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Inflation Adjusting the Tax Base – Policy and Design Issues

Real effective tax rates on different forms of capital income will differ because of a number of imperfections in how the tax base is defined. The tax base may differ from economic income for a number of reasons:

- Gaps in the base such as the non-taxation of capital gains or owner occupied housing.
- Tax rules relating to the timing of crystallising tax liabilities may cause differences in effective tax rates. For example, tax calculated on an accrual basis (as under the financial arrangement rules) has a higher real effective tax rate than an equivalent amount of tax calculated on a realisation basis (such as a disposal of revenue account property).
- The impact of inflation on the tax base. The tax base is defined in nominal values. Real interest income and expenses are over-stated in the presence of positive inflation. Non-indexation of the tax base can also produce variations in effective tax rates across different forms of capital investment.

This paper concentrates on the third of these problems.

What is indexation?

The fact that inflation distorts the measurement of income from capital for taxation purposes has been a subject of discussion and policy analysis since the resurgence of inflation in the 1970s. Indexation of the tax base seeks to remove these distortions by removing the effects of inflation from the calculation of income in order to approximate a tax on real income. Indexation of the base concerns the measurement of income. In contrast, indexation of the rate scale adjusts tax thresholds so that average tax rates do not rise as incomes grow in step with inflation.

International experience

Numerous major studies of how to adjust accounting and taxable income in the face of inflation have been undertaken since its resurgence in the mid-1970s. The Sandilands Commission in the UK looked at changes to accounting and studies on indexing the tax system for inflation were undertaken by the Hofstra Commission in the Netherlands in the late 1970s, the ill-fated US Treasury Tax Reform proposals in 1984 and New Zealand in 1989.

Despite the strong economic arguments for indexation noted below, no major OECD country has adopted comprehensive inflation accounting of their tax system. Mexico has implemented a scheme of partial indexation and Israel had a more comprehensive version. Both countries have since scaled back or eliminated their indexation systems. During the 1980s, while inflation was significant, various ad hoc measures were adopted by countries to blunt inflation's impact; for example, providing relief for inventories, accelerated depreciation or reduced rates of tax or indexation for capital gains. In the longer term, however governments have acted to reduce inflation and to cut tax rates rather than introduce inflation indexing for tax purposes. As inflation and tax rates have fallen since the early 1980s, many of the ad hoc measures have been abandoned.

The obstacles that deterred countries from indexing their tax systems were mainly ones of practical implementation, rather than economic policy. These problems included:

- complexity of indexation;
- compatibility with legal and accounting systems, (which similarly had studied but backed away from inflation adjustments);
- compatibility with tax systems of other countries; and,
- the potential revenue cost and the consequent need for higher tax rates to achieve government revenue goals.

1989 New Zealand Consultative Document

In 1989 the Minister of Finance released a discussion document on the taxation of capital which, among other things including a capital gains tax, proposed that the taxation of capital income in New Zealand be adjusted to remove the effects of inflation on the measurement of income from capital. The paper proposed a series of comprehensive adjustments to the computation of income. These adjustments were relatively standard and similar to other proposals that have been advanced in this area in other countries. The proposals were not implemented.

This note takes these proposals as a point of departure and explores some of the implementation issues that would arise with them. It also makes some preliminary conclusions about the degree of complexity that their application would impose on taxpayers.

Impact on national savings

The impact of indexation on the level of tax depends upon the rate of inflation relative to the real rate of return. If the real rate of return is four percent and inflation is two percent then the nominal rate of return required on a bond to deliver a real rate of return of four percent would be 6.1 percent. Assuming a tax rate of 33 percent, the real after-tax rate of return would be 2.03 percent. Indexing the tax base so that only real interest is taxed would raise the real after-tax rate of return to 2.68 percent. This is equivalent to reducing the tax rate applied to nominal income from 33 percent to about 22 percent.

A life cycle model can be used to simulate the effect of indexation on the level of private and national savings for a representative saver. Under assumptions as employed in the paper on the drivers of savings, indexation could increase private savings by about four percent, but national savings would be likely to fall, since the increase in private savings is only two thirds of the revenue loss to the government. Indexation also impacts on company taxation. Overall company tax revenues would be likely to fall (a decrease in the financial sector and an indeterminate effect in the non-financial sector). This would decrease national savings at least to the extent that the benefits accrue to non-residents.

Standard tax policy criteria

In the absence of major impacts on the level of national savings, indexation can be analysed according to standard tax policy criteria as employed by the Tax Working Group.

Economic efficiency

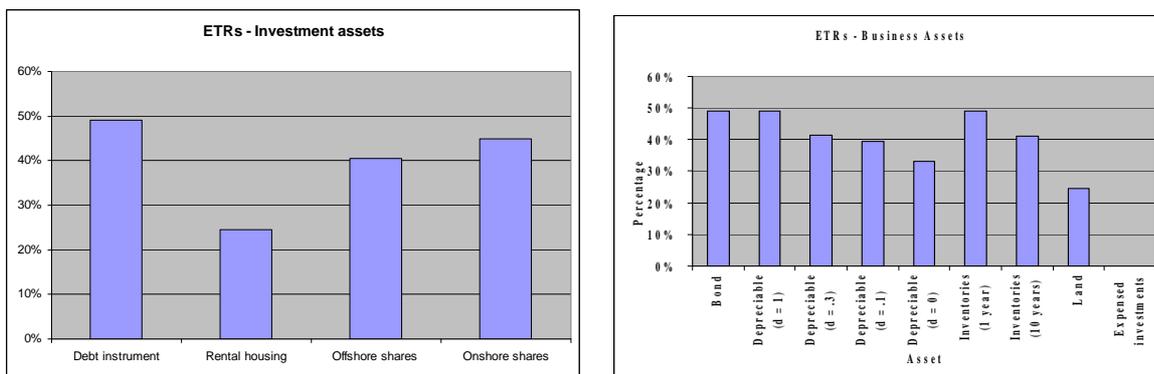
Inflation causes distortions in the measurement of income as nominal income can differ from real income in the presence of inflation. Distortions occur in two main areas: the calculation of investment income of savers; and the calculation of business income. Distortions can occur in the level of taxes paid and in the pattern of taxation across different assets.

