

# THE COSTS OF INFLATION

*In this article Roger Greville and Michael Reddell examine the impact of inflation and the reasons for aiming for price stability.*

## EXECUTIVE SUMMARY

Contrary to some claims, inflation has adverse effects on the real economy, even if it is fully expected. Inflation can also have unfortunate effects on the distribution of income and wealth.

Expected inflation has had the largest impact on the real economy through its interaction with the income tax system. The inflation/tax interaction has depressed after-tax real interest rates on financial instruments – effectively over-taxing financial savers and subsidising business borrowers, and severely distorting pricing signals within the economy. The aggregate response to these signals has been to discourage savings, encourage investment (particularly in assets such as land and building) and to encourage a higher level of gearing throughout the economy.

The second major way in which anticipated inflation exerts its influence on the real economy is through its impact on the cashflow positions of businesses and households. If interest rates increase in line with inflation then, in the presence of inflation, a larger proportion of firms' revenues and individuals' current incomes are paid out by way of interest. Indexed loans – which would ease these problems – have not become common, despite years of high inflation.

Inflation also increases the opportunity cost of holding non-interest bearing money balances, and means that more resources are devoted to the physical process of changing prices, wages, benefits etc.

These costs would arise even if inflation was fully expected. In fact, however, inflation is uncertain, and some evidence suggests that higher inflation is associated with greater uncertainty about the inflation rate. This uncertainty generates various costs and changes in economic behaviour. For example, in periods of inflation, individuals and firms face greater uncertainty as to whether observed price movements are relative or absolute price movements. These uncertainties mean that people devote more resources to risk-minimising strategies – for example, forecasting, and adopting shorter contract periods. The uncertainties increase the likelihood that inappropriate consumption and investment decisions will be made in times of inflation.

The overall impact of inflation has been to lower living standards, as resources have been misallocated, or used for purposes which would have been unnecessary in the presence of stable prices. Moreover, the burden has almost certainly fallen most heavily on the financially unsophisticated sections and poorer sections of our community – scarcely in accord with most canons of justice and equity.

For these reasons, monetary policy is now oriented towards the permanent elimination of inflation. On the transition to price stability there will undoubtedly be some costs, but these costs will be more than offset by the economic benefits of stable prices. In achieving and maintaining price stability monetary policy will be making its best possible contribution to a prosperous and equitable economic future for New Zealand.

## INTRODUCTION

Since early 1988 the Government has consistently stated that its intention is to achieve price stability, and since mid-1989 the target date for this goal has been December 1992. This objective is consistent with the provisions of the new Reserve Bank of New Zealand Act 1989 (discussed in greater detail elsewhere in this issue) which states that the primary function of the Reserve Bank is the achievement and maintenance of a stable general level of prices. The purpose of this article is to spell out why the achievement of price stability is important. The article discusses the ways in which inflation can adversely affect the economy, with particular emphasis on the New Zealand context. The article is broken into two main sections; the first section deals with the effects of expected inflation, with an emphasis on how inflation interacts with the tax system<sup>1</sup>; and the second section deals with the costs of unexpected inflation and the uncertainty that surrounds inflation. Other brief sections consider the appropriate response to these costs, and comment on the empirical evidence available regarding the costs of inflation.

## THE EFFECTS OF EXPECTED INFLATION

Simple textbook models were once used to argue that the costs of an expected and stable inflation rate are minimal. By abstracting from real world institutional or conventional constraints, it was held that no great harm results from inflation – or certainly not from an inflation rate equal to the average inflation rates of our trading partners. Indeed, in the 1960s in particular, it was widely believed that it was possible to exploit a semi-permanent tradeoff between inflation and growth, and thus that a moderate rate of inflation could actually be beneficial for the economy. This view lives on among some of the critics of the direction of New Zealand's monetary policy, but is distinctly a minority position in the literature.

It is now generally accepted that only unexpected inflation can boost economic activity, that these gains are essentially temporary in nature, and that these temporary gains have to be offset against the additional costs associated with the inflation. It is now recognised that there are a number of mechanisms through which inflation can have adverse effects on the economy. Even if the inflation rate is fully expected, the mechanisms include (in probable order of importance):

- the interaction between inflation and the income tax system;
- the liquidity constraints imposed on individuals and firms, as a result of high nominal interest rates and rigidities in the market for credit;
- the increase in the (opportunity) cost of holding non-interest-bearing money balances;
- the increased frequency with which all prices throughout the economy need to be changed (known as 'menu costs').

### Inflation and the Tax System

The largest effect expected inflation has had on the economy arises from its interaction with the largely nominally-based income tax system, used in New Zealand and most other countries.

Under the New Zealand tax system the full amount of any interest income is liable for income tax. Moreover, the full amount of interest paid by businesses (but not by households) is regarded as a deductible expense. These provisions apply even though in periods of inflation a significant proportion of interest receipts and pay-

<sup>1</sup> Carey (1989) provides a more detailed and technical examination of the costs which result from the interaction of inflation and the nominally-based tax system.

ments does not represent true economic income, but simply compensation to the lender for the loss of purchasing power caused by inflation. Thus, even if in inflationary times nominal interest rates rise to the full extent of inflation, there will be a clear tendency for financial savings to be over-taxed, and for business borrowing to be subsidised, i.e. real after-tax interest rates will fall. (See the box for a discussion of why market forces do not offset this effect.)

