

**NO FREE
LUNCH**
THE COSTS OF
TAXATION

ALEX ROBSON

NEW ZEALAND BUSINESS ROUNDTABLE
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Alex Robson's report draws heavily on his investigation into the costs of taxation in Australia. A study based on this research, *The Costs of Taxation*, was published by the Centre for Independent Studies in 2005 as the eighth monograph in its Perspectives on Tax Reform series. The New Zealand Business Roundtable gratefully acknowledges the cooperation of the Centre for Independent Studies in the production of this New Zealand companion study.

FOREWORD

Dr Alex Robson's report, *No Free Lunch: The Costs of Taxation*,¹ examines the economic costs of raising tax revenue in New Zealand. This is an important issue because government spending and taxation are large relative to national output and income. The incremental costs of taxation increase as the tax burden rises.

The level of government spending is the best overall indicator of the tax burden. Ultimately, spending must be financed primarily by current or future taxation. Real central government current outlays per capita increased by about 150 percent to almost \$10,000 (in 2002–03 prices) between 1953–54 and 2003–04.² In its 2005 survey of the New Zealand economy, the Organisation for Economic Cooperation and Development (OECD) stated unequivocally that “higher taxes have a negative impact on economic growth”.³

The 2005 election campaign illustrated the continuing pressure from special interest groups to increase government spending and the willingness of political parties to campaign for votes by promising to meet their demands. The benefit to interest groups of such spending is usually apparent. However, from the perspective of the community as a whole, the central issue is whether the overall benefits of such spending outweigh related costs. Where spending is funded from taxation, as most central and local government spending is, the costs of taxation must be taken into account.

A dollar that is taken in tax to fund government spending is not available for private consumption or saving. But the costs of raising a dollar in taxation are higher than a dollar, because, as Robson observes in his conclusion, “all forms of taxation alter economic choices and drive economic activity from higher to lower valued uses”. The costs that arise are the pure economic costs or deadweight losses of taxation. They are the value of output that is forgone as a result of the government taxing people. Deadweight losses arise irrespective of whether the related revenue is spent wisely or wasted.

If the rate of income tax is increased, some people might decide to work fewer hours, they might conclude that it is not worthwhile training for an additional qualification or seeking promotion, or they might elect to stay on welfare rather than take a job. A homeowner might also decide that it is better to paint the house and forgo after-tax income rather than pay a tradesperson to undertake the work simply because of the higher tax wedge between gross and after-tax wages. These are examples of deadweight losses.

¹ This report is based on a monograph on the costs of taxation in Australia. See A Robson, *The Costs of Taxation*, Perspectives on Tax Reform (8) (Sydney: The Centre for Independent Studies, 2005).

² B Wilkinson, *Restraining Leviathan: A Review of the Fiscal Responsibility Act 1994* (Wellington: New Zealand Business Roundtable, 2004), 6–7 and personal communication with B Wilkinson. Outlays were deflated by the consumers price index (CPI).

³ *OECD Economic Surveys: New Zealand*, July 2005, Organisation for Economic Cooperation and Development, Paris, 134. The survey notes that it has been estimated that an increase of about one percentage point in the tax burden could be associated with a direct reduction of about 0.3 percent in output per capita, rising to 0.6–0.7 percent if indirect effects through investment are also taken into account.

Robson focuses on the pure economic or deadweight costs of taxation. He summarises research conducted overseas and in New Zealand that measures the deadweight costs of taxation, including the 1994 study by W Erwin Diewert and Denis Lawrence, *The Marginal Costs of Taxation in New Zealand*, which was commissioned by the Business Roundtable.⁴

The pure deadweight costs of tax are difficult to measure with any precision. Governments rarely try to do so. Robson reports that if research findings for the United States apply to New Zealand, total deadweight losses from all taxes (computed at an average of \$0.18 to \$0.24 per dollar of tax revenue) may have amounted to between \$10 billion and \$13 billion in 2005–06. On this basis, such costs would have exceeded government spending on health or education (\$10 billion each) and would rank second (after social security and welfare) by level of ‘spending’.

For New Zealand, Diewert and Lawrence estimated the pure deadweight loss from raising an additional dollar of tax on labour income (the *marginal* deadweight loss) at \$0.18 in 1990–91. Paul McKeown and Alan Woodfield derived an estimate of between \$0.25 and \$1.46 for 1987–88.⁵

Robson defines the marginal cost of funds or taxation as one plus the marginal pure deadweight loss. He explains that traditional estimates of the marginal cost of funds (such as those derived by Diewert and Lawrence, and McKeown and Woodfield) may be far too low because they measure the impact of tax on one choice, such as labour supply. Taxation, however, affects a host of choices that people make.

Robson reports on overseas studies in which he finds that the level of taxable income is far more sensitive than labour supply (hours of work) to small changes in the level of tax. Taxable income provides a broad measure of the deleterious effects of high taxes. If the findings of such research apply to New Zealand, the marginal cost of personal income tax could be as high as \$3.

The marginal cost of funds provides a *minimal* benchmark against which to measure public projects or policy interventions. From an efficiency point of view, any project or policy that fails to provide benefits that offset the marginal cost of taxation should not be undertaken – because overall community well-being would be reduced.

The costs of taxation extend beyond pure economic costs or deadweight losses. Robson identifies a number of additional ways in which tax imposes costs on individuals, irrespective of whether they gain from related government spending. These include enforcement, avoidance, and compliance and administration costs. They also include rent-seeking activities, which arise when one section of the population tries to persuade the government to divert resources from another.

⁴ E Diewert and D Lawrence, *The Marginal Costs of Taxation in New Zealand* (Canberra: Swan Consultants (Canberra) Pty Ltd, 1994).

⁵ P McKeown and A Woodfield, ‘The Welfare Cost of Taxation in New Zealand Following Major Tax Reforms’, *New Zealand Economic Papers* 29:1 (1995), 41–62.

Robson examines the connection between the costs of taxation and economic growth. He reports that high taxation is likely to harm economic activity and growth. Some developed countries (most notably Ireland and South Korea) have reduced the burden of taxation on upper incomes in the recent past. They have recorded the fastest growth rates. Robson finds that OECD countries that made substantial cuts in their top tax rate, or in the income level at which it first applies, or both, between 1980 and 2000 were rewarded with average annual per capita growth over this period in excess of 3 percent, almost double that achieved by other countries examined.

Extending the analysis across 98 different countries, Robson finds that “On average, countries which significantly cut taxes on upper incomes between 1980 and 2000 enjoyed average per capita growth rates of nearly three times those that did not”. These and similar findings contradict frequent claims by the minister of finance, Dr Michael Cullen, that taxes do not adversely affect growth.⁶

No Free Lunch: The Costs of Taxation deals with one of the main reasons why continuing growth in government spending reduces the potential output and income of the community, and harms economic growth. But it is not the only reason. Other ways in which big government harms growth were explored by Winton Bates and Bryce Wilkinson in reports for the Business Roundtable.⁷

Most new spending proposals and many existing spending programmes are unlikely to produce the return necessary to cover the costs of taxation required to fund them. Lower spending and taxation can, therefore, be expected to make the community better off.

Roger Kerr
Executive Director
New Zealand Business Roundtable

⁶ See, for example, M Cullen, ‘Address to Public Meeting’, 11 July 2002, www.scoop.co.nz/mason/stories/PA0207/S00312.htm.

⁷ W Bates, *How Much Government? The Effects of High Government Spending on Economic Performance* (Wellington: Business Roundtable, 2001) and B Wilkinson, *op cit*, fn 2.

EXECUTIVE SUMMARY

Taxation generates various administrative, avoidance, compliance and rent-seeking costs. New Zealand's Inland Revenue Department (IRD) employs over 4,760 people and its operating expenses in 2006–07 are forecast to be \$531 million. New Zealand's total 'tax army' of tax lawyers and accountants, as well as IRD staff, is more than four times the size of its 'real army'.

Taxation also leads to 'deadweight losses' (basically, the value of lost output) by prompting people to switch from higher valued to lower valued economic activities (a concept described in section 3.1 of this report). If the findings of research undertaken in the United States apply to New Zealand, total deadweight losses from taxation in New Zealand in 2005–06 could be between \$10 billion and \$13 billion, and thus exceed public spending on each of health and education (\$10 billion each).

While tax revenues may be spent by government on beneficial uses, these benefits have to be weighed against the deadweight losses incurred as a result of levying the tax in the first place. This is rarely done, and there are no official published estimates of deadweight costs.

Any proposed spending that does not provide a higher percentage return than the marginal cost of raising the extra revenue cannot be justified in economic terms. New Zealand research estimates that it costs between \$1.18 and \$2.46 to raise an additional dollar of personal tax. To be economically justified, the last dollar of government spending should therefore generate a return of at least 18 percent, net of any additional administrative or production costs. It is doubtful whether many projects would pass this benchmark test.

By reducing deadweight losses, tax cuts tend to stimulate growth. Countries that significantly cut taxes between 1980 and 2000 enjoyed average per capita economic growth rates that were nearly three times those of other countries.

Graduated personal income tax systems tend to generate higher deadweight losses than flatter tax structures. However, a flat tax still distorts economic incentives and creates a deadweight loss.