For individual companies taxes may be either increased or decreased in the presence of inflation, depending upon their mix of assets and levels of debt. For individuals investing savings in financial assets, inflation generally leads to an increase in their effective tax rates.

For business assets, historical cost accounting understates the costs of assets purchased in the past relative to revenues accounted at current dollars. Generally, shorter lived assets, such as inventories and quickly depreciating plant and equipment face higher effective tax rates than slower (or non-) depreciating assets such as buildings and land. For financial assets, interest bearing instruments, such as bonds are most affected. Both income and costs of debt are over-stated.

The distortion on economic behaviour varies with the level of inflation that causes the tax base to mis-measure economic income; the tax rate that applies to the base; and the elasticities of supply and demand for the various assets that determines size of the resulting misallocation of resources.

In the absence of indexation, reducing tax rates also reduces the impact of inflation induced mis-measurement of income. Reducing the level of inflation and its volatility also reduces the distortions.



The variation of the impact of inflation on different assets can be illustrated through the use of effective tax rates. These results are discussed in more detail in the Appendix.

While effective marginal tax rates are a useful indicator of the degree of distortion that arises in the presence of inflation, care must be taken in drawing out the implications of these effective tax rates. The largest divergences among the rates come from other features of the tax system rather than inflation. For example, the imputed rent on owner-occupied houses is not taxed and capital gains are not taxed. However these factors must be placed in the context of other provisions of the tax system and the amount of economic inefficiency that is likely to arise from the distortion. While owner-occupied housing enjoys a zero effective tax rate, it is reasonable to assume that the most houses are purchased with the aid of mortgages with non-deductible interest. In that case, the zero tax rate does not lead to an inefficient increase in the stock of housing since home-owners face the same incentives as if they were in a non-taxable environment. For rental housing, assuming that the source of the capital gains results from increases in the price of land and that the supply of land is relatively inelastic, the resulting distortion in economic activity is limited although it may encourage more savings to flow into real property investment.

Fairness

Inflation can also raise fairness concerns to the extent that it over-estimates investment income of savers. It is particularly important for seniors who rely on investment income after they have finished working.

On the other hand, income from capital is concentrated in the hands of higher income individuals and companies. Significant tax cuts for these groups could raise concerns on the distribution of taxation.

Revenue integrity

International compatibility

New Zealand would be the only developed country to index their tax system for inflation. Accordingly there would be systematic differences between the New Zealand tax systems and our major investment partners. Systematic differences with other countries' tax systems open up arbitrage opportunities which can be put revenues at risk due to behavioural reactions and tax avoidance.

Avoidance

In the absence of detailed rules, it is difficult to identify specific avoidance possibilities. The 1989 document discussed a number of possibilities. One such was the incentive for firms to increase their stock of assets that would benefit from an indexing adjustment around dates at which the adjustment base is measured and reduce those that would suffer from an adjustment. Firms also have an incentive to re-characterise their income into a form which receives the adjustment. Where there are parallel adjustments this benefit can be offset, but where taxpayers are in different taxpaying situations this can be beneficial. Such asymmetries can occur between taxpaying and tax exempt or tax loss entities, or when transactions are made across borders.

Practical implementation issues

The following sections raise a number of general issues with implementation. Such issues have been a major factor in deterring countries from implementing inflation indexing. The detailed implementation issues are further discussed in the Appendix.

Degree of approximation

Any practical system will require a degree of approximation relative to a theoretically appropriate set of adjustments. The need for approximation raises the question of how much more accurate the "inflation" based system would be compared to the current low rate broad-based tax system.

An example of the need for approximation occurs with the choice of inflation index to use in the adjustments. While there was a considerable debate among accountants concerning the correct price index to use, for tax purposes a general price index would be appropriate. Of available indices, the CPI is the most timely and least subject to revisions. However, even with the CPI, tax would be imposed on income flows prior to the calculation of the index. For example, banks would be required to deduct resident withholding tax on interest during the period. Accordingly, the index would need to be announced in advance. In order to avoid the need for all interest recipients to file tax returns, that index number would need to be final. How would this number be chosen? Would the index be based on expected inflation? Could this be outside the RBNZ's target range? Questions arise of whether cumulative indices would be revised to "correct" for under or over indexation (divergences between the year's index and actual inflation.) How would this work for taxpayers who have made annual adjustments to asset and liability balances? A number of more ad

hoc adjustments could avoid some of the calculation complexity noted below. However, all such approximations raise the question of the degree of accuracy of the system relative to its compliance cost.

Transition

In order to ensure that balanced adjustments are made to income and expenses, existing assets and liabilities, currently accounted for at historical cost, may need to be restated in current dollars. The net adjustment in a company's taxable income is the difference between the negative adjustments arising from restating assets in constant dollars and a positive adjustment from allowing deductions for real interest costs only. If assets costs start at old historical costs, without a rebasing to take into account inflation since they were incurred, then the reduction in interest deductions may exceed the reduction from adjustments to assets, even for companies that would enjoy overall tax reductions in a mature system. In such cases a transition restatement would be appropriate. While the restatement would not go through the income account, it would increase the annual adjustments that are made. This is likely to be very complex in design and implementation. If the adjustment is not made then many companies could face tax increases even though, in fact, their income is overstated in the presence of inflation.