The impact of inflation on after-tax real interest rates is vividly demonstrated in the following simple table, in which the real interest rate is assumed to be 5 per cent and the tax rate 25 per cent:

Inflation Rate (%)	0	5	10	15
Nominal interest rate (%)	5	10	15	20
After-tax real interest rate (%)	3.75	2.5	1.25	0

As illustrated in Figures 1-3 real after-tax interest rates fell markedly in New Zealand during our years of high inflation. The effects of these depressed after-tax interest rates are various, but it is clear that, given the other institutional constraints within the economy, the advent of rapid inflation helped to distort severely pricing signals within the New Zealand economy.

Small savers have probably been the one group that has suffered most. Risk and transactions cost considerations tend to mean that rather limited savings options are open to such people – usually restricted to deposits with financial institutions. These deposits offered no protection against the impact of inflation on after-tax real returns, even after deposit rate controls were lifted. By contrast, larger, wealthier, or more sophisticated savers have generally been able to ensure that much of their savings were held in the form of real assets – often financed by debt, the interest on which was tax-deductible. Returns on real assets have been largely insulated from the adverse effects of inflation, given the absence of a tax on nominal capital gains.

### **Inflation and Real After-Tax Interest Rates**

In the body of the article it was shown that, where interest is tax assessable (deductible), in the presence of inflation real after-tax interest rates would fall, even if nominal interest rates rose one-for-one with inflation. However, abstracting for the moment from the fact that household interest costs are not deductible, it might be thought that this case is something of a straw man. It might be argued that, in the presence of inflation, all nominal interest rates would simply rise to whatever levels were necessary to keep the real after-tax return on savings and the real after-tax cost of borrowing the same as in a period of stable prices. In such a situation both borrowers and lenders would be no worse off than under price stability.

In an economy where international private capital flows are severely restricted such a pattern of behaviour might tend to occur. Prior to 1984, New Zealand could, in many respects, have been regarded as just such an economy. However, real-after-tax interest rates in New Zealand have varied with inflation. Real after-

tax interest rates fell significantly as inflation gathered pace in the late 1960s and early 1970s, and have generally been negative until very recently (see figures 1 and 2).

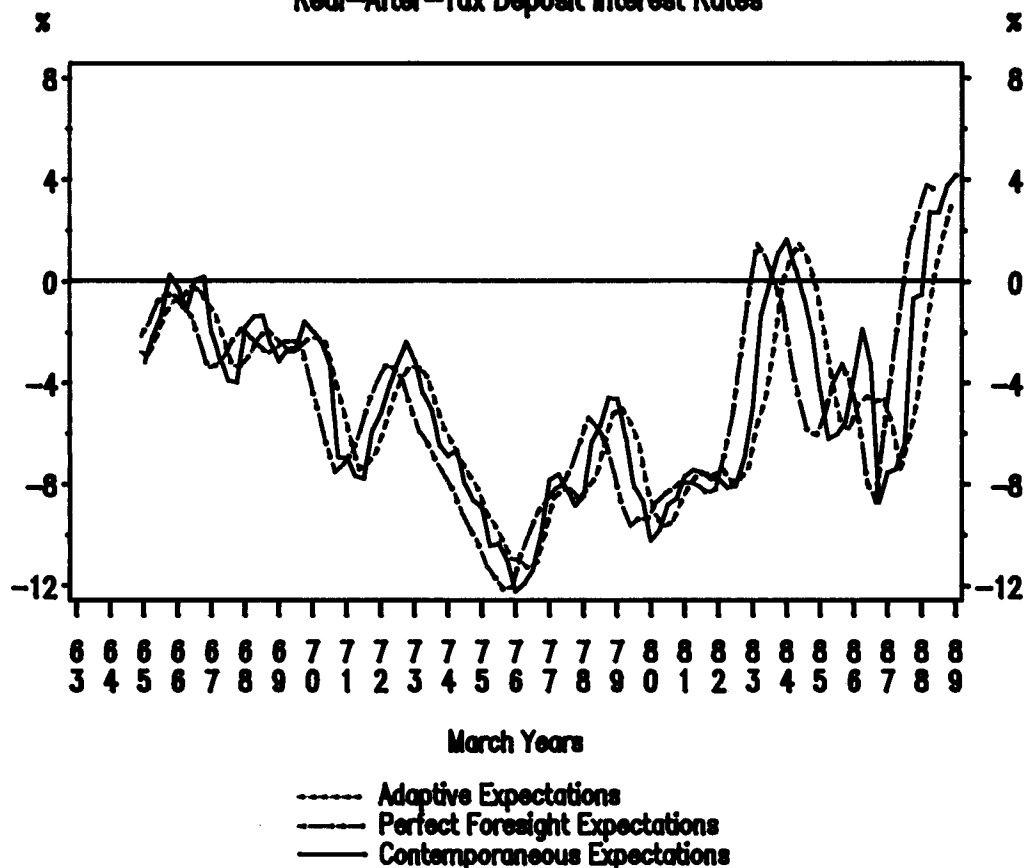
Various factors may help to explain this behaviour. On the one hand, New Zealand was never totally isolated from international forces. On the other hand, extensive regulation affected New Zealand interest rates for most of the pre-1984 period, preventing them fully adjusting to inflation. Moreover, inertia can be a powerful factor, and over much of the earlier period there was probably a strong expectation that high inflation would – as in the past – prove to be a temporary phenomenon.

In a relatively open economy, such as New Zealand has been since exchange controls were removed in 1984, where capital can flow freely in and out of the country, nominal interest rates are much less likely to rise sufficiently to maintain domestic lenders' real after-tax returns. The reasons for this are somewhat different than for the closed economy case, and primarily reflect a curious inconsistency in the taxation policies of most countries whereby both nominal interest receipts (payments) and foreign exchange losses (gains) are regarded as assessable (deductible) for tax purposes.