At New Zealand's current levels of taxation and spending, claims that higher taxes would have little or no effect on economic incentives are not credible.

I

INTRODUCTION

Tax his oil, tax his gas, tax his notes, tax his cash. Tax him good and let him know that after taxes, he has no dough.

If he hollers, tax him more. Tax him till he's good and sore. Tax his coffin, tax his grave, tax the sod in which he's laid.

Put these words upon his tomb: 'Taxes drove him to his doom'. After he's gone, we won't relax. We'll still collect the inheritance tax.

From 'The Tax Collector's Creed'
Anonymous

If two or more individuals agree to exchange goods or services, then as long as the exchange is voluntary, one or more of those individuals will be better off. In an economy with free markets, the vast majority of exchanges are mutually beneficial – otherwise individuals would not conduct them. Individual pursuit of self-interest – combined with institutions that facilitate voluntary exchange between individuals – tends to promote mutually beneficial outcomes, even though no single person consciously promotes this end. These mutually beneficial exchanges of goods and services lie at the heart of the creation of economic wealth and higher living standards.

In essence, taxes tend to discourage mutually beneficial exchanges by driving a wedge between the prices that suppliers wish to receive for their output and the prices that consumers are willing to pay for these products. For example, income taxes drive a wedge between the wage that workers are willing to accept to supply labour and the wage that employers are willing to pay them. Because of these wedges, some potential gains from mutually beneficial exchanges – which exist when demand prices exceed supply prices – are left unexploited. Agents instead are induced to conduct alternative exchanges, which, while certainly involving mutually beneficial wealth creation, do not create *as much* wealth and are not *as* mutually beneficial as the gains made from voluntary exchange. In summary, taxes, whilst raising revenue, also tend to divert economic resources from higher valued to lower valued economic uses. For various kinds of taxes, economists generically refer to these unexploited gains from trade as the *deadweight loss* of a tax.

Thus, in a very real sense, taxes destroy economic wealth.⁸ Indeed, in 1819, the celebrated American jurist John Marshall noted that “the power to tax involves the power to

⁸ It is worth noting that subsidies have a wealth-destroying effect similar to the costs that are described here. Subsidies drive down the prices that consumers are willing to pay below the prices that producers wish to receive. Thus, subsidies induce *too many* exchanges of subsidised goods, and drive resources away from higher valued uses. In this sense, the wealth-destroying effects of subsidies are no different from those of taxes, and must be added to the costs of taxation to enable us to get a full estimate of the cost of both forms of government intervention.

destroy". Unfortunately, Marshall's wisdom regarding the nature of taxation continues to elude some economists, many of whom should know better.⁹

Another famous American jurist, Oliver Wendell Holmes, is reported to have remarked that "taxation is the price we pay for civilized society". By some strange coincidence, it seems as though this view is as popular among those in charge of raising tax revenue as it is among those responsible for spending it.¹⁰ But the fact that a disbursement of funds may provide a benefit does *not* mean that the costs of raising those funds – the 'price', as Holmes put it – should be ignored or trivialised. What if the 'price' of a certain tax (in terms of its economic cost) exceeds the benefits that the revenue allegedly provides? How are taxpayers supposed to know whether the gains from paying taxes are worth the costs, when the debate over tax rates continually gets diverted, the true costs of taxation obfuscated, and attention gets directed to the alleged benefits of an entirely different branch of government activity? When Holmes made his remark, the levels of government spending and taxation were around 10 percent of gross domestic product (GDP) or less in the United States and many other economies. Today these levels are far higher in most countries, including New Zealand, as is the associated 'price' of raising tax.

Costs of taxation are costs, not benefits, and that is that. Whether the benefits of government spending exceed the costs is a very different question from the questions about what exactly the costs are and why they exist. Once a full and proper discussion and an assessment of the costs of taxation is completed, attention can be turned towards the purported benefits of various spending proposals. It is then possible to examine whether the alleged economic benefit of the last dollar spent on a particular government programme more than offsets the economic cost of raising that last dollar from taxpayers. If costs are conflated with benefits, this is simply not possible.

⁹ For example, in an address (B Easton, 'The State of the Nation: Issues for the 2005 Election', St Andrew's Trust for the Study of Religion and Society, Wellington, 12 July 2005, see <http://www.scoop.co.nz/stories/HL0507/S00170.htm>), Brian Easton asked, 'Wont [sic] Lower Taxes Increase GDP?' His reply was, "There is an hypothesis that higher tax rates depress output. If it were correct, then lowering taxes would increase GDP. Economist after economist has sought to prove the result, but they never can. Despite its plausibility, the research simply does not support the hypothesis." In a formal paper (M Keating, 'The Case for Increased Taxation', Academy of the Social Sciences in Australia, Occasional Paper No 1 (2004), see <http://www.assa.edu.au/publications/op/op/12004.pdf>), Michael Keating argues that "the Australian economy could tolerate a significant increase in the ratio of taxation to GDP without great difficulty". While framed in terms of GDP, the major thrust and implication of Easton's comment and Keating's paper is that increasing taxes by a significant amount would not create any substantial economic costs.

¹⁰ For example, the quote is chiselled in stone at the US Treasury Building in Washington DC. This somewhat schizophrenic view of taxation was also adopted in 1999 by the Australian Commissioner of Taxation, Michael Carmody (without crediting Holmes). The Commissioner attempted to make the 'ethical' case in favour of paying higher taxes by conflating the costs of taxation with the alleged benefits of government spending, see 'Ethics and Taxation', Speech Delivered to the Edmund Rice Business Ethics Forum, Sydney, 28 October 1999, <http://www.ato.gov.au/corporate/content.asp?doc=/content/sp9907.htm>.

2

SOME BASIC PRINCIPLES

2.1 A taxonomy of costs

In the *Wealth of Nations*, Adam Smith expounded some basic principles of taxation that provide an excellent introduction to some of the issues discussed in this report. With regard to the costs of taxation and the design of the tax system, Smith's first principle was that:

Every tax ought to be so contrived as both to take out and keep out of the pockets of the people as little as possible, over and above what it brings into the public treasury of the state.¹¹

That is, Smith believed that taxes should be designed to minimise economic waste – or to 'take out and keep out of the pockets of the people as little as possible, over and above what the tax raises in revenue'. What kinds of costs did he have in mind?

Like many modern economists, Smith recognised that even if the tax system were simple, easy to comply with, and easy to administer, it could still have economic costs. He wrote:

It [a tax] may obstruct the industry of the people, and discourage them from applying to certain branches of business which might give maintenance and unemployment to great multitudes. While it obliges the people to pay, it may thus diminish, or perhaps destroy, some of the funds which might enable them more easily to do so.

The modern microeconomic approach to measuring the pure economic or deadweight costs of taxation is based on Smith's observation and is discussed below. It reflects the observation (made in the introduction) that taxes raise revenue but also tend to divert economic resources from higher valued to lower valued economic uses.

Smith also noted that, besides the disincentive effects discussed above, taxation would have additional costs. He classified these costs as follows:

- **Administrative and enforcement costs**

The levying [of a tax] may require a great number of officers, whose salaries may eat up the greater part of the produce of the tax, and whose perquisites may impose another additional tax upon the people.

¹¹ All quotes below are from A Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) Liberty Fund Edition (Indianapolis: Liberty Fund, 1981) Book V, Chapter 2, 826–827.

- **Avoidance costs**

By the forfeitures and other penalties which those unfortunate individuals incur who attempt unsuccessfully to evade the tax, it may frequently ruin them, and thereby put an end to the benefit which the community might have received from the employment of their capitals. An injudicious tax offers a great temptation to smuggling. But the penalties of smuggling must rise in proportion to the temptation. The law, contrary to all the ordinary principles of justice, first creates the temptation, and then punishes those who yield to it; and it commonly enhances the punishment, too, in proportion to the very circumstance which ought certainly to alleviate it, the temptation to commit the crime.

- **Compliance costs**

By subjecting the people to the frequent visits and the odious examination of the tax-gatherers, it may expose them to much unnecessary trouble, vexation, and oppression; and though vexation is not, strictly speaking, expense, it is certainly equivalent to the expense at which every man would be willing to redeem himself from it.

All of these costs are as easily recognisable today as they were in 1776, when Smith wrote the *Wealth of Nations*. Today's taxation systems not only require "a great number of officers" (the Inland Revenue Department currently has a staff of over 4,760 full-time equivalent employees, and its operating expenses in 2006–07 are forecast to amount to \$531 million)¹² but also transfer many of the administrative costs from the "great number of officers" to taxpayers themselves or to employers. In many cases the administrative costs and compliance costs of taxation have become indistinguishable from one another, because responsibility for administration has been transferred to the private sector. For example, when employers withhold income taxes from employees, they are performing more of an administrative function than a compliance function. They are, in effect, collecting taxes on the government's behalf.