Imputation

Another fundamental issue in the treatment of business income is the implication of indexing for the imputation system. Under the current system, when a dividend is paid imputation credits can be attached to the extent that tax has been paid by the company. Any remaining unimputed dividends are subject to tax in the hands of the shareholder. Indexing would split dividends paid out of nominal earnings into dividends from "real" taxed earnings and "inflationary" untaxed earnings. Dividends paid out of the new "inflationary" category of retained earnings would not have imputation credits attached, but should be exempt as they are in effect a return of capital. While companies could avoid taxation with share buy-backs, rearranging distributions would be complex and would cause a major disruption in market patterns. To avoid taxation of the inflationary component of income would require that pools of "inflationary" retained earnings would need to be created. Dividends from these pools would need to be tracked through chains of companies. Rules for calculation of capital amounts would need to be adjusted and such pools would need to retain their character through reorganisations. These adjustments are likely to be complicated.

Calculation of income

For business assets, indexation would adjust the historical cost that would otherwise be recognised to reflect changes in the level of the index between the times of purchase and disposal.

Apart from transition, the adjustments for depreciable assets are likely to be reasonably easy to comply with as the information needed to calculate the adjustments is already present. For example, only partial year indexing would be provided in the year of purchase and sale of an asset. But depreciation is already prorated in the year of purchase. Nevertheless, companies would need to revise their tax accounting systems to implement the change.

For inventories the changes to calculations would be more complex as currently, the time during the year that stock is purchased and sold is not needed for the calculation of income. In order to have an accurate calculation with indexation, however, the time of purchase of the stock would need to be taken into account in order to make the constant dollar adjustments that are necessary. This would be complex. Generally in this area there is a trade-off between accuracy and compliance costs. For example, if an average stock over the year is used for making the indexing adjustment, a more accurate system would require that constant value levels of stock be calculated for periods during the financial year of the company.

The main area where the annual calculation is likely to be complex is in the area of financial instruments. While the adjustment appears straightforward in simple cases, two main categories of complexity arise. The first is when there are part year holdings of instruments. In that case, the indexing adjustment must be prorated by the holding period within the year. In situations where a financial institution is calculating interest income and withholding tax, the adjustments should be relatively straightforward, although the costs of retooling to the financial industry could be significant. However, when they do not, for example with market purchased instruments or where the taxpayer must compute an adjustment due to an incorrect withholding tax rate on interest paid by the financial institution, complexity will arise. The second issue that would arise is determining the principal amount on which to make the indexing adjustment. Post-issue purchases of tradable securities would be especially problematic. In that case the principal amount depends upon the relationship between the market and coupon rates of interest and the time to maturity. The principal amount changes over time and approaches the face value as the security matures. Accrual taxpayers currently calculate this principal amount, but cash basis taxpayers do not. Foreign exchange variation, for instruments denominated in foreign currencies, would also need to be added to the calculation.

Other, more exotic financial instruments can be more problematic. In the case of forward contracts, leases etc. an interest component may be imbedded in the price, but may not be explicit and it may be difficult to determine the principal amount. This can be especially problematic for transactions across borders.

Coherence

Comprehensive indexation of the tax base is an internally consistent method of calculating income where adjustments are made to all forms of capital income and costs. More ad hoc methods have the potential to introduce inconsistencies.

Revenue impact

There is a significant revenue cost of applying indexation to the income from savings for individuals. Financial institutions would also have reductions in taxes payable to the extent that their business is equity financed. For non-financial businesses, the impact on the level of taxation is less clear and would vary considerably depending upon the mix of assets and the debt equity ratio of the individual businesses.

Overall the revenue cost would be around a billion dollars.

Summary

In summary:

- Taxation of nominal income in the presence of inflation distorts marginal decisions to invest and save;
- These concerns have long been recognised but countries have not indexed their tax systems, even when inflation and tax rates were much higher than they are today;
- This reluctance to index reflects issues of implementation and revenue cost, rather than a disagreement with the economic case for indexation;

- Implementation issues include:
 - Concerns about timeliness of data and complexity would mean that the system would necessarily have approximations;
 - Many areas of complexity would arise. Major issues include transition, the imputation system, and innovative financial instruments;
 - Compatibility with legal and accounting concepts; and,
 - Interaction with other countries' unindexed systems would open up arbitrage opportunities resulting in revenue loss and complexity.
 - In assessing complexity it is important to remember that the devil is in the details, and many areas of complexity would emerge as detailed rules were developed.

More ad hoc methods of compensating savers for inflation are possible. One such would be to tax only a portion of interest income (and possibly only deduct a portion of interest expense). Issues with such systems are explored in the note on a partial exclusion for interest income.

Appendix

This Appendix outlines the distortions in economic decisions that arise from taxation in the presence of inflation and briefly assesses the implementation issues which would arise if New Zealand were to adopt a comprehensive inflation scheme. Such a scheme would require that adjustments be made for all business assets that are currently held at historical cost and for the inflationary component of the return on financial assets and liabilities.

The Appendix looks briefly at methods of calculation of inflation adjustments for different categories of assets and liabilities and for different taxpayers. It is based upon proposals contained in the 1989 consultative document on the taxation of income from capital. Comments are made about potential areas of complexity or difficult system design.

Distortions in income measurement

Business income

In principle, inflation can distort the measurement of all receipts and expenditures.