Exchange rates and interest rates can fluctuate very considerably over the short term. However, over a longer term, differences in interest rates in various countries can be expected to reflect the differing inflation rates, and exchange rates can be expected, on average, to move to offset the differences between the inflation rates of various countries.

For example, if New Zealand consistently ran an inflation rate 10 percentage points higher than Switzerland's then, over time and other things being equal, it is likely that New Zealand interest rates would be around 10 per cent higher than those in Switzerland, and that the New Zealand dollar would depreciate by 10 per cent per annum against the Swiss franc. Thus, a Swiss investor might invest in New Zealand at our high interest rates but would expect the high nominal interest rate to be offset by a foreign currency loss as the New Zealand dollar depreciated over time. However, whereas for both the domestic and foreign investor the inflation compensation component of the high nominal interest rate is assessable for income tax under most countries' tax regimes (including New Zealand), the foreign investors are able to claim a deduction for the foreign exchange loss, effectively ensuring that it is only their real rate of return that is taxed, not the nominal as is the case for local investors. With reasonably well-integrated international markets, this distortion would be sufficient to ensure that if New Zealand's inflation rate rises above the world average, real after-tax returns (costs) on financial assets (liabilities) to the domestic investor will fall. For example, it is only as New Zealand's inflation rate has returned to around world levels over the last couple of years that after-tax interest rates for domestic investors or borrowers have turned positive (see figure 3).

**Figure 1**  
**Real-After-Tax Deposit Interest Rates**



The overall impact of inflation on the level of savings in the economy has almost certainly been adverse, as the costs and constraints on holding less-liquid assets have been reflected in a lower overall return on savings.

On the other side of the ledger, in the years prior to full imputation, the low or negative real cost of borrowed funds to businesses resulting from inflation represented a considerable subsidy to business borrowers and reinforced the incentive, present even under price stability, to favour borrowed funds over new equity. A higher gearing ratio considerably increases the risks facing holders of equities, especially given the cash-flow constraints discussed in the next section. The variability of residual profit flows, and as a result the risk of corporate failure, can be expected to have increased – a process which is far from costless. The experience of New Zealand over the period 1984-88 was illustrative of this phenomenon.

However, the bias in favour of debt finance was not the only effect on corporate activity of the tax/inflation interaction. The reduction in after-tax real borrowing costs represented a taxpayer subsidy to business borrowers. This subsidy would have tended to increase total investment – with investment projects being undertaken in assets earning social rates of return far below the private returns to the subsidised investors, and below the true cost of finance – the world real interest rate.

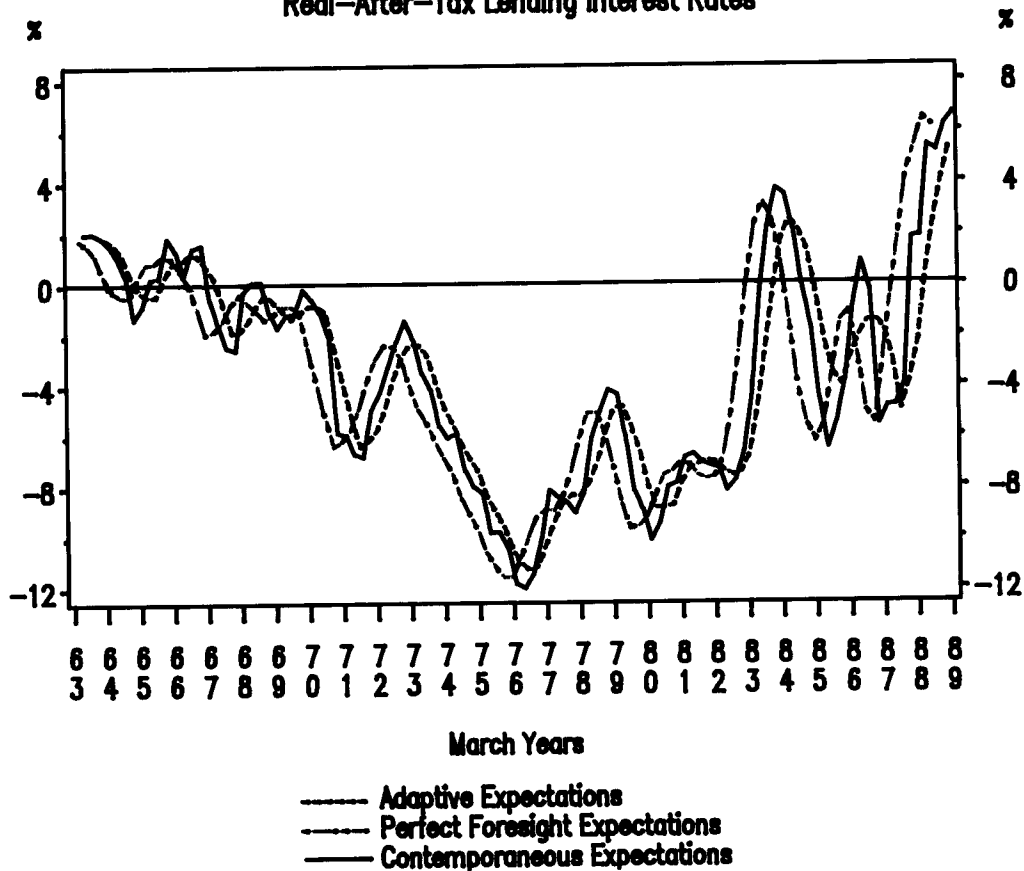
The tax/inflation interaction has also distorted the pattern of investment, disadvantaging firms engaged in the direct production of goods and services relative to those with a heavy concentration of investment in long-lived fixed assets such as land and building. This bias arises because the depreciation and inventories provisions of the tax laws also fail to recognise inflation. Depreciation allowances and inventory valuation for tax purposes are required to be calculated on an historical cost basis.

