^(N-1))*((1-DEP)^(N-1))*(R+DEP)
```

where RETURN is return on investment;
N is the year;
100 is the initial investment;
PDOT is the rate of inflation;
R is the real rate of return; and
DEP is the depreciation rate set as in the calculation of user cost.

Taxes are calculated as:

```
TAXES=(T*RETURN)- ((T*INTDEDUCTION)+(T*CCA)+(ITC*100))
```

where INTDEDUCTION is either nominal or real interest payments depending on whether the tax system is indexed on the proportion of the investment that is debt financed;
CCA is capital consumption allowances on 100 investment either indexed or unindexed as applicable calculated using rates shown in table 1 taking into account half year rule; and
ITC is the investment tax credit.

An alternative methodology for calculating effective tax rates based on a comparison of before-tax and after-tax internal rates of return
was also tried but was not utilized because of the extreme sensitivity of the results to what were considered to be unreasonably high internal rates of return.

A.3 Capital Gains

The effective tax rates on capital gains displayed on table 2 are

based on John Bossons' methodology.[28] The assumptions utilized for the annual rate of accrual of real capital gains and the holding period are given in Table 3.

The effective tax rate is calculated using the following formulas:

$$ETR1=1-((1+RRCG)^{(1/H)}-1)/R$$

$$RRCG=((1+NRCG)/((1+PDOT)^H))-1$$

$$NRCG=(((1+G)^H)-1)*(1-.5*T)$$

$$G=(1+PDOT)*(1+R)-1$$

where ETR1 is the effective tax rate on capital gains;
RRCG is the real after-tax gain;
H is the holding period;
R is the annual rate of accrual of real capital gains;
NRCG is the nominal after-tax capital gain realized after H years;
PDOT is the inflation rate;
G is the nominal rate of accrual of capital gains; and
T is the marginal tax rate.

The effect of deferral in reducing the inflation induced tax increases is calculated as the difference between the effective tax rate (ETR1) which reflects both inflation and deferred taxation and another effective tax rate (ETR2) which reflects the effects of inflation and no deferral. This other effective tax rate is calculated using the following formulas:

$$ETR2=1-(ACG/R)$$
$$ACG=(1+G*(1-.5*T))/(1+PDOT)-1$$

where ACG is the after-tax real capital gain accrued in the current year assuming no deferral of tax; and
the other variables are as defined above.

The effect of the lack of indexation is calculated residually given the actual realeffective tax rate, the rate for accrual-based taxation of 50 per cent of real gains (25 per cent for a taxpayer in the 50 per cent marginal tax bracket), and the effect of deferral.

The calculation of the real effective tax rates for an Indexed

Security Investment Plan (ISIP) is somewhat more involved given the complexity of the plan. The fair market value of the ISIP in year I is assumed to have an initial value of 1 and to grow with the real return and inflation.

$$FMV[I]=FMV[I-1]*(1+R)*(1+PDOT)$$

An example of how the indexing of an ISIP works was provided in table 4 above. It can be expressed mathematically as:

$$INDEXCOST[I]=(INDEXCOST[I-1]*(1+PDOT)) + 0.25*(FMV[I]-(INDEXCOST[I-1]*(1+PDOT)))$$

The tax on the gain is:

$$TAX[I]=0.5*T*0.25*(FMV[I]-(INDEXCOST[I-1]*(1+PDOT)))$$

To simplify the calculation, it was assumed that the tax is not paid out of the ISIP, but instead is financed at an after-tax cost related to the rate of real gain. Cumulative tax is thus defined as follows:

$$CUMTAX[I]=(CUMTAX[I-1]*(1+((1-T)*R))*(1+PDOT))+TAX[I]$$

The return after-tax at the end of the holding period is the increase in fair market value over the holding period minus cumulative taxes.

$$RETURN=FMV[H+1]-FMV[1]-CUMTAX[H+1]$$

The real after-tax annual rate of return is calculated as follows.

$$RRETURNREAL=((((1+RETURN)/((1+PDOT)^H)))^(1/H))-1$$

The real effective tax rate is:

$$ETR=1-(RRETURNREAL/R)$$