Current revenues and expenses are distorted by inflation when amounts incurred at the beginning of the year are compared to amounts incurred at the end of the year. In principle, such amounts should be adjusted to a constant dollar end of year value. In the absence of hyper-inflation such adjustments are rarely considered as part of the inflation problem, but could in fact be material if expenditures and receipts do not occur uniformly over the year. Similar adjustments also would be appropriate for inventory costs. Whether inflation adjustment of current costs and revenues would increase or decrease profits depends upon the pattern of costs and expenditures during the year and the margin of sales over costs.

The calculation of profits arising from the holding of inventories suffers from two distortions. To the extent that increases in the value of inventories arise from increases in the general price level, rather than changes in relative prices, real profits are overstated. Deducting the opening balance of inventories times the rate of inflation from income corrects for this overstatement. On the other hand, most valuation methods for inventory are based on historical costs and so understate the value of inventory holdings at the end of the year. In principle all inventories should be brought forward to a constant dollar value in a manner similar to the discussion on current costs. In the absence of this restatement, the adjustment based upon the opening balance of inventories would be overstated. On balance, in most situations, nominal taxation in the presence of inflation leads to over-taxation of inventory profits.

Currently, the value of depreciable assets is expressed at historical cost. This understates the real depreciation costs of such assets, as the costs should be measured in current constant dollars. To correct this distortion, historical costs should be adjusted to current constant dollar values for changes in the general price level¹. The amount of the distortion arising from historical cost accounting depends upon the economic life of the asset. Perhaps counter-intuitively, the degree of distortion is greater for shorter-lived assets since the depreciation component of the return to the asset is relatively more important for such assets.

¹ Note that, in the absence of an accrual capital gains tax on changes in the market value of depreciable assets, the constant dollar amount is not the market value of the asset.

On the other hand, the deduction of nominal interest costs overstates the costs of a business. Inflation lessens the burden of a firm's liabilities over time leading to an unrecognised profit. Accordingly an amount should be added to income of the borrower equivalent to the fall in the real value of the debt over the year.

Whether or not an individual company pays too much or too little tax depends upon their relative holdings of assets and liabilities.

Inflation impacts differentially on different assets. This can lead to distortions in choice of assets.

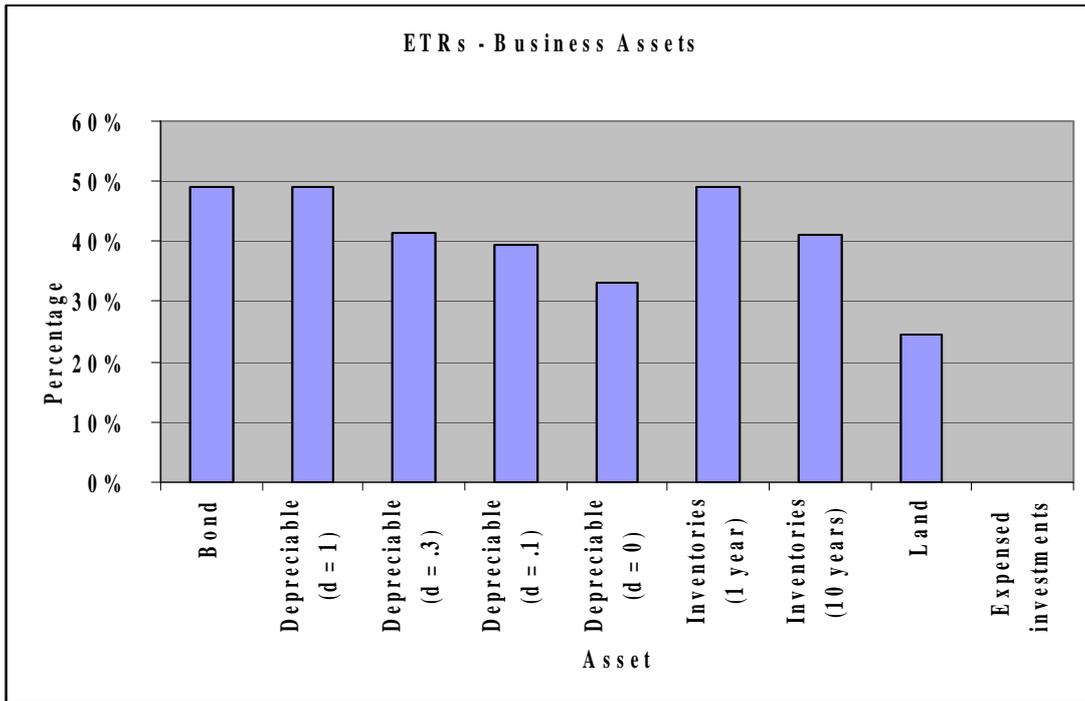
Figure 1 compares real effective tax rates (ETRs)² for a range of investments in the presence of inflation. Note, generally variations in tax rates due to general tax treatment of the assets exceeds distortions due to inflation at the levels currently experienced in most OECD countries. Data recorded in Figure 1 considers investment into:

- depreciable assets;
- inventories; and
- investment in expensed assets (i.e., assets where capital expenditure may be immediately deducted).

Investment in owner-occupied housing and in expensed assets faces a zero ETR. The zero ETR for expensed investments arises because such expenditure can be deducted immediately. Expensed assets include many forms of intangibles (e.g., advertising and marketing expenses which build up a brand name and much R&D expenditure). It also includes investment in oil and gas exploration and investment in forestry. Investment in land generates an intermediate ETR of about 20 percent, under the assumption that half of the return to land is in the form of capital gains. ETRs of other assets vary between about 40 percent and 33 percent.

² The ETR can be measured as the difference between the real pre-tax rate of return and the real post-tax rate of return divided by the real pre-tax rate of return or $(p - s)/p$ where p is the real pre-tax rate of return on an investment and s is the real post-tax rate of return. For example, an investment which generates a real pre-tax rate of return of 5 percent and a real post-tax rate of return of 3 percent would have an ETR of 40 percent.