Such arrangements fail to recognise the current replacement cost of assets, effectively overstating, and hence 'over-taxing', company profits. For firms investing in land and buildings the depreciation and inventories bias is insignificant relative to the scope for tax-free capital gains, and accordingly the pattern of investment will have been significantly biased towards such assets. This conclusion is consistent with casual observation of investment patterns over the past decade<sup>2</sup>.

Taking the big picture, the bias against savings, and towards debt finance and higher total investment, means that inflation will have tended to lead to a larger balance of payments deficit than would have prevailed under price stability. In particular, the structure of the tax system will tend to lead to the economy as a whole being rather more highly geared under inflation, and hence – like an individual person or firm – rather more vulnerable to economic shocks. There will be strong tendencies for foreign involvement in the economy to be through debt-finance, rather than direct equity holdings. Foreign equity holdings in New Zealand are more likely to rise (as over the last year or two) as New Zealand inflation falls to around world levels and domestic debt finance becomes less attractive.

Taken together, the tax/inflation interaction over the years has almost certainly worsened New Zealand's growth performance. Our national income has been held back as resources have been used in a socially non-optimal way, and at the same time the bias towards debt finance has contributed to the very high overseas debt levels we now face.

**Figure 2**  
**Real-After-Tax Lending Interest Rates**



<sup>2</sup> It can be shown algebraically (see Carey (1989) p.25) that the effect of the tax-induced lower real interest rates dominates the depreciation and inventories effect, so that in aggregate, under the sort of income tax system which prevailed until imputation was implemented, total investment tends to rise in the presence of inflation.

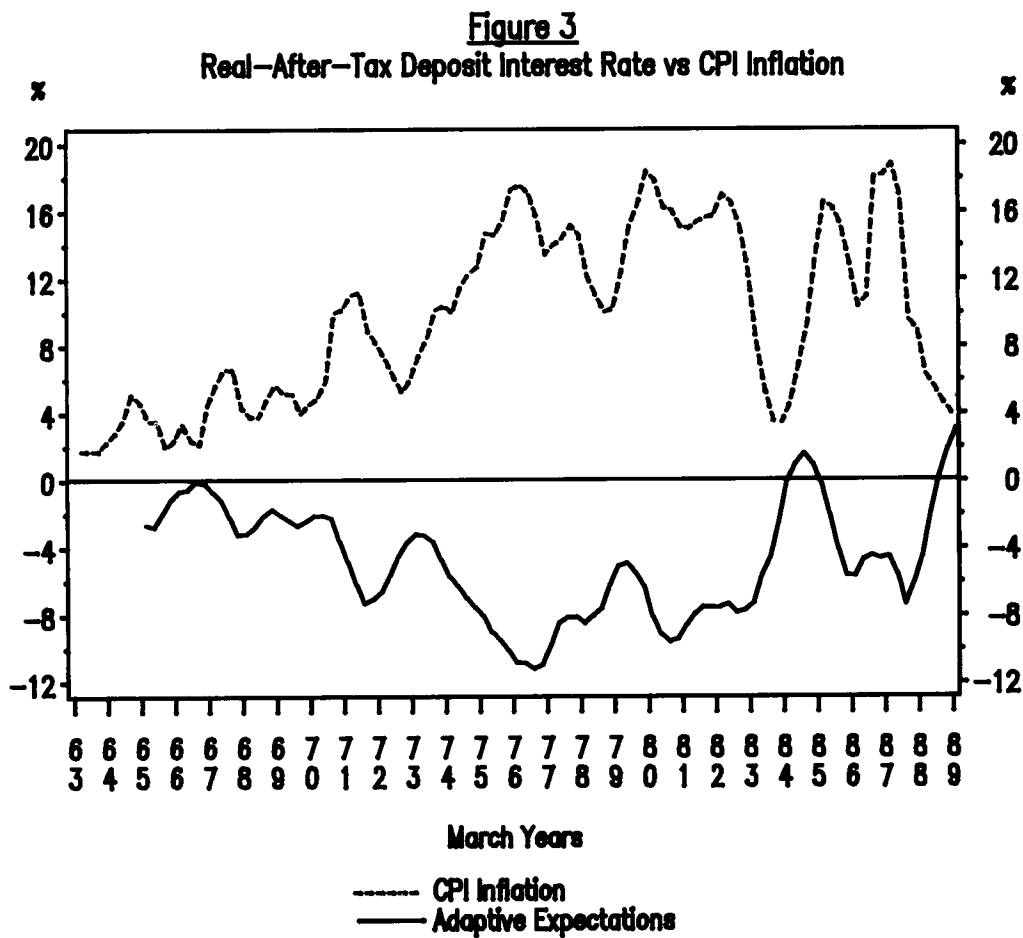
## Inflation and Liquidity Constraints

However, although inflation helped to subsidise corporate borrowers, even they have not been immune to some of the ill-effects of inflation. In particular, the resulting high nominal interest rates have placed severe cashflow constraints on both business borrowers and households, given the institutional structures and conventional limits operating in the market for credit.

Even if salaries and, in the case of businesses, revenues kept up with inflation, in times of even moderate inflation interest payments as a proportion of total outgoings increase significantly.