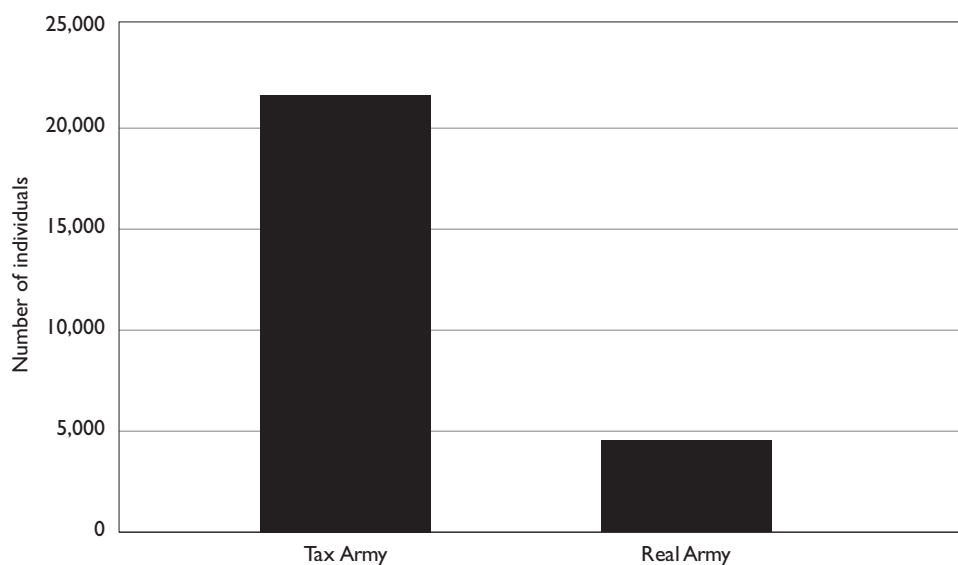
The primary reason for the growth in compliance costs and administrative costs, aside from a rise in the level of the tax burden, is the increasing legal and economic complexity of the tax system. Legal complexity is best understood as the absence of simplicity. Simplicity tends to decrease with the sheer density of tax rules, their degree of technicality, the extent to which different tax laws apply to the same set of facts and the degree of indeterminacy or uncertainty that they create.¹³

The growth of compliance costs manifests itself in a variety of obvious ways, including the growth in the number of accountants, tax specialists and tax lawyers employed in the economy, many of whom do not create any new wealth but are employed to prevent the government acquiring the wealth of their clients. To illustrate this trend for the United States, Richard Vedder compares the size of the 'tax army' (one quarter of all lawyers, one

¹² Inland Revenue Department, 'Statement of Intent 2006–2009', <http://www.ird.govt.nz/aboutir/reports/soi/soi-2006-2009/> accessed 17 April 2007, 3 and 31.

¹³ See P Schuck, 'Legal Complexity: Some Causes, Consequences and Cures', *Duke Law Journal*, 42 (1992), 1–52, and R Epstein, *Simple Rules for a Complex World* (Cambridge, MA: Harvard University Press, 1995). For a formal economic analysis of the effects of complexity and variability of regulations, see R Quandt, 'The Welfare Effects of Complexity and Variability in Regulations', *Economics Letters*, 13:2–3 (1983), 259–261.

Figure 1: The 'tax army' and the 'real army', 2005–06



Sources: New Zealand Inland Revenue Department, *Statement of Intent 2006–09*, 4; New Zealand Institute of Chartered Accountants, *2005 Annual Report*, 14; New Zealand Law Society, *2005 Annual Report*, 4; New Zealand Defence Force, *Statement of Intent 2006–09*, 187.

half of all accountants, and all officers employed by the US Internal Revenue Service) with the size of the 'real army' (permanent US Army forces), and finds that the former easily exceeds the latter, with the gap growing over the last two decades.¹⁴

Figure 1 uses Vedder's methodology to perform the same comparison for New Zealand in 2005–06, and shows that the 'tax army' (one quarter of all lawyers, one half of all accountants and all officers employed by the Inland Revenue Department) was more than four times the size of the 'real army' (regular New Zealand Army personnel) for that year. The comparable ratio for Australia in 2001–02 was over three.¹⁵

At the margin, higher administrative, avoidance, enforcement and compliance costs tend to be associated with lower levels of economic activity, and lower *rates* of economic growth, depending on how the costs change with changes in the level of economic activity. The existence of complexity is itself an obstacle to tax reform and lower levels of taxation. If nobody truly understands what the law means as it stands or to which situation it applies, how can intelligent reform proceed? The existence of complexity in the tax code is often the result of one interest group or another lobbying successfully for special deductions or treatment. These special interest groups oppose reform because complexity in certain parts of the tax law benefits them. This leads us to another category

¹⁴ R Vedder, 'Replace the Income Tax with Consumption Tax', Paper presented at the World Taxpayers Conference, Gold Coast (November 2004).

¹⁵ A Robson, *op cit*, fn 1, 3.

of the costs of taxation – *revenue-seeking* or *rent-seeking costs* – which were not discussed by Smith and which were first identified by Gordon Tullock.¹⁶

- **Rent-seeking costs**

The revenues that governments raise from taxes represent lost consumption and profit opportunities for those who are taxed. However, taxes signify greater potential consumption and profit opportunities for those who gain access to tax revenue by way of subsidies, direct transfers, or other redistributive government programmes. Thus, before taxes are raised and the proceeds redistributed, potential producers and consumers may lobby the government not to levy taxes, but other groups may lobby in favour of higher taxes in order to finance the greater spending that might be directed their way. Because these activities are directed at redistributing wealth rather than creating extra production, they represent an additional social cost of taxes and subsidies above and beyond the usual deadweight losses. Rent-seeking activity, if successful, reduces output below its competitive level in some markets and increases it in other markets.

In general, then, the full social costs of taxation and subsidies could also include some fraction of the potential revenues that are raised from taxes, and this cost may be much larger than the usual deadweight losses and other costs that taxation and subsidies create separately. More generally, in any analysis of public policy in a rent-seeking society, the resources aimed at influencing the distribution of wealth – and which do not (either directly or indirectly) create wealth – should be added to standard deadweight costs to arrive at an overall measure of the welfare cost of redistributive programmes.¹⁷

Furthermore, there may be additional incentives for rent seeking when there are existing distortions in other markets. When distortions in markets already exist, producers in these distorted markets may have an incentive to suppress or encourage the establishment of new distortions in hitherto undistorted markets. The incentive for this inter-industry lobbying is often at its strongest when the welfare effects of an existing distortion can, in theory, be partially offset by the introduction of a new distortion in another related market. For example, if an existing tax on the consumption of butter induces consumers to switch to margarine, then introducing a new tax on margarine may partially offset the initial negative welfare effects of the butter tax. These are sometimes called second-best policies.

In other words, individuals who already enjoy the fruits of redistributive taxation may have a strong incentive to appeal to the language of second-best to further their own private interests. In these situations, the total amount of resources spent on trying to encourage government intervention in an undistorted market can easily exceed Tullock's

¹⁶ G Tullock, 'The Welfare Costs of Tariffs, Monopolies and Theft', *Western Economic Review* 5 (1967), 224–232.

¹⁷ The costs of rent-seeking activities are certainly large enough to concern welfare economists. Recent estimates (by D Laband and G McClintock, *The Transfer Society: Economic Expenditures on Transfer Activity* (Washington DC: Cato Institute, 2001) are available for the United States in the year 1997, and amount to US\$546 billion (at 1997 prices).

partial equilibrium deadweight loss 'rectangle' measure, because the creation of a new distortion can enlarge the 'rectangles' that already exist in other distorted markets.¹⁸

Although this paper focuses on the pure economic or deadweight costs of taxation, these other kinds of costs may be as important (or, in some cases, more important). For example, if a tax rate is very low, its deadweight costs may be low in both a marginal and total sense, but the economic costs of enforcing, administering, avoiding and complying with the tax may be very high, depending on the institutional arrangements that are in place and the particular economic activities to which the tax applies. Thus, while we discuss the deadweight costs of taxation in some detail, we do not mean to imply that this narrow category of wealth destruction is the most important one. Indeed, focusing only on deadweight costs can sometimes lead to serious economic policy errors when it comes to tax reform.

¹⁸ See A Robson, 'Rent Seeking and the Presence of Existing Distortions', *Working Paper in Economics and Econometrics*, No 448 (Canberra: Australian National University, 2005).

3

THE PURE ECONOMIC COSTS OF TAXATION

The modern microeconomic approach to measuring the pure economic or deadweight costs of taxation is based on Smith's observations. The approach proceeds by noting that when a government taxes a particular economic activity, it raises revenue but also alters individual economic incentives at the margin and "obstructs the industry of the people". The correct measurement of deadweight loss takes both of these effects into account. It does *not* account for administrative costs, avoidance costs, compliance costs, enforcement costs, or rent-seeking costs.

3.1 The deadweight loss of a tax: the example of personal income taxation

Higher income taxes reduce workers' after-tax wages. Leaving aside any benefits workers derive from additional government spending financed by higher income taxes, lower after-tax wages make workers worse off, even if workers do not alter their behaviour. At the margin, reductions in after-tax wages make other kinds of economic activities more attractive. To partially mitigate the adverse effects of lower after-tax wages, workers substitute away from the taxed activity (work) into other activities.

At the margin, workers may increase time devoted to leisure or recreation, lower their work intensity (devote more time to 'on-the-job' leisure), pursue 'do-it-yourself' work, engage in home production for barter, or substitute into activities or occupations with significant non-pecuniary (non-wage) benefits.