Figure 1

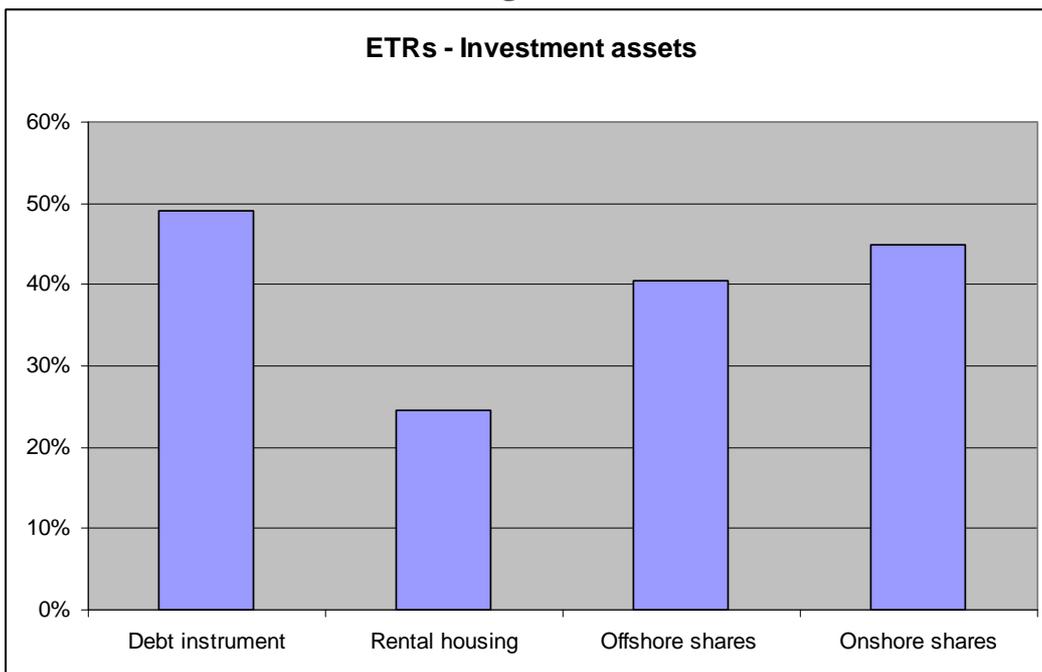


Distortions to savings decisions

Inflation also distorts the taxation of various savings instruments.

Figure 3 illustrates effective tax rates (ETRs) for investors on 17.5% and 33% marginal tax rates for holdings of bonds, owner-occupied housing, rental housing, and foreign and domestic shares. Figure 3 shows potential savings biases. For investors on a 33 percent marginal tax rate, the highest effective tax rate (ETR) is bonds followed by domestic shares, foreign shares and rental housing. The ETR on owner-occupied housing is zero. These different ETRs can distort the way in which people hold their savings.

Figure 3



In all of our estimates of real effective marginal tax rates, it is assumed that investments are financed with an individual's own capital. The bond is assumed to provide a nominal interest rate of 6.08 percent and real interest rate of approximately 4 percent. It provides a nominal post-tax rate of return of 4 percent and a real post-tax rate of return of 2.03 percent assuming an individual with a 33 percent tax rate. This is equivalent to tax at a rate of 49.2 percent on its real economic income. The real effective tax rate is greater than the statutory tax rate because the individual is being taxed on more than real economic income. Both real interest and the inflationary component of interest are being taxed. In calculating these real effective tax rates, it is assumed that inflation is 2 percent per annum.

Owner occupied housing faces a real effective marginal tax rate of zero because imputed rental income (i.e., the rental income that could be charged if the house were rented out to a third party) and capital gains are not being taxed. For rental housing and shares, we assume that for rental housing, 50 percent of the return is in rents and 50 percent is in non-taxable capital gains. For an individual taxed at 33 percent, the real effective tax rate on rental housing is 24.6 percent.

For the tax rate on shares in a domestic company, we show the combined effect of taxes at both the company and shareholder levels. Many types of investment will be undertaken more commonly by companies than by unincorporated enterprises. But New Zealand's full imputation company tax system means that incentives for a New Zealand individual to invest through a company can be very similar to those for the New Zealander to invest directly. It is assumed that the company invests in a mix of business assets producing a 6.08 percent nominal return and there is 2 percent inflation. It is assumed that companies have a 66.7 percent payout ratio. For foreign shares, we assume that shareholders are taxed on a fair dividend rate (FDR) basis.³ In this case, the individual is assumed to earn a return post foreign taxes of 6.08 percent.

As noted above, these ETRs assume full equity financing. If interest is deductible and an investment is financed by debt, lightly taxed investments will often have negative ETRs. If funds are sourced from overseas, this will mean that there will be incentives to invest at a lower risk-adjusted pre-tax rate of return than the cost of funds to the economy. This may be a particular concern with rental property which is lightly taxed and often heavily debt financed. If funds are sourced domestically the over-deduction of interest will be balanced by over-taxation of the interest in the hands of the lender.

Business Income

Current revenues and costs

Most discussions of the impact of inflation on nominal profits focus on the treatment capital assets and liabilities, but ignore current revenues from the sale of goods and services and current costs, such as wages and salaries. In principle, current revenues and costs should be expressed in constant dollars so that costs and revenues incurred at different times of the year are recognised comparably. For companies with positive net cashflow, ignoring this effect understates profitability. While at modest levels of inflation, this effect is likely to be smaller than other adjustments, it is relevant when examining adjusting inventory accounting for inflation.