To illustrate this point, take the example of a salary earner with an after-tax income of \$25,000 and a flat mortgage of \$100,000. Assume for the sake of argument that in the absence of inflation the rate of interest is 4 per cent. The share of income paid out by way of interest is 16 per cent. Now assume an inflation rate of 6 per cent, leading to a nominal interest rate of, say, 10 per cent, i.e. the inflation rate, 6 per cent, plus the real price stability interest rate, 4 per cent. The homeowner will now be paying out around 40 per cent of his income by way of interest. At the extreme, an inflation rate of 21 per cent and interest rate of 25 per cent – not far above levels reached in New Zealand – would see the entire first year salary devoted to servicing. In these circumstances it would be impossible for the person to take a mortgage, even though the real interest rate is unchanged from that prevailing under price stability, because of the very heavy real servicing burden in the early years of the mortgage.

Most financial institutions have strict lending guidelines under which they are only prepared to lend money to people whose debt servicing commitments are less than



some specified percentage of their *current* income (usually around 30 per cent). This figure appears to have fluctuated relatively little over the years despite changes in the inflation rate. However, given the fact that people have other expenditure commitments, even if such limits were not in place, even moderately high inflation would make it difficult for many people to obtain loans; in particular, to get into a first house. As a result, consumption and investment choices can be severely constrained by inflation, imposing a potentially significant welfare cost on the nation.

The problem arises because loans – whether housing mortgages or business loan facilities – are not inflation-indexed. Moreover, in the absence of such indexation, it is difficult and at times expensive, to increase one's total *nominal* borrowings to service an existing debt. Such an attempt to meet the nominal interest burden by increased borrowing would probably (if perhaps irrationally) be widely seen as a sign of a borrower being in financial difficulties, pointing to a review of loan conditions.

The indexation of mortgages by the financial sector would, of course, eliminate the liquidity constraints associated with inflation. Under such a regime, nominal interest rates would approximately equal the real interest rate the individual could expect to pay in a stable price environment, but the nominal value of the loan would increase annually by the rate of inflation. Indexed loans, on the one hand would allow lenders to protect the real value of their funds and, on the other hand, would have allowed borrowers to match their cashflows better (by spreading real repayments more evenly) and therefore reduce the possibility of default. Given that there have been no known legal barriers to the introduction of indexed mortgages – and indeed that some institutions in the late 1970s offered low-start mortgages – it is somewhat surprising that indexed mortgages (and other debt contracts) have not become more common.

The economic literature offers little assistance in resolving the question. However, it is possible that a variety of factors have been at work. On the one hand, in the 1970s there was probably an expectation that inflation would be short-lived and, in the absence of strong competitive pressures, no one deemed it worth the effort to design such new instruments. Moreover, there have also been 'second-best' responses from the Government to ease the symptoms, including, for example, subsidised home-ownership accounts, and continued very low interest finance from the Housing Corporation – which significantly eased the liquidity constraint for low and single income families. Moreover, the rising trend in female participation in the labour force, and the resulting sharp increase in the number of two-income families, has also meant that the short-term financial pressure of high nominal interest rates has been less than might have been expected. Finally, in looking for an explanation, money illusion cannot be overlooked – the desire to see one's mortgage falling in nominal terms seems to be widespread.

## **Inflation and Money Balances**

Inflation imposes a tax on holders of money, by eroding the real purchasing power of such balances. Most empirical evidence suggests that increasing the cost of holding currency and non-interest bearing deposit balances, leads individuals to hold fewer of these assets than they would with stable prices. As a result, more time and resources are devoted to ensuring that adequate liquidity is available to finance the transactions households intend to undertake. At a trivial level, lower holdings of currency will generally mean more frequent visits to an ATM, or more extensive use of the economically-costly cheques and credit cards.

The lost purchasing power is, of course, effectively transferred to the Government (the ultimate issuers of currency) and to borrowers (whose loans are funded by

cheap deposits). As currency holdings have shrunk relative to income, and, more recently, interest-bearing cheque accounts have become more common, the magnitude of the distortion and redistribution has shrunk considerably over the years.

## Menu Costs

Other costs associated with inflation are what are referred to as 'menu costs'. These costs are incurred whether or not the rate of inflation is expected. 'Menu costs' are the actual costs associated with physically changing prices. These costs include those of altering labels on goods (or reprinting the menu) when the price level changes. Other examples include those associated with recalculating wage payments, altering interest rates and payments, and indeed, altering welfare benefits – which in New Zealand were adjusted more frequently during the years of high inflation. Each price change costs money and although these costs may be small individually, when they are considered across the entire economy they represent a considerable – and unnecessary – waste of society's scarce resources.

## OTHER EFFECTS OF INFLATION

The costs and distortions arising from inflation which were outlined in the first half of this article would occur even if the inflation of the last 20 years had been fully expected, so that no one faced any uncertainty about the price level. However, there are also significant allocative and equity consequences of uncertainty about inflation. This part of the article outlines the implications of unexpected inflation and briefly develops the case that inflation, by its nature, is and has been inherently uncertain and costly.

Incorrect expectations about inflation can result in significant costs to economic agents and to society generally. These incorrect expectations arise both from the difficulty of distinguishing relative and absolute price changes, and, from uncertainty about the course of monetary policy and the rate of inflation.

When prices are generally stable, a change in a single price sends an important signal to consumers and producers. However, if the price level is changing and there is uncertainty about the actual magnitude of such changes, then difficulties arise in determining whether an increase in the price of a particular item is due to an increase in the general price level (i.e. inflation) or to a permanent change in the real value of that item relative to other goods and services. Thus, any particular price change leaves a consumer or producer uncertain whether to change his previous purchasing patterns or simply to carry on as previously, waiting for all other prices to catch up.