This is what is meant by the observation that taxes drive economic resources from higher valued to lower valued uses. Higher personal income taxes encourage workers to substitute into economic activities that they otherwise would not have undertaken. These substitution effects never work in the same direction as the tax change. That is, higher personal income taxes never induce substitution towards more work.

Some commentators correctly point out that higher income taxes create disincentives and induce workers to substitute out of work, but then go on to claim that because leisure is valuable, income taxes should not be reduced or that they should even be increased.¹⁹ This argument misses the point regarding the nature of the disincentive effects of higher taxation. Leisure is indeed valuable – no economist has ever claimed that leisure is of no value or is 'bad'. The question is whether, at the margin, workers prefer to undertake more or less work. Higher income taxes alter the gains and losses involved in these marginal assessments and by themselves can never make workers better off than they

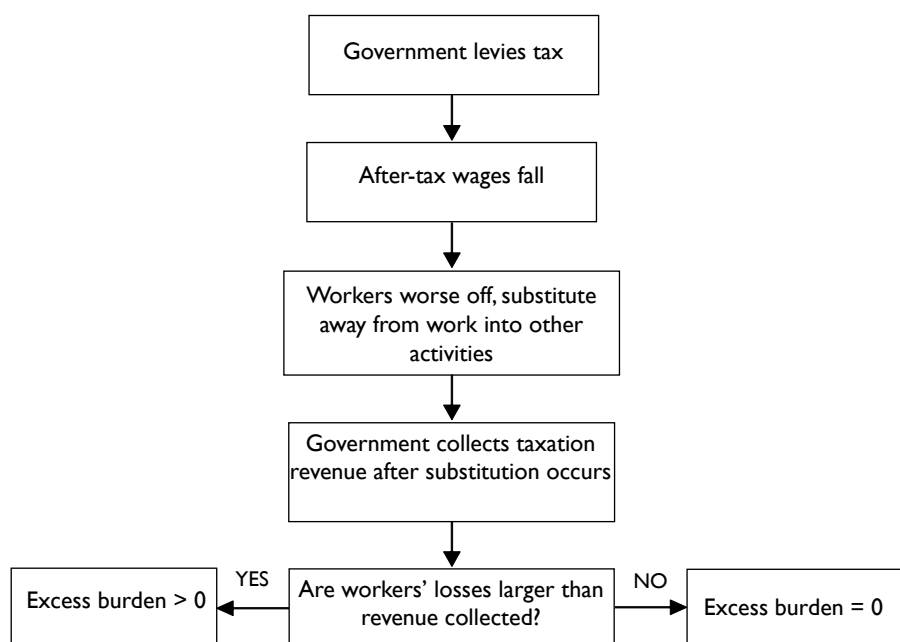
¹⁹ See, for example, R Gittins, 'The Real Secret to Happiness: Higher Taxes', *The Melbourne Age*, 14 April 2005.

otherwise would have been. Otherwise, workers would tax themselves. To claim that higher income taxes by themselves make workers better off is to take paternalism to an entirely new level.

Governments collect revenue from income taxes. The tax is said to create an *excess burden* or a *deadweight loss*²⁰ if the revenue raised by the tax is less than the overall loss in worker well-being created by the fall in after-tax wages.²¹ Correctly measured, the size of the deadweight loss is driven by the size of the tax and the size of the substitution effects.²² The steps involved in measuring the excess burden of personal income taxation are illustrated in Figure 2 below.

The same steps can be used to estimate the deadweight cost of a tax on any kind of economic activity. Other issues such as income effects, existing taxes on other activities, and so on are discussed at length by Chris Jones (2005).²³ However, these considerations do not change the basic approach, which can be applied to taxes on all forms of economic activity including consumption, saving, investment and so on.

Figure 2: Computing the excess burden or deadweight loss of personal income taxes



²⁰ We will use these terms interchangeably throughout the paper.

²¹ More precisely, the deadweight loss is the excess of the funds that must be given to a consumer to restore them to their pre-tax indifference curve, over and above the additional tax revenue collected from them, see P Diamond and D McFadden 'Some Uses of the Expenditure Function in Public Finance', *Journal of Public Economics* 3 (1974), 3–21.

²² Diamond and McFadden, *ibid*; A Auerbach, 'The Theory of Excess Burden and Optimal Taxation' in Auerbach, A and Feldstein, M (eds) *Handbook of Public Economics*, Vol 1 (Amsterdam: North Holland, 1985); A Auerbach and J Hines, 'Taxation and Economic Efficiency', Working Paper No 8181 (Cambridge, MA: National Bureau of Economic Research, 2001); and B Salanie, *The Economics of Taxation* (Cambridge, MA: MIT Press, 2003). Some economists and commentators implicitly include income effects in calculations of the deadweight loss of taxation. This approach is problematic for a variety of reasons, most of which are explained in the sources noted above as well as in R Tresch, *Public Finance: A Normative Theory* (New York: Academic Press, 2002).

²³ C Jones, *Applied Welfare Economics* (New York: Oxford University Press, 2005).

4

PERSONAL INCOME TAXATION AND INDIVIDUAL INCENTIVES

Those who ignore or seek to trivialise the economic costs of high marginal tax rates point to the older literature on the effects of taxes on certain observable features of labour supply, and incorrectly infer from this literature that high marginal income tax rates create few or no deadweight costs. Some commentators go further and argue (for example) that “Tax cuts would be a bold move in what is clearly the wrong direction” or that “cutting the top rate of tax might do nothing at all”.²⁴

Such views indicate an extremely poor understanding of basic economics. First, observed changes in labour market behaviour in response to changes in tax rates are a poor indicator of the true sign and magnitude of the substitution effect. As the author of one of the best graduate public finance texts states:

One ‘theorem’ commonly derived from the supply and demand framework is that government should tax products (factors) whose demand (supply) is perfectly inelastic to avoid deadweight loss. If either the demand or supply curve were constant, output would remain constant, and there would be no deadweight resulting from the tax. Unfortunately, this proposition is not accurate. Taxes can generate welfare loss, properly measured, even if demand or supply is perfectly inelastic.²⁵

Secondly, as discussed above, even if individuals do not respond to higher tax rates and do not alter their behaviour, any increase in personal income tax rates by itself (ie leaving aside any benefits from additional public spending) unambiguously makes workers worse off.

Thirdly, by increasing personal income tax rates the government alters the amount of revenue that it collects. Thus, changing a particular tax may or may not alter individual behaviour, but it is wrong to conclude from this that income taxes create no welfare losses, and illogical to claim that the effects will amount to “nothing at all”.

²⁴ The minister of finance, Dr Michael Cullen, has often questioned the economic benefits of lower taxes and has implied that they have little or no effect on labour supply. In 2002 he said, “Tax cuts may sound like a welcome shot in the arm for the economy, but the evidence indicates that their long term impact on growth is unclear ... [W]e only need to examine the impact on the New Zealand economy of the significant cuts to personal taxes that took place in 1986, 1988, 1996 and 1998 and the massive cut to the corporate tax rate in 1988. The truth is that all of these tax cuts failed to lift the sustainable growth rate ... So what the evidence shows is simply this: that in and of themselves tax cuts have not sparked a lift in the sustainable growth rate. This is because lowering taxes does not in itself alter the fundamentals of an economy. It does not increase the level of skills in the workforce, it does not increase our uptake of technology, and it does not gain better access to global markets. Tax cuts would be a bold move in what is clearly the wrong direction”, see M Cullen, ‘Address to Public Meeting’, Whakatane, 10 July 2002, <http://www.scoop.co.nz/mason/stories/PA0207/S00312.htm>. Also see P Martin, ‘Tax Cuts Don’t Make us Work Harder’, *The Sydney Morning Herald*, 30 March 2005.

²⁵ R Tresch, *op cit*, fn 22, 404.

Much of the literature suggests that, for adult males, changes in net wages may have little effect on average labour force participation rates or average hours worked.²⁶ However, these findings do *not* mean that in taxing such activities the government creates no economically meaningful disincentives. Average participation rates and average hours worked provide extremely poor estimates of the true size of the substitution effect for individuals. For example, a finding of a zero average effect on hours of work could mean that the majority of productive workers only slightly reduce their hours, whilst a minority of relatively unproductive workers increase their hours significantly. The efficiency consequences could be quite large, even though average hours worked remain constant. The same point about heterogeneity in the labour force applies to participation rates.

Moreover, as discussed above, individuals can vary their effective labour supply in many ways, none of which may involve reducing their actual hours worked or their decision to participate in the labour force. Indeed, in some workplaces, individuals have very little freedom to vary their hours of work, particularly in jurisdictions with highly centralised and rigid industrial relations systems. In these circumstances workers can and do adjust to changes in after-tax wages along other margins.

4.1 Taxable income

As discussed thus far, for the purposes of meaningful policy analysis, the narrow focus on average measures of hours worked and participation rates is misplaced. For personal income taxes, a more accurate measure of the disincentive effects is the responsiveness of *taxable income* to changes in wages. Measuring taxable income is quite different from measuring hours worked or labour force participation rates, and is a more suitable way of picking up changes in work intensity or effort, shifts to home production or barter, or changes to occupations with significant non-pecuniary components.