³ Under the FDR method foreign shares are generally deemed to earn a 5% return and the actual returns are disregarded except in some cases for individuals. Individuals holding shares that yield less than 5 percent, are allowed to pay tax on less than a 5% return but we ignore this in our estimates of ETRs.

Revenue account assets taxed on disposal

Problem: historical cost accounting understates constant dollar cost of acquisition and, so overstates real profit on disposal.

Remedy: Increase historical cost by change in level of the index between the time that the asset is purchased and the time that it is sold:

Implementation Issues:

- Acquisitions and disposals between indexing periods would mean that partial year adjustments would need to be made. Accordingly the time during the year that an asset was acquired or sold would need to be reported. This is a new requirement, where only the cost of the asset is currently necessary.
- Annual calculation of indexed amount or only on disposal or other change of status; would require that above information is retained until disposed of, or would mean an additional calculation would need to be made each year.
- Divisions, involuntary disposals and combination of assets would require that a new indexed cost base be calculated and future indexing would be calculated according to this cost base.
- Transition; how to ensure parallel treatment for assets purchased at different times.

Example of transition problem

Taxpayer 1 purchased land 20 years ago for 100. The nominal price of the land has appreciated by 3% a year, the same rate as general inflation. The current value of the land is 180.6. The taxpayer sells the land after a further 5 years for 209.4.

Taxpayer 2 purchases land today for 180.6 and sells it for 209.4 after 5 years.
Assume that indexing is introduced today.

If there were no transitional provisions, then the two taxpayers would obtain different indexing adjustments when the property was eventually sold even though they have equivalent investments at the time that the new policy is brought in.

Taxpayer 1 would receive an adjustment based on the 100 purchase price, of 15.9. Taxpayer 2 would receive an indexing adjustment of 28.8.

If the taxpayers also had equivalent amounts of debt with reduced deductibility of interest, Taxpayer 1 could face a tax increase while Taxpayer 2 enjoys a reduction in tax, even though they are in economically equivalent situations at the time that the policy was introduced.

Note that in the case where Taxpayer 1 is allowed to base their indexing adjustment on the current value⁴ of the property at the time the new system comes into force; they would still have to pay tax on the accrued gain up to the time of the system being put into place. Thus they would still have to pay tax on the pre-accrued gain of 80.6 at the time they sold the property.

Conclusion, there is a manageable increase in complexity on an ongoing basis for sophisticated firms. However adjustments for transition would be appropriate and would be complex.

⁴ It is a question whether a valuation would be needed or if the original cost would be indexed by inflation that had accrued since the time of purchase.

Depreciable assets

Problem: Historical cost method understates current value of depreciation, increasing current profit calculation when deducted from current revenue stream.

Remedy: Historical costs would be adjusted to reflect increases in index since time of purchase. The mechanics of the adjustment would depend upon whether diminishing balance or cost price basis depreciation was used by the company. In either case the ongoing adjustments would be relatively simple to calculate. The greatest ongoing calculation complexity would be partial year indexing for purchases and disposals made during the year. Currently, companies can only take partial year depreciation in the year of purchase or sale of an asset, so the information necessary to make the partial year indexing adjustment already exists.

Transition issues also apply to depreciable assets as the adjustment should be based upon a market or indexed value at the time of introduction. This would be an area of significant complexity.

Conclusion, there is a manageable increase in complexity for sophisticated firms, but transition is problematic.

Trading stock

Problem: Historical cost of assets understated when compared to selling price, increasing profits, value of closing stock understated reducing profits.

Remedy: Each component should be indexed to current dollars, although there may be offsets due to subtractions.

The treatment of trading stock raises more design issues than do depreciable assets, and is likely to be a greater source of complexity if an accurate adjustment is to be made. On the other hand, if more ad hoc adjustments are made, they are likely to have a greater variance relative to the appropriate adjustment. The main problem is that patterns of purchases and sales and levels of inventory can vary significantly over the year, and so firms with similar levels of average inventories may in fact require quite different levels of adjustment. Moreover, a number of methods for inventory accounting are allowed and they, in principle, should result in comparable adjustments⁵.

Inventory profits are calculated according to the following formula.

$$\text{Profit} = \text{Revenues} - (\text{Inventory cost of sales} = \text{Opening stock} + \text{Purchases} - \text{Closing stock}).$$

In principle each of these values could be accounted for in constant dollars. As noted above there is a case for accounting for different current revenues and costs in constant end of year dollars. Values of opening and closing stocks would also be in constant dollars. In this case the formula for profit would become:

$$\text{Profit} = \text{Revenues}_{\text{Constant \$}} - (\text{Inventory cost of sales} = (1 + \text{inflation rate}) \times \text{Opening stock}_{\text{Constant \$}} + \text{Purchases}_{\text{Constant \$}} - \text{Closing stock}_{\text{Constant \$}}) =$$

⁵ LIFO is sometimes suggested as a remedy to the presence of inflation. LIFO is inappropriate for income tax purposes as it provides relief in the form of a deferral, rather than a permanent deduction from income, that is contingent upon fluctuations in the level of inventories and implicitly uses the price of the good as an index, rather than a general inflation measure. As such it fails to tax real gains in value that arise from relative price changes. LIFO is not considered further here.

$$\text{Revenues}_{\text{Constant \$}} - \text{Purchases}_{\text{Constant \$}} + \text{Change Inventory}_{\text{Constant \$}} - \text{inflation rate} \times \text{Opening stock}_{\text{Constant \$}}$$

This formula has the advantage that it provides an accurate measure of inventory profits regardless of the pattern of purchases and sales, and consequently level of inventory, throughout the year. The chief concern is one of compliance as it asks that all current transactions during the year be put into constant end of year dollars. The 1989 consultative document viewed this as imposing too much burden and dismissed the option. It is to be considered whether monthly totals for these flow amounts could be indexed to year end values as an approximation.