Experience, both in New Zealand and overseas, has also been that the higher the inflation rate the more variable it is. In New Zealand, for example, the variability of annual rates of inflation was significantly higher in the inflationary 1970s and 1980s than in earlier decades, and tentative evidence also suggests that higher rates of inflation have resulted in more variability in successive quarterly inflation rates. One of the reasons for this greater variability – and hence uncertainty – is that high inflation prompts community concern about inflation, eventually encouraging governments to adopt measures designed to reduce inflation at least temporarily, as occurred in New Zealand in 1978 and 1982.

The uncertainty about future inflation trends, and the related difficulty at any point in time in distinguishing absolute and relative price changes, increased the difficulty facing private sector agents in making informed consumption, pricing, and investment decisions. This difficulty is particularly apparent for transactions with longer-

term implications. Forming inflation expectations involves the use of scarce and costly resources. Given the alternative uses for those resources and the inherent difficulty in obtaining the sort of inflation data necessary to make plans, people must make a trade-off between investing more resources in improving their forecasts, and accepting the risk of inaccurate forecasts. If the inflation rate becomes more variable, more resources are necessary to maintain a consistent degree of forecasting accuracy. By contrast, considerably fewer resources would need to be devoted to forecasting inflation if price stability was achieved and maintained.

Even professional forecasters have considerable difficulty in accurately forecasting the inflation rate over the longer term. Thus, in a period of inflation it is likely that a greater number of inappropriate (welfare-decreasing) decisions will be made than when the general price level is stable. The increased uncertainty is likely to lead to more investment being undertaken in projects which, with hindsight, will prove to have been of dubious worth, and some other attractive projects will be passed up or deferred because of misperceptions about relative prices. The greater uncertainty is also reflected in the tendency for pre-tax real interest rates – particularly on longer-term instruments – to be higher in high inflation countries than in those countries with relatively low and stable inflation rates, such as Japan, West Germany, and Switzerland.

In addition to devoting resources to forecasting, part of the community's response to inflation uncertainty has been a considerable shortening in business planning horizons and in the average length of nominal contracts agents are willing to enter into. Contracts for fixed periods expressed in nominal terms are all part of the way in which society organises itself. They are an integral part of running an efficient market economy at least cost, and with the inevitable uncertainty borne by those most willing to carry it. For example, there are excellent reasons why both employers and workers would not want to set wages daily or even weekly in an auction market. Both sides face a greater degree of certainty, about input costs and income respectively, and the negotiation of employment contracts is itself a far-from-costless process. However, the existence of uncertain inflation encourages more frequent wage negotiations, to minimise the risk facing both employers and workers that the negotiated wages will be inappropriate in the macroeconomic environment which involves over the ensuing period. Inflation and the related uncertainty add noise to the labour market bargaining process, making it highly likely that in times of rising inflation, real wages will fall behind, or that at other times real wages will be too high and output and employment losses will ensue (as over recent years when expectations of inflation have fallen only slowly).

An uncertain macroeconomic environment also tends to shorten the length of other contracts or activities. On the one hand there can be a greater concentration of investment in projects with relatively short payback periods. And, in the financial sector, New Zealand's record of high and variable inflation led to the replacement of fixed rate term loans (guaranteeing access to finance over a required term at a fixed cost) with variable rate loans, offering considerable uncertainty to the borrower as to both real and nominal interest rates. By contrast, fixed rate housing loans re-emerged to some extent during 1988, as inflation fell sharply and medium-term prospects for a low stable inflation rate appeared to improve.

More generally, the introduction of uncertainty about inflation into this process makes the machinery of the economy work less efficiently and adds further, at times considerable, costs to the process. This reduction in efficiency prompts countervailing measures and more expensive solutions to running the economy – including voluntary indexation – without generating any compensating benefits for the community.

On average, it seems likely that inflation, operating through the mechanisms outlined in this section, has again most harmed the poorer and least sophisticated people in society.

These people are probably least able to make inflation forecasts, let alone have the financial resources to employ someone to make the forecasts for them. Reading political and economic trends is difficult, and for many people the least-cost and possibly optimal form of forecasting is to simply assume that what has been in the past will continue in the future. Moreover, the uncertainty of inflation creates additional economic hazards which well-educated, wealthy and relatively sophisticated people are better able to handle than the less sophisticated.

There are specific examples of the way in which unanticipated inflation generated outcomes which would generally be considered inequitable.

The entire inflationary phase of the period since the mid-1960s was unexpected. As noted earlier, fixed long-term nominal contracts are an efficient way of organising a market economy in the face of price stability, particularly as, other than in war-time, sustained inflation had been unknown in New Zealand's recorded history. This record gave people no reason to believe that nominal contracts would not be appropriate. As a result, for example, in saving for retirement, individuals entered into occupational superannuation schemes and life insurance funds which offered benefits expressed in nominal terms (and which often had very penal withdrawal provisions and, in the case of the former, compulsory membership). Moreover, others accumulated savings in 'safe' government stock or bank accounts. Those people with retirement savings held in these forms found their wealth severely eroded when an era of sustained inflation dawned (although, of course, at least some of the gains to funds were passed back to policyholders).

Such people could not have known that inflation was likely to occur, and had no incentive to guard against something that had never happened. This redistribution is one of the more unfortunate aspects of inflation, as peoples' lives cannot be rerun if in middle age the real value of their retirement savings is significantly eroded by inflation. Age and compulsory retirement provisions generally mean that there is only limited scope for people to replace significant losses through their own efforts, and so inevitably they become dependent on the next generation.