Recent empirical evidence from the United States suggests that taxable income is quite sensitive to changes in after-tax wages. The key parameter is the *elasticity of taxable income* with respect to changes in tax rates, which measures the percentage change in taxable income when marginal tax rates change by one percent. Table 1 summarises some recent US studies of the absolute size of this parameter, with a higher number indicating a greater degree of responsiveness.²⁷

A comprehensive study by Jonathan Gruber and Emmanuel Saez (2002) estimates the elasticity of taxable income to be 0.4. They also find that the elasticity for taxpayers with annual incomes above US\$100,000 is 0.57, while for those on lower incomes it is much

²⁶ On the other hand, a common finding is that adult *female* labour force participation and hours worked are much more sensitive to changes in net wages.

²⁷ For a survey of research on the elasticity of taxable income, see S Giertz, 'Recent Literature on Taxable-Income Elasticities', Technical Paper 2004-16, Tax Analysis Division, (Washington, DC: Congressional Budget Office, 2004), <http://www.cbo.gov/ftpdocs/60xx/doc6028/2004-16.pdf>.

smaller.²⁸ As a general rule, the responsiveness of taxable income tends to be higher for higher income earners, indicating a very large economic cost per dollar of revenue raised for the most productive individuals. The notion that there are few or no economic costs associated with higher taxes on 'high income earners' seems to be as popular as it is wrong.²⁹

Table I: US estimates of the elasticity of taxable income with respect to tax rates

Study	Estimate
Lindsey (1987) ³⁰	1.05–2.75
Auten and Carroll (1999) ³¹	0.75
Feldstein (1995) ³²	1.1–3.05
Navratil (1995) ³³	0.8
Carroll (1998) ³⁴	0.5
Saez (1999) ³⁵	0.4
Gruber and Saez (2002) ³⁶	0.4

²⁸ Interestingly, Gruber and Saez use their findings to argue that efficient tax systems should feature tightly targeted transfers to lower income taxpayers and a flat or even declining marginal rate structure for middle and high income taxpayers, see J Gruber and E Saez, 'The Elasticity of Taxable Income: Evidence and Implications', *Journal of Public Economics* 84 (2002), 1–32. A more recent study by W Kopczuk also estimates the elasticity of taxable income to be 0.4. See W Kopczuk 'Tax Bases, Tax Rates and the Elasticity of Reported Income', *Journal of Public Economics*, 89 (2005), 2093–2119.

²⁹ Other recent evidence also suggests that labour supply may indeed be highly responsive to tax rates. For example, E Prescott, 'Why Do Americans Work So Much More Than Europeans?', *Federal Reserve Bank of Minneapolis Quarterly Review* 28:1 (2004), 2–15, estimates that Americans on average devote 50 percent more work to the market sector than, for example, French workers. He argues that this is primarily due to differences in the tax structures in these economies. Also see J Slemrod (ed), *Does Atlas Shrug?: The Economic Consequences of Taxing the Rich* (Cambridge, MA: Harvard University Press, 2000).

³⁰ L Lindsey, 'Individual Taxpayer Response to Tax Cuts: 1982–1984, with Implications for the Revenue Maximizing Tax Rate', *Journal of Public Economics* 33 (1987), 173–206.

³¹ G Auten and R Carroll, 'The Effect of Income Taxes on Household Behavior', *Review of Economics and Statistics* 81:4 (1999), 681–693.

³² M Feldstein, 'Behavioural Responses to Tax Rates: Evidence from the Tax Reform Act of 1986', *American Economic Review*, 85:2 (1995), 170–174; M Feldstein, 'The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform Act', *Journal of Political Economy* 103:3 (1995), 551–572.

³³ J Navratil, *The Economic Recovery Tax Act of 1981: Evidence on Individual Taxpayer Behavior from Panel Tax Return Data* (Unpublished Harvard Thesis, 1995).

³⁴ R Carroll, 'Do Taxpayers Really Respond to Changes in Tax Rates? Evidence from the 1993 Tax Act', *Working Paper 79*, Office of Tax Analysis (Washington DC: US Department of the Treasury, 1998).

³⁵ E Saez, 'The Effect of Marginal Tax Rates on Income: A Panel Study of 'Bracket Creep'', *Working Paper No 7367* (Cambridge, MA: National Bureau of Economic Research, 1999).

³⁶ J Gruber and E Saez, *op cit*, fn 28.

5

MEASURING THE COSTS OF TAXATION

5.1 Total and average deadweight losses

The pure economic costs of taxation can be measured in total and at the margin. The costs are typically normalised to allow for the fact that government collects revenue from taxation. The *average deadweight cost* of taxation or *average cost of funds* (ACF) computes the total deadweight loss created by a tax, and then divides it by the total amount of revenue collected by that tax.

Recent US studies (see Table 2) indicate that the ACF for all forms of taxation lies somewhere between 18 percent and 24 percent of total government revenue. This means that *on average* each dollar that the US government collects in revenue from all forms of taxation costs the private sector between \$1.18 and \$1.24.

Table 2: US estimates of the average deadweight costs of all taxes

Study	Estimate %
Ballard <i>et al</i> (1985) ³⁷	23.8
Jorgenson and Yun (1990) ³⁸	21.2
Jorgenson and Yun (1991) ³⁹	18

Taxation revenue raised by central and local government in New Zealand in 2005–06 was about \$55 billion.⁴⁰ If US estimates of the ACF apply to New Zealand then the total excess burden of taxation in New Zealand in 2005–06 amounted to at least \$10 billion and could be as large as \$13 billion. To put this in perspective, in 2005–06 central government spent \$10 billion on each of health and education.⁴¹ Thus, the total deadweight loss from taxation in New Zealand (not including costs associated with administration, enforcement,

³⁷ C Ballard, J Shoven and J Whalley, 'General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States', *American Economic Review* 75 (1985), 128–138.

³⁸ D Jorgenson and K Yun, 'Tax Reform and US Economic Growth', *Journal of Political Economy* 98:5 (1990), S151–193.

³⁹ D Jorgenson and K Yun, 'The Excess Burden of Taxation in the United States', *Journal of Accounting, Auditing and Finance* 6:4 (1991), 487–509.

⁴⁰ All forms of government revenue (including non-tax revenue) amounted to almost \$81 billion, or 52 percent of GDP, see M Cullen, 'Half Year Economic and Fiscal Update 2006: Fiscal Outlook' (Wellington: The Treasury, 2006) 54, <http://www.treasury.govt.nz/forecasts/hyefu/2006/> and Statistics New Zealand, 'Local Authority Statistics: December 2006 Quarter' (Wellington: Statistics New Zealand, 2007), <http://www.stats.govt.nz/products-and-services/hot-off-the-press/local-authority-statistics/local-authority-statistics-dec06qtr-hotp.htm>.

⁴¹ M Cullen, 'Half Year Economic and Fiscal Update 2006: Core Crown Expenses Table' (2006), 137.

compliance and avoidance) exceeds the amount of public spending devoted to health or education.⁴² Only government spending on social security and welfare exceeds the total excess burden of tax.

The ACF can also be calculated for particular kinds of taxes. For example, there are several US estimates of the average cost of personal income taxation per dollar of revenue. These are reported in Table 3 below.

Table 3: US estimates of the average deadweight costs of personal income taxes

Study	Estimate %
Hausman (1981) ⁴³	18.4–22.1
Ballard <i>et al</i> (1985) ⁴⁴	37.4
Jorgenson and Yun (1990) ⁴⁵	33.3
Jorgenson and Yun (1991) ⁴⁶	18
Feldstein (1999) ⁴⁷	32.2

These studies estimate that the ACF for personal income taxation is between 18 percent and 37 percent for the United States. In New Zealand, revenue from personal income taxation in 2005–06 was almost \$24 billion,⁴⁸ so, applying the US estimates of the ACF to New Zealand yields a total annual deadweight loss from personal income taxation of between \$4 billion and \$9 billion. To place this in context, combined spending on defence, law and order, transport and communications, and heritage, culture and recreation by central government in 2005–06 was less than \$7 billion.⁴⁹

5.2 Marginal deadweight losses and the marginal cost of funds

Most changes in economic policy are incremental. Taxes are usually increased or reduced incrementally, and each proposal for additional government spending or cutbacks is often small compared to the overall size of the budget and economic activity. Thus, the pure economic costs of raising a tax *incrementally* (or the benefits of reducing taxes or government

⁴² Compliance costs were examined by C Sandford and J Hasseldine, *The Compliance costs of Business Taxes in New Zealand* (Wellington: Institute of Policy Studies, 1992) and Colmar Brunton, *Measuring the Tax Compliance Costs of Small and Medium-sized Businesses: A Benchmark Survey, Final Report* (Wellington: Inland Revenue Department, 2005).

⁴³ J Hausman, 'Labour Supply' in Aaron, H and Pechman, J (eds) *How Taxes Affect Economic Behaviour* (Washington, DC: The Brookings Institution, 1981).

⁴⁴ C Ballard, J Shoven and J Whalley, *op cit*, fn 37.

⁴⁵ D Jorgenson and K Yun, *op cit*, fn 38.

⁴⁶ D Jorgenson and K Yun, *op cit*, fn 39.