The consultative paper suggested the following formula:

$$\text{Revenues} - \text{Purchases} + \text{Change Inventory}_{\text{Constant \$}} - \text{inflation rate} \times \text{Average stock}_{\text{Constant \$}}$$

The consultative paper approach avoids the need to bring all current costs and revenues into constant dollars. This involves some measure of inaccuracy. In order to deal with fluctuations in levels of inventories, it suggested that the inflation adjustment be based upon an average level of inventories over the year. An important point is that both methodologies involve computing a constant dollar amount of inventories. This calculation involves similar adjustments as putting revenues and costs into constant dollars. The amount of the adjustments depends on rate of turnover of inventory and different inventory methods may require different adjustments. Moreover, if only end of year stocks are used, considerable inaccuracy can exist for businesses whose inventories fluctuate over the year. In that case more frequent constant dollar inventory stock accounts might be needed, greatly increasing the compliance costs.

Conclusion: inventory accounting appears to impose a significant trade-off between accuracy and compliance burden and any system that is reasonably accurate involves a fair amount of complexity.

Financial Assets and Liabilities

In general, income and expenses from financial assets and liabilities would be adjusted by reducing income/deductions by an amount equal to the index times the outstanding principal amount of the loan. Financial instruments are the area of the greatest potential complexity.

Debt instruments

Variable principal accounts

Such accounts include ordinary bank chequing and savings accounts. Cash PIEs would be another example.

Balances on bank accounts vary over time as deposits and withdrawals are made. Accordingly it would be impossible for ordinary taxpayers to determine a principal amount on which to base the indexing adjustment. Generally however, individuals do not need to file income tax returns in order for such income to be taxed. Institutions typically determine an interest amount which depends upon a particular measurement of principal over a period. An institution could construct an average amount of principal over the period in question and make inflation adjustment based upon that amount. While the institution would have the information on hand to make this calculation, it would entail potentially significant system changes to reduce the amount of interest income that would be subject to resident withholding tax. The average principal for the period would need to be calculated and then multiplied by an indexing factor which is appropriate for the period of the

calculation. This amount would then need to be deducted from the interest earned by the account before application of the marginal tax rate of the taxpayer.

The consultative document identified a potential issue that would apply to many bank accounts. Accounts may provide unbilled services, which are offered in lieu of a full interest rate, which should, in theory, be subject to tax. Thus income from such accounts may already be subject to less than full taxation. In that case, indexation may not be appropriate and could in fact increase existing distortions. The consultative document suggested that the indexing adjustment could not exceed the interest paid on the account, i.e. no loss could be created), but in principle the adjustment should be reduced or eliminated for all accounts that provide unbilled services. This represents another trade-off between accuracy and complexity.

Conclusion: generally simple for taxpayers, but increased costs for financial institutions. May increase the bias where there is over-compensation of service accounts where the service portion of the return is tax free.

Non-tradable fixed term instruments

A typical example would be a term deposit. Such instruments cannot be traded and are cashed out for their accumulated interest and principal value.

With interest-paying instruments, the principal amount would be the face value. The treatment would depend upon whether the taxpayer uses cash-basis or accrual reporting of income, but the issues in implementation are similar.

In either case, the indexing adjustment would need to be prorated over the period to which the interest payment relates. For instance, for a cash-basis taxpayer with a term deposit making monthly payments, the adjustment to interest would depend upon number of months over which the income is earned. Generally the financial institution would be able to make this calculation at the time that it paid the interest to the taxpayer. However, for accrual taxpayers there would be a disconnect between the timing of the adjustment for the taxpayer and the time at which the institution could make the adjustment. For term deposits that straddled taxation year ends, the taxpayer would need to accrue income and make a partial adjustment in the year before the interest is paid. Accordingly, the adjustment for withholding purposes and for accrual purposes would be different, leading to the need for the accrual taxpayer to make calculations and refunds to be given.

There is the need to provide partial indexing for shorter term deposits and purchases and maturities within the year. This is relatively simple if institution is responsible for paying tax, as with most cash basis taxpayers. But it would be complex if taxpayer is filing a return or if an adjustment needed to account for an incorrect withholding tax rate. Again this would be an issue for accrual basis taxpayers.

Complexity can also arise if instrument is held offshore. In that case the institution would not make the calculation on behalf of the individual. The principal amount would need to be adjusted for changes in exchange rate changes and individual calculation would be necessary.

Conclusion: can be complex to account for partial year holdings, particularly when institution is not making calculation, such as for accrual basis taxpayers or where an incorrect withholding rate has been applied.

Tradable instruments

These instruments would include government stock, commercial paper and bonds.

The value of tradable debt instruments may differ from their face value due to changes of interest rates. Accordingly, post-issue purchases may have acquisition costs that are different from the face value when coupon and market rates are different. Moreover, the principal amount of the instrument will vary over the term of the instrument, (i.e. the premium or discount will reduce as the bond approaches maturity).

Cash basis investors would have the greatest difficulty to do inflation adjustments for tradable instruments. Generally, they would not have an appropriate accounting of principal amounts on which to base their calculations. In order to have an accurate calculation they essentially would need to apply the accrual rules to the instruments. The accrual rules require the calculation of a principal amount based on the internal rate of return of the instrument. Even simplified interest calculations would require that the cash price adjustment upon maturity would need to be indexed. This would not be simple.

Accrual taxpayers already need to keep account of the principal value of bond to compute their income. In that case there may not be a great amount of extra complexity for them.

Conclusion: can be quite complicated to extent that principal amounts do not exist to use as basis for indexing adjustment.