An interesting example of the inequitable outcomes associated with inflation relates to long-term leases with fixed rentals, particularly those lands compulsorily made subject to long-term lease arrangement. For example, the Maori Reserved Lands Act of 1955 set up perpetual leases for large tracts of land under its jurisdiction, with annual rentals set only every 21 years. Inflation has effectively confiscated much of the wealth of the owners of these lands, in a manner no one could have expected, no matter how many resources had been applied to forecasting, or would have considered just or equitable if inflation had been expected. Although it can be argued that Parliament could have acted to redress this injustice, the failure to do so, even after 20 years of high inflation, and the arbitrary nature of the redistributions, is an extreme example of how difficult it is for the losers to achieve adequate compensation for the inflationary losses<sup>3</sup>.

## RESPONSES TO THE COSTS OF INFLATION

Having examined some of the costs of inflation the appropriate response needs to be considered – particularly given the temporary costs of reducing inflation. There are two main means of coping with the problems caused by inflation.

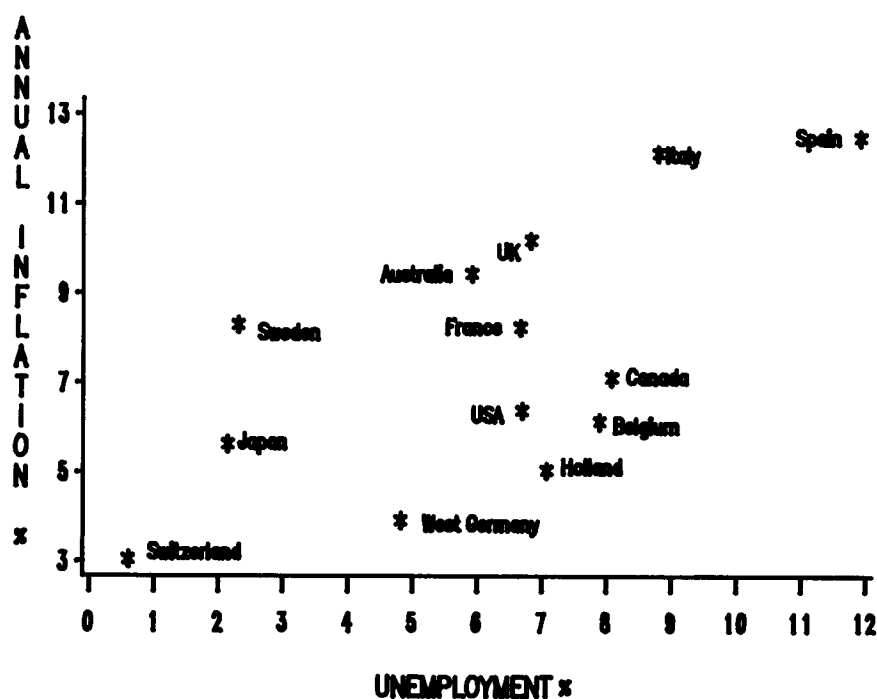
<sup>3</sup> There have been indications more recently from the Government that measures will be implemented to redress these apparent injustices.

The first route, and the one adopted by the Government, is to adopt a stable medium-term approach to monetary policy directed at the achievement and maintenance of price stability and so over time to establish a credible social and political commitment to the maintenance of a stable price level. In such an environment the costs of inflation are totally avoided.

Some would argue that an outcome just as acceptable, and with rather less temporary costs, could be obtained by settling for a commitment to a low stable inflation rate. In general, the costs of inflation are broadly proportional to the rate of inflation. However, there are reasons to believe that price stability, rather than simply some low rate of inflation, should be the appropriate medium-term goal of monetary policy. Price stability avoids any need for contract provisions to cope with the price level changes involved with a low stable inflation rate. In addition, international experience suggests that the maintenance of price stability creates its own inertia; minimising the risks of a future resurgence in it by creating an economic structure which works best with stable prices and building expectations that deviations from price stability will eventually be reversed. Moreover, a commitment to a stable price level is likely to be considerably more socially and politically credible than a commitment to a stable rate of inflation. If a government commits to 5 per cent inflation, why not 6 per cent, or 7 per cent? A stable price level is a much clearer concept, and one for which it is considerably easier to hold monetary authorities accountable over an extended period.

The second alternative to cope with the costs of inflation is indexation. Individuals and firms have always been free to enter into private contracts with indexation clauses. However, explicit indexed contracts have generally not become widespread

**Figure 4**  
**Inflation - Unemployment: OECD Countries: 1971-1989 (averages)**



Source : OECD Main Economic Indicators & The Economist

in most countries which have suffered from prolonged inflation.