⁴⁷ M Feldstein, 'Tax Avoidance and the Deadweight Loss of the Income Tax', *Review of Economics and Statistics* 81:4 (1999), 674–680.

⁴⁸ In New Zealand, personal income taxation is the major source of central government tax revenue (43 percent of total tax in 2005–06), see M Cullen, 'Half Year Economic and Fiscal Update 2006: Additional Fiscal Information' (2006), 17.

⁴⁹ See M Cullen, *op cit*, fn 41, 13.

spending incrementally) should be of great interest to practitioners and policymakers. Comparisons of these costs for different taxes should also be widely publicised so that taxpayers can observe exactly how much private surplus is destroyed when the last dollar of tax revenue is raised by the government, and how much better off they would be if governments at all levels reduced their voracious appetites for spending more.

Incrementally raising a tax may have a large additional deadweight cost, but may also raise a relatively large amount of additional revenue. Some sort of normalisation is required so that sensible comparisons of costs can be made among various taxes. The *marginal deadweight loss* (MDWL) of a tax does exactly this: it calculates the incremental cost of raising a particular tax, and then normalises this by dividing by the incremental change in revenue. The *social marginal cost of public funds* is computed as one plus the MDWL.

5.3 Why is the MCF so useful?

The marginal cost of funds (MCF) for a particular tax is a convenient summary measure of the pure economic cost of raising the last dollar in revenue from the private sector using that particular tax. Raising a dollar by changing a particular tax reduces private sector well-being by at least one dollar, plus the additional pure economic costs (discussed above) of the tax increase.

The claim that related spending might create a benefit somewhere in the economy is immaterial for computing the cost of raising revenue. Moreover, the costs of taxation do not depend in any way on how revenue is spent, so there is no need to calculate a different MCF for every dollar of public spending. In any case, this is an impossible task for welfare states in the modern era, where there are literally thousands of spending projects.

Holmes' tendentious remark, referred to in the introduction to this report, is irrelevant if the actual economic costs of taxation are ignored. Nevertheless, as pointed out above, it is used time and again in public discussions of taxation without any explicit reference to the 'price' that is being borne by taxpayers. Public debate has become so skewed against taxpayers that New Zealand politicians rarely argue that the costs of raising an additional dollar of revenue are too high, relative to the alleged benefits of an additional dollar of public spending. It seems that making such a claim is as unfashionable as it is true.⁵⁰

Although the concept is ignored by most commentators and public sector economists, the MCF is a central issue in evaluating public policy because it gives a precise answer to the following question: At current levels of taxation, how much additional private wealth was destroyed when the government raised its last dollar of revenue? In addition, the MCF provides a benchmark against which to measure public projects or policy interventions. Specifically, any project or policy that does not provide a higher percentage return than the MCF should not go ahead. The MCF can therefore be seen as a lower bound on the hurdle rate of return for public sector projects.⁵¹

⁵⁰ A welcome exception to this rule in Australia is C Emerson, 'Dead Weight on Path to Dead End', *The Courier-Mail*, 7 April 2005.

⁵¹ There are many subtleties in the correct definition and computation of the MCF that we are glossing over here. For a rigorous discussion of the issues, see C Jones, *op cit*, fn 23.

The correct measurement and widespread publication of the MCF of taxation should be a fundamental part of the design of any public policy involving either taxation or spending. Even if the alleged public benefits of additional government spending exceed the *direct* production costs (say, of building a road or hospital), the extra spending may not be justified because private wealth was destroyed when those funds were raised by taxation.

In other words, *to properly justify an additional dollar of government spending funded from tax revenue, the benefit of that extra spending must be far more than a dollar, because the economic cost of raising that dollar is far more than a dollar.* Interestingly, the New Zealand government and its agencies do not currently provide any official published estimates of the MCF or the total deadweight costs of taxation.⁵² For reasons that are probably not unrelated, they also fail to provide official published estimates of the alleged marginal or total benefits of almost all public spending.

5.4 Estimates of the MCF for personal income taxation

The MCF can vary widely, depending on the nature of the tax in question. Economists have employed sophisticated economic and statistical techniques to estimate the MCF. Since personal income taxes are usually the major single source of government revenue (they accounted for 43 percent of central government tax revenue in New Zealand in 2005–06), most analysts have focused on those particular taxes. For personal income taxes, older estimates of the MCF for OECD countries are usually in the 1.2–1.3 range.⁵³ In other words, studies suggest that the last dollar of revenue raised through personal income taxation generally cost the private sector between \$1.20 and \$1.30.

⁵² The Treasury commissioned E Diewert and D Lawrence to undertake a study of the deadweight cost of tax on income from capital following their 1994 study of the deadweight cost of tax on labour income for the New Zealand Business Roundtable (E Diewert and D Lawrence, *op cit*, fn 4). A draft report on the first phase of the study was produced in 2001 and was reviewed by the Treasury and at least one external economist. However, a final report on the first phase and work on subsequent phases of the project have not been completed. The Inland Revenue Department established a substantial research programme in the 1990s which focused on an examination of the impact on economic growth of taxation and included some work on deadweight losses. Some 38 draft working papers were produced in 1997 and 1998 but the methodology employed in some of the main papers was the subject of critical reviews and certain findings led to a public controversy. In a briefing prepared for the incoming government in 1999, the Inland Revenue Department expressed its reservations about an attempt in some of the papers to measure deadweight costs of taxation by selecting an indicator of national welfare that is measurable (such as the rate of growth in GDP) and estimating the extent to which taxation has adversely affected the level of that indicator. The research programme was abandoned before the papers were completed, see Inland Revenue, *Supplementary Briefing Papers – Volume 2: Report on Research Commissioned by Inland Revenue* (Wellington: Inland Revenue Department, 1999), <http://www.taxpolicy.ird.govt.nz/publications/index.php?catid=3>.

⁵³ References include C Ballard and D Fullerton, 'Distortionary Taxes and the Provision of Public Goods', *Journal of Economic Perspectives* 6:3 (1992), 117–131; D Fullerton, 'Reconciling Recent Estimates of the Marginal Welfare Cost of Taxation', *American Economic Review* 81:1 (1991), 302–308; C Ballard, J Shoven and J Whalley (*op cit*, fn 37); E Browning, 'On the Marginal Welfare Cost of Taxation', *American Economic Review* 77 (1987), 11–23; C Stuart, 'Welfare Costs per Dollar of Additional Tax Revenue in the United States', *American Economic Review* 74 (1984), 352–362; H Campbell, 'Deadweight Loss and Commodity Taxation in Canada', *Canadian Journal of Economics* 8 (1975), 44–447; B Dahlby, 'Progressive Taxation and the Social Marginal Cost of Public Funds', *Journal of Public Economics* 67:1 (1998), 105–122; E Diewert and D Lawrence, 'The Deadweight Costs of Taxation in New Zealand', *Canadian Journal of Economics* 29 (1996), S658–673 and 'The Excess Burden of Taxation in New Zealand', *Agenda* 2:1 (1997), 27–34.

For New Zealand, W Erwin Diewert and Denis Lawrence (1994) estimate the MCF of tax on labour income in 1990–91 to be 1.18.⁵⁴ They also estimate the MCF of consumption tax (mainly GST) in 1990–91 to be 1.14.⁵⁵ Diewert and Lawrence subsequently observed that these estimates of the MCF were likely to be relatively conservative because the marginal deadweight loss from tax on income from capital was not estimated. It was expected to be higher given that capital is more mobile than labour in a small open economy.⁵⁶

Paul McKeown and Alan Woodfield (1995) estimate the MCF for labour income in 1987–88 to be between 1.25 and 2.46.⁵⁷ The estimates of Diewert and Lawrence (1994) and McKeown and Woodfield (1995) mean that to be economically justified, the last dollar of government spending should create an economic return of at least 18 percent (and perhaps as high as 146 percent), net of any direct administrative or production costs involved in that spending.⁵⁸

Diewert and Lawrence (2001) prepared a draft report for the Treasury on the first phase of a study aimed at measuring the cost of tax on income from capital. They are understood to have estimated the MCF for company tax to be 1.13 in 2000.⁵⁹ Estimates for each year from 1972 to 2000 varied considerably, ranging from 1.07 (1990) to 1.31 (1987). A comparable study for Australia estimates the MCF for business taxes to be 1.22 in 1997, which is higher than for New Zealand.⁶⁰ Both studies took account of the production losses that are only a part of the total loss arising from capital taxation. Additional losses that fall on domestic

⁵⁴ E Diewert and D Lawrence, *op cit*, fn 4. The average MCF of tax on labour income for 1972 to 1991 was 1.10. The study was criticised by John Small who raised some methodological issues and suggested that the MCF was too high, see J Small, *The Distribution of Estimates of the Marginal Costs of Taxation* (Auckland: University of Auckland, undated). Small contributed to several draft working papers on Diewert and Lawrence's work that were listed in Inland Revenue, *Supplementary Briefing Papers, op cit*, fn 52, 90–91.

⁵⁵ E Diewert and D Lawrence, *op cit*, fn 4. The average MCF of consumption tax for 1972 to 1991 was 1.08. All indirect taxes, other than property taxes and import duties, were taken into account.