Equity instruments

Preferred shares

While preferred shares are not financial arrangements, they are purchased for their interest-like rate of return and so should receive a similar indexing adjustment as would debt. This would preserve the equivalence between preference shares and debt investments under the imputation system. Calculating the adjustment would raise many of the same issues as tradable instruments. For some tax payers, the combination of imputation credit and the indexing adjustment could eliminate all tax payable and lead to unused imputation credits.

The treatment on the payor side is less intuitive. In order to parallel the treatment of debt there would need to be an addition to the income of the payor, even though they do not receive an explicit interest deduction. In order to see this, the following example compares the treatment of a preference share with a principal amount of 1000 and a coupon rate of 7.2% with debt of the same amount and a coupon rate of 10% and an inflation rate of 4%. The company pays tax at the 28% company tax rate and assume that the investor pays tax at a 33%.

The following tables show the positions of a paying company and an investor, with either debt or a preference share, with and without an indexing adjustment. It is assumed that before tax interest rates do not change when indexing is introduced.

Unindexed System		
	Debt	Share
Company		
Bond interest	100	100
Indexing adjustment	0	0
Interest/dividend	100	72
Indexing adjustment	0	0
Taxable income	0	100
Tax	0	28
Individual		

Indexed System		
	Debt	Share
Company		
Bond interest	100	100
Indexing adjustment	-40	-40
Interest/dividend	100	72
Indexing adjustment	40	40
Taxable income	0	100
Tax	0	28
Individual		

Interest/dividend	100	72
Gross-up	0	28
Indexing		
Adjustment	0	0
Taxable Income	100	100
Tax before credit	33	33
Credit	0	28
Net tax	33	5
After-tax income	67	67
Total Tax	33	33

Interest/dividend	100	72
Gross-up	0	28
Indexing		
Adjustment	-40	-40
Taxable Income	60	60
Tax before credit	19.8	19.8
Credit	0	28
Net tax	19.8	-8.2
After-tax income	80.2	80.2
Total Tax	19.8	19.8

With an unindexed system, imputation ensures that preference shares and debt have equivalent after-tax income and costs for investors and borrowers, respectively. The second table shows that maintaining that equivalence under an indexed system would require that preference shares receive the same indexing adjustment as debt. This in turn implies at the company level that an adjustment is made even though the preference share dividend does not receive an explicit interest deduction. The mechanism of the imputation credit provides an equivalent offset at the investor level to the deductibility of interest at the borrower level. In the table, it is assumed that the company uses the funds raised to purchase a bond, and so the company receives an indexing adjustment on the income side that offsets the adjustment on the debt side. Changing the investment made by the company could change the adjustment on the income side and so net tax at the company level could rise or fall in practice. The adjustment that is appropriate for the preference share liability would remain the same.

Common shares

The interaction between imputation and indexation for common shares is complex.

Common shares earn returns through capital gains and dividends. Capital gains are generally untaxed in New Zealand. As such there is no need for inflation indexing the return. When shares are taxed on revenue account, there would be a need for an adjustment as for other revenue account assets.

When dividends are received and taxed using the imputation system, adjustment would be needed to separate the real and inflationary returns underlying the dividend. Nominal dividends received would include a portion of taxed “real” profits and a portion of untaxed “inflation” profits; and could also include untaxed real profits. Taxed real profits would give rise to an imputation credit. They would be subject to tax under the normal rules. Inflation profits, on the other hand would not have underlying tax paid. In the absence of an adjustment, these dividends would not have imputation credits and would result in tax being paid by the shareholder. However, such income is more in the nature of a return of capital. It should be exempt from tax. On the other hand, real profits that escape taxation, such as capital gains or foreign income, should be taxed.

The current imputation rules are reasonably simply to comply with as they require only one account, that is, taxes paid net of imputation credits previously attached to dividends. It is not necessary to compute an account out of which untaxed income is paid, since such unimputed dividends arise naturally when stocks of imputation credits are exhausted. Indexation introduces a third income concept, the inflationary component of nominal income. It would be necessary to create an account from which such dividends are paid, (income that is exempt). It is not immediately obvious how to calculate this amount without computing an annual account of such income. The calculation of which would require a separate accounting of nominal income, and a nominal balance sheet. In addition, the various accounts would need to be tracked through chains of companies and corporate reorganisation.

Conclusion: changes to the imputation system to create and track tax exempt pools of “inflationary” income would be complex.

Innovative financial instruments

Innovative financial instruments provide a particular challenge. The risks and rewards of debt can be implicit in instruments, or combinations of instruments, that do not have the traditional form of debt. For example there is imbedded interest in forward contracts and other pre-paid contracts that extend over time. For such instruments, it would be necessary to recognise that an adjustment is necessary and then to identify principal amounts on which to base the adjustments. A number of such instruments currently have income calculated according to technical determinations issued by the IRD. These determinations would need to be amended to take into account the new approach to taxing financial arrangements.

International tax issues

New Zealand would be the only developed country to index their tax system for inflation. Accordingly there would be systematic differences between the New Zealand tax systems and our major investment partners. Systematic differences with other countries’ tax systems open up arbitrage opportunities which can put revenues at risk due to behavioural reactions and tax avoidance.

A company that currently borrows from offshore would be exposed to partial denial of the interest deduction on the borrowing. If instead, the borrower sold a royalty interest to its offshore parent company, which in turn borrowed the funds, the royalty payment would be deductible and there would be no adjustment to the interest on the loan, which would now be held offshore. There is little institutional restraint on the form of funding between a parent and its subsidiaries.

The example illustrates that behavioural reactions, especially across borders with countries that do not index for inflation (i.e. everyone else), can impose revenue risks on the system.