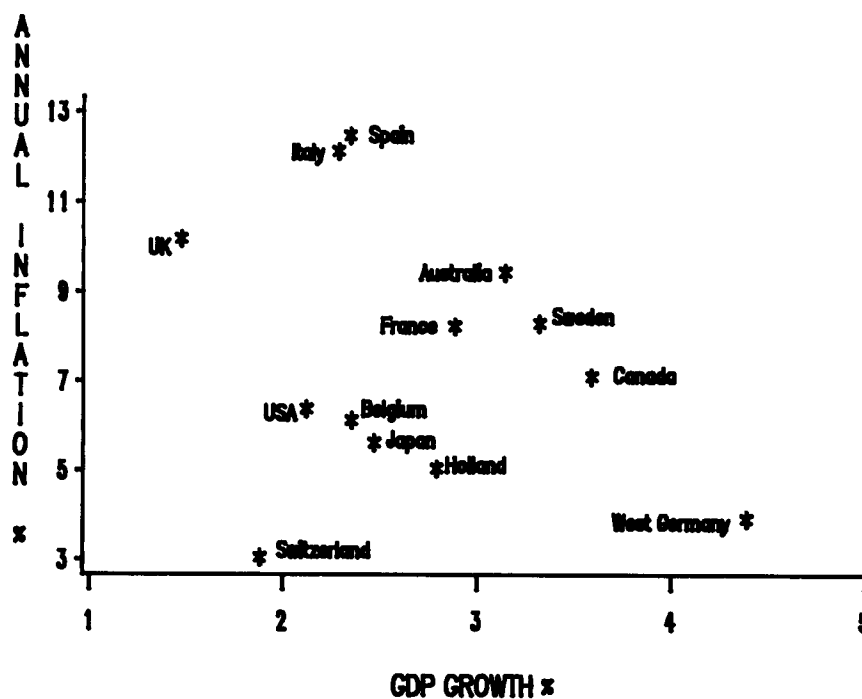
Full statutory indexation has been adopted in some hyper-inflationary countries, but all such systems have eventually broken-down amid calls for governments to actually reduce inflation. These breakdowns and the fact that private indexation has not become widespread even after 20 years of relatively high inflation in New Zealand, suggest that indexation is not as clean, cheap, and non-distortionary as the simple model might suggest. There are timing problems regarding the availability of statistics and the retrospective adjustment of nominal payments and costs of making such adjustments. Even if such adjustments took place only every quarter they would still be far from costless. The existence of these costs means that indexation is not a neutral solution.

The Bank has, of course, favoured over the years a move towards the sort of indexation of the taxation system proposed by the Government in its Consultative Document on the Taxation of Income from Capital issued in late 1989. Such a system would minimise the tax-related costs of any future inflation and leave it open to the private sector to adapt its own arrangements to cope with any future pressures. Nevertheless, the universal non-acceptance of indexation as a permanent solution should leave New Zealand wary of seeing it as a sound alternative to the successful achievement of price stability.

## EMPIRICAL EVIDENCE

The nature of the costs and distortions associated with inflation has been outlined in previous sections. The existence of such distortions is generally not disputed. What

**Figure 5**  
**Inflation - GDP Growth Rates: OECD Countries: 1971-1989 (averages)**



Source : OECD Main Economic Indicators & The Economist

is challenged is the empirical significance of the costs of inflation. How much higher, for example, would our national income be if inflation could be finally eliminated, and are these gains worth having if the costs of getting inflation down are substantial?

Most of the empirical research in this area has been conducted on data from the United States and the United Kingdom, and even this work offers few conclusive findings. Little work has been done in New Zealand – partly because of the extreme difficulty of disentangling the impact of inflation from the impact of other distortions in the New Zealand economy, and partly because of data deficiencies. Some tentative cross-country empirical work undertaken at the Bank does, however, point to the rate of inflation having been a significant explanatory variable for the national income performances of a range of developed countries in recent decades. The Reserve Bank is committed to undertaking any research possible in this area in the future. However, the Bank has no reason to believe that the magnitude of the costs in New Zealand will prove to be any less than those in other countries. On plausible assumptions about the annual costs of these distortions the cumulative costs over the years could amount to as much as 10-20 per cent of GDP.

## CONCLUSION

There are no benefits from inflation for society as a whole, although, of course, there are individual winners from the redistributions inflation generates. There are, however, significant costs and distortions arising from inflation. The distortions have the effect of lowering national income and generating arbitrary and unlegislated wealth redistributions – redistributions which appear generally to have hit hardest the poorer, more conservative and less financially sophisticated sections of the community.

Substantial costs arise from the interaction of the tax system with inflation; many of which could be overcome with appropriate changes to the tax system. However, even if these changes were made other significant costs would remain. These costs would reflect the costs of gathering information, the inherent uncertainty engendered by inflation, and the existence of contracts expressed in nominal terms. All these factors tend to mean that inflation contributes to a misallocation of a country's scarce resources and results in the use of some of those resources in activities which would simply not be necessary if stable prices could be maintained.

In the medium to long-term there are therefore clear gains to be had from achieving price stability – avoiding the costs, distortions and arbitrary redistributions brought about by inflation. There are, of course, costs associated in eliminating inflation, but these costs themselves are largely avoidable, and of a one-off nature. By contrast, the benefits of eliminating inflation can be expected to be permanent. Both the Government and the Reserve Bank believe that price stability is the best contribution monetary policy can make for a more prosperous society in the 1990s.

## FOR FURTHER READING

- Carey D. "Inflation and the Tax System", *Reserve Bank of New Zealand Bulletin*, 1989, March Quarter, Vol. 52, pp. 18-26.
- Garfinkel, M.R. "What Is an 'Acceptable' Rate of Inflation? – A Review of the Issues", *Federal Reserve Bank of St Louis Review*, 1989, July/August, 71(4), pp. 3-15
- Fischer, Stanley. "Relative Shocks, Relative Price Variability and Inflation", *Brookings Papers on Economic Activity* (1981a), pp. 381-431.
- Fischer, Stanley. "Towards an Understanding of the Costs of Inflation: II", in Karl Brunner and Alan H. Meltzer, eds. *The Costs and Consequences of Inflation*, Carnegie-Rochester Conference Series on Public Policy (North-Holland, Autumn, 1981b), pp. 5-42.
- Taylor J.B. "On the Relation between the Variability of Inflation and the Average inflation Rate", in K. Brunner and A. Meltzer (eds), *The Costs and Consequences of Inflation* (1981), 15, pp. 57-86, Carnegie-Rochester Conference Series on Public Policy, North-Holland, Amsterdam.
- Wilcox, J.A. "Liquidity Constraints on Consumption: The Real Effects of 'Real' Lending Policies", *Federal Reserve Bank of San Francisco Review*, Fall 1989.