⁵⁶ E Diewert and D Lawrence, 'The High Costs of Capital Taxation in Australia', *Agenda* 5:3 (1998), 356.

⁵⁷ P McKeown and A Woodfield, *op cit*, fn 5. Their estimates assume a compensated labour supply elasticity of between 0.2 and 0.6. McKeown and Woodfield found that the MCF had increased slightly from 1985–86, following the implementation of tax reforms. They largely attributed the rise in the average effective marginal tax rate to tax bracket creep. A broadening of the tax base may also have been a factor. McKeown and Woodfield discuss why their estimates of the MCF are much higher than the comparable estimate of Diewert and Lawrence (*op cit*, fn 4). They observe that Diewert and Lawrence's approach is more general, utilising general equilibrium methods, and that a certain degree of disaggregation, and econometric estimates of critical parameters, are generated within the structure of their model. On the other hand, the compensated labour supply elasticity estimated by Diewert and Lawrence (at 0.79) was above the upper bound assumed by McKeown and Woodfield. For Australia, Findlay and Jones, whose methods are similar to those of McKeown and Woodfield, derive an estimate of between \$1.23 and \$1.65, while Campbell and Bond estimate the MCF at between \$1.19 and \$1.24, see C Findlay and R Jones, 'The Marginal Cost of Australian Income Taxation', *Economic Record* 58 (1982), 253–262 and H Campbell and K Bond, 'The Cost of Public Funds in Australia', *Economic Record* 73 (1997), 22–34.

⁵⁸ In 1991 the US government modified its cost-benefit procedures to assign a cost of \$1.25 to every dollar of expenditure funded from tax revenues.

⁵⁹ E Diewert and D Lawrence, 'The Marginal Excess Burden of Capital Taxation in New Zealand', draft report for the Treasury, 2001.

⁶⁰ E Diewert and D Lawrence, 'The Deadweight Costs of Capital Taxation in Australia', in Fox, K (ed), *Efficiency in the Public Sector* (Boston: Kluwer Academic Publishers, 2002). Less reliable results, based on an earlier version of the methodology and database, were reported in E Diewert and D Lawrence, *op cit*, fn 56.

households due to the taxation of the return on capital were not estimated. Diewert and Lawrence (2002) comment that their estimates of the MCF for capital taxation are likely to be under-estimated because average rather marginal rates of tax were used and because their model entailed a relatively high degree of aggregation.⁶¹

More recent evidence suggests that the MCF for personal income taxes may be near the upper end of the range estimated by McKeown and Woodfield (1995) but for reasons that the authors did not take into account. As discussed earlier, if income tax rates rise, then individuals and firms may respond by legally shifting part of the employee's compensation into non-pecuniary forms of earnings or they may engage in other forms of tax avoidance and evasion, in order to reduce their tax liability. Thus, when income tax rates rise, observed hours of work may not change by much, but taxable income may rise less than proportionately.⁶² The additional revenue raised from a tax increase may be very small. Indeed, there may actually be a *reduction* in tax revenue as workers accept more non-wage forms of compensation.⁶³

All of this suggests that the traditional estimates of the MCF discussed earlier may be far too small. Martin Feldstein (1999)⁶⁴ studies these issues in the light of the US 1986 Tax Reform Act, and finds substantially larger values of the MCF for income taxes than those obtained using traditional estimates. He estimates that the deadweight loss may be larger than two for personal income taxes. In other words, Feldstein's estimates imply that the last dollar of revenue raised from personal income taxation in the US cost the private sector more than three dollars, and that the economic return from the last dollar of government spending should exceed 200 percent.

As discussed above, the MCF provides a *minimal* benchmark against which to measure public projects or policy interventions. From an efficiency point of view, any project or policy that fails to offset the costs of taxation (even if it would raise welfare in isolation) should not be undertaken. These costs should be taken into account when governments wish to levy taxes to redistribute wealth (that is, impose a system of direct cash transfers

⁶¹ E Diewert and D Lawrence, *op cit*, fn 60, 148.

⁶² New Zealand's fringe benefit tax is aimed at limiting the scope for monetary compensation to be provided in a non-taxed form. During the 1999 election campaign, the Labour Party proposed to increase the top personal rate of tax from 33 percent to 39 percent. It initially said that it would not increase the rate of fringe benefit tax. However, when the Labour-led government implemented the policy it replaced the then single rate of fringe benefit tax with multiple rates, including a rate that reflected the new top rate of personal income tax, and took other measures to limit the scope for tax avoidance.

⁶³ The *Laffer curve* of a tax shows how tax revenue responds to changes in the tax rate. All taxes have Laffer curves which, when no other distortions are present, indicate that tax revenue must fall if tax rates are increased above a certain level. Despite the debate surrounding the Laffer curve in public discussions of taxation, the fact that revenue may fall following an increase in tax rates is perhaps one of the most uncontroversial and uninteresting propositions in all of economics. It is also an extremely old idea, having been discussed by the French economist Jules Dupuit over 150 years ago (see J Dupuit (1844) 'De la Mesure de L'utilité des Travaux Publics', *Annales des Ponts et Chaussées*. Published in English in Jackson, P (ed), *The Foundations of Public Finance* (Cheltenham: Elgar, 1996)).

⁶⁴ M Feldstein, *op cit*, fn 47.

or government purchases of private goods) or to provide public goods.⁶⁵ Expenditure on transfers, subsidies and public goods of course may produce their own (negative or positive) welfare effects, but these additional welfare effects of spending should not be confused with the economic costs of extracting the revenue in the first place.⁶⁶

5.5 An alternative way of viewing the concepts behind the MCF

Even when governments refuse to reduce taxes, the concepts used to calculate the MCF are still very useful. For example, suppose that the government reduced spending on a particularly wasteful policy, and used the money to fund a more productive project, without extracting any additional revenue from the private sector. It would then be possible to estimate the opportunity cost of allocating a marginal dollar to the new project. This opportunity cost would be equal to the (very small) reduction in the marginal social benefit of the wasteful project. The more wasteful the policy, the lower the opportunity cost of eliminating it. The reallocation of public funds in this way to finance productive government projects would be far less costly than the alternative of raising additional revenue from the private sector by increasing taxes, which we have seen involves considerable social costs. In other words, in economies characterised by wasteful government spending, the cheapest method of funding productive government projects is to eliminate that wasteful spending, rather than raising taxes. If such an analysis were attempted, the resulting estimate of the 'marginal cost of funds' would not be the cost of raising new funds from higher taxation. Instead, it would be the social cost of reallocating existing funds from government projects with low social returns to those with higher social returns. Nevertheless, the economic concepts behind such calculations would be very similar to those used to compute the traditional MCF.

⁶⁵ Dr Michael Cullen was reported to have "congratulated the Board of Guardians and managers of the New Zealand Superannuation Fund on its 2004–05 year". According to the government, "The Fund generated over \$726 million in investment income after costs but before tax, representing a return of 14.13 percent. The Fund continues to track ahead of its performance target – a credit to those involved and good news for New Zealanders." Dr Cullen was also reported to be "delighted at the striking success achieved in its [the Fund's] first years." This assessment ignores the MCF. The capital invested in the New Zealand Superannuation Fund is essentially financed from current or deferred taxation. Although the return earned on an investment in a single year cannot be compared directly with the MCF, the Fund's earnings are unlikely to be anywhere near as attractive as suggested by the government when the MCF is taken into account and may be insufficient to warrant the tax required, see New Zealand Government, 'Super Fund Striking Success', *Beehive Bulletin*, 5 August 2005.

⁶⁶ The merits of government spending programmes are often doubtful, see W Bates, *op cit*, fn 7 and B Wilkinson, *op cit*, fn 2.

6

INCOME TAXATION AND ECONOMIC GROWTH

The costs of high personal income taxation also show up in broader measures of economic activity. In recent history no economies that are comparable to New Zealand's have achieved per capita GDP growth of 4 percent or more on a sustained basis once general government spending exceeds 40 percent of national product.⁶⁷ Even though government spending may be productive, after it reaches a certain level it is not sufficiently productive to offset the distortionary effects of the higher level of taxation that is required to finance it. That is, once government reaches a certain size, any positive correlation that might exist gets swamped by the negative incentive effect of higher taxation. Roughly speaking, the total deadweight losses of taxation rise in proportion to the square of the tax rate.

From a microeconomic perspective, this is exactly what estimates of the marginal cost of funds (MCF) tend to suggest – additional public projects should have a social return of at least 20 or 30 percent (and perhaps higher) to have any chance of having a net overall positive economic effect. As government size increases and the average and marginal costs of taxation rise, there are fewer and fewer public projects or policies that possess such characteristics.

As discussed above, estimates of the MCF are driven by the fact that higher personal income taxes create significant work disincentives, and cause workers to substitute out of work and into other activities. But the estimates are only a start – they assume that tax statutes and rulings are easy to understand and easy to comply with.⁶⁸ Thus, they are far from being completely accurate summaries of the full costs of taxation, in the sense that they ignore some potentially important costs.

A key factor in determining long-run growth rates is the *effective* supply of labour, which depends on productivity, skills, effort and so on. A worker who is more skilled will produce more output than a worker with fewer skills, even though each employee may work the same number of hours. By definition, personal income taxation induces individuals to substitute away from *any* activity that will earn them higher personal income, including investment in human capital. Human capital forms a significant part of

⁶⁷ B Wilkinson, *op cit*, fn 2, 26–30.

⁶⁸ J Slemrod and S Yitzhaki, 'The Costs of Taxation and the Marginal Efficiency Cost of Funds', *IMF Staff Papers* 43:1 (1996), 172–198 show how to estimate (but do not in fact compute) the MCF when evasion, avoidance, administrative and compliance costs are present.

New Zealand's wealth, and higher income taxes retard the accumulation of this wealth.⁶⁹ Again, the narrow focus on the effect of personal income taxation on hours worked or participation rates misses an important part of this story.

6.1 Personal income tax cuts and per capita economic growth

The older literature using the neoclassical growth model allowed no role for taxation and public spending to influence long-run growth rates. The more recent endogenous growth literature emphasises the notion that, in the long run, increases in productivity can only occur through the accumulation of physical capital, human capital, and knowledge. In modern economies this accumulation overwhelmingly occurs in the private sector, as a result of decisions made by firms and individuals regarding the benefits and costs of savings, investment, education and so on. To the extent that taxation on income from capital and labour reduces investment in these accumulated factors, its marginal effect (net of any spending effects) will tend to reduce economic growth.

6.1.1 Within-country studies

Over the long run, the effects of international differences in institutions, legal regimes, and so on may swamp any effects that changes in taxes may have on economic growth. Thus, the effects of taxation on economic growth are most easily identifiable when the possibility of other growth-altering factors (such as changes in institutional arrangements) is small or non-existent. Therefore, one possibility is to look for evidence of the effect of local and state taxes on economic growth *within* a particular country. There are several studies which do this, and most find negative correlations. Robert Kleine (1977),⁷⁰ R Scot Grierson (1980)⁷¹ and Grierson *et al* (1977)⁷² report negative correlations between US state tax levels and state growth. L Jay Helms (1985)⁷³ uses a pooled time series and cross-sectional data set from 48 US states and finds that increases in property taxes, income taxes and user fees all tend to retard economic growth at the state level. Alaeddin Mofidi and Joe Stone (1990)⁷⁴ find similar results.

⁶⁹ P Trostel, 'The Effect of Taxation on Human Capital', *Journal of Political Economy* 101:2 (1993), 327–350 develops an endogenous growth model allowing for human capital accumulation. He argues that higher income taxes have a significant negative effect on human capital formation. Specifically, for plausible parameter assumptions, he finds that a one percentage point increase in a flat income tax rate causes the long-run stock of human capital to decline by 0.97 percent.

⁷⁰ R Kleine, 'State and Local Tax Levels and Economic Growth – A Regional Comparison', *Proceedings of the Annual Conference on Taxation of the National Tax Association – Tax Institute of America* (1977), 162–173.

⁷¹ R Grierson, 'Theoretical Analysis and Empirical Measurements of the Effects of the Philadelphia Income Tax', *Journal of Urban Economics* 8 (1980), 123–137.

⁷² R Grierson *et al*, 'The Effect of Business Taxation on the Location of Industry', *Journal of Urban Economics* 4 (1977), 170–185.

⁷³ L J Helms, 'The Effect of State and Local Taxes on Economic Growth: A Time Series Cross-Section Approach', *Review of Economics and Statistics* 67:4 (1985), 574–582.

⁷⁴ A Mofidi and J Stone, 'Do State and Local Taxes Affect Economic Growth?', *Review of Economics and Statistics* 72:4 (1990), 686–691.

6.1.2 International evidence

The disincentive effects of taxation tend to show up in international data over the long run. Consider, for example, the data collected by the Fraser Institute in their *Economic Freedom of the World* publication.⁷⁵ Our own preliminary analysis of this data for the period 1980–2000 tends to suggest that higher rates of income taxation retard economic growth.⁷⁶

The Fraser Institute reports on the structure of personal income tax systems for rich and poor countries since 1970, and derives a measure of the burden of taxation that takes into account the importance of high marginal tax rates and the level of income at which the highest marginal rate first applies. Table 4 summarises their 0–10 rating scheme, where a higher number indicates a less burdensome personal income tax system. Tax systems receive a high rating if they have a low top marginal rate, but also receive a high rating if the highest marginal rate does not apply to low income levels. Note also that the Fraser Institute measure controls for changes in nominal incomes across time and across countries by expressing income tax thresholds in a common metric, 1982–84 US dollars.

Many countries in the Fraser Institute's sample have changed their personal tax systems in the last two decades, so it is straightforward to make long-run comparisons of the effects of changing tax systems across countries. The change in income tax structures in OECD countries in the last two decades can be measured by the difference between their Fraser Institute ratings in 1980 and 2000. For example, New Zealand's measure increased from a rating of 2 to 5, indicating that the Fraser Institute estimates that a modest improvement in the personal income tax system occurred in New Zealand between 1980 and 2000. In

Table 4: Measuring the income tax burden: Fraser Institute rating system

Top marginal tax rate %	Income threshold level of top marginal tax rate (1982–84 \$US)			
	10	10	10	10
<20	10	10	10	10
21–25	9	9	10	10
26–30	8	8	9	9
31–35	7	7	8	8
36–40	5	6	7	8
41–45	4	5	6	7
46–50	3	4	5	5
51–55	2	3	4	4
56–60	1	2	3	3
61–65	0	1	2	2
66–70	0	0	1	1
>70	0	0	0	0

Source: *Economic Freedom of the World*, 1980–2000.

⁷⁵ J Gwartney and R Lawson, *Economic Freedom of the World* (Vancouver, BC: Fraser Institute, various issues) and <http://www.freetheworld.com/>.

⁷⁶ The literature on the relationship between taxation, GDP and economic growth is briefly surveyed in A Robson, 'Taxation, Individual Incentives and Economic Growth', Second Prize, IREF Essay Contest on Taxation and Economic Growth, February 2005.

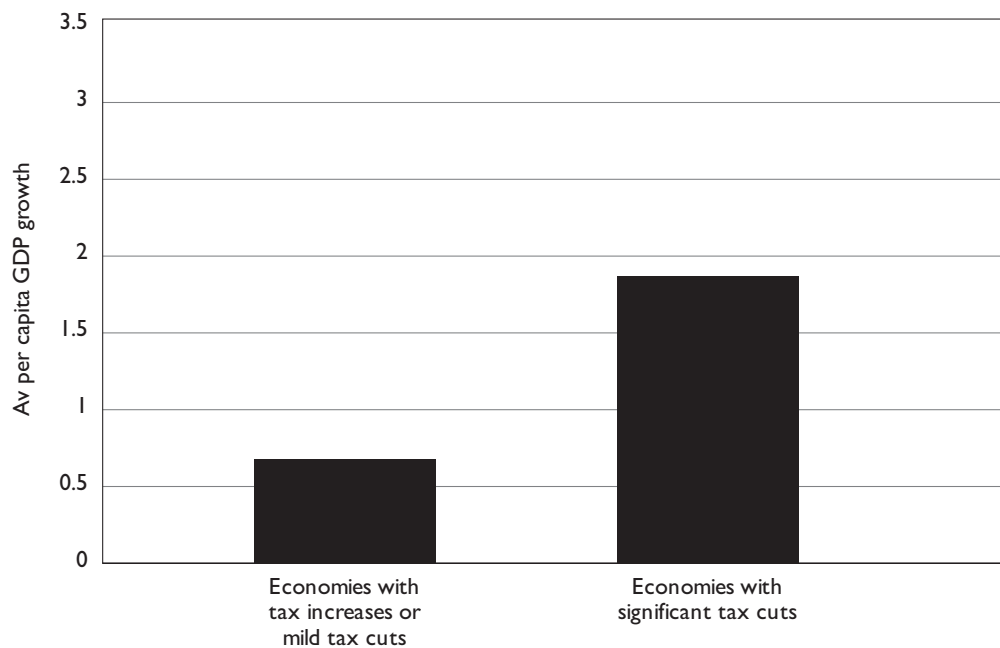
fact, New Zealand's rating was as high as 7 in 1990 and 1995. However, in 2000 (and in all subsequent years), New Zealand's rating fell to just 5 out of 10, indicating considerable scope for further improvement.⁷⁷

Average real per capita rates of economic growth over the same period are also available.⁷⁸ Figure 3 above shows that OECD countries that significantly cut their taxes (increased their Fraser Institute measure by 4 or more points) had an average annual per capita economic growth rate of over 3 percent, while those that increased taxes or reduced taxes mildly managed an average annual per capita growth rate of only 1.7 percent, almost *half* the rate enjoyed by significant tax-cutting nations.

This is highly suggestive of the proposition that that lower marginal income tax rates (ie higher measures of tax cuts) are associated with higher per capita economic growth. However, the figure by no means provides conclusive evidence of the effects of lower income taxes on growth – a complete analysis would control for other factors that are important for growth. Nevertheless, the figure supports findings of microeconomic studies of the costs of income taxation.

For the full sample of all countries for which both sets of data are available (98 countries in total), countries that increased their Fraser Institute measure by 4 or more points had

Figure 3: Income tax cuts and per capita economic growth: Average performance of OECD countries, 1980–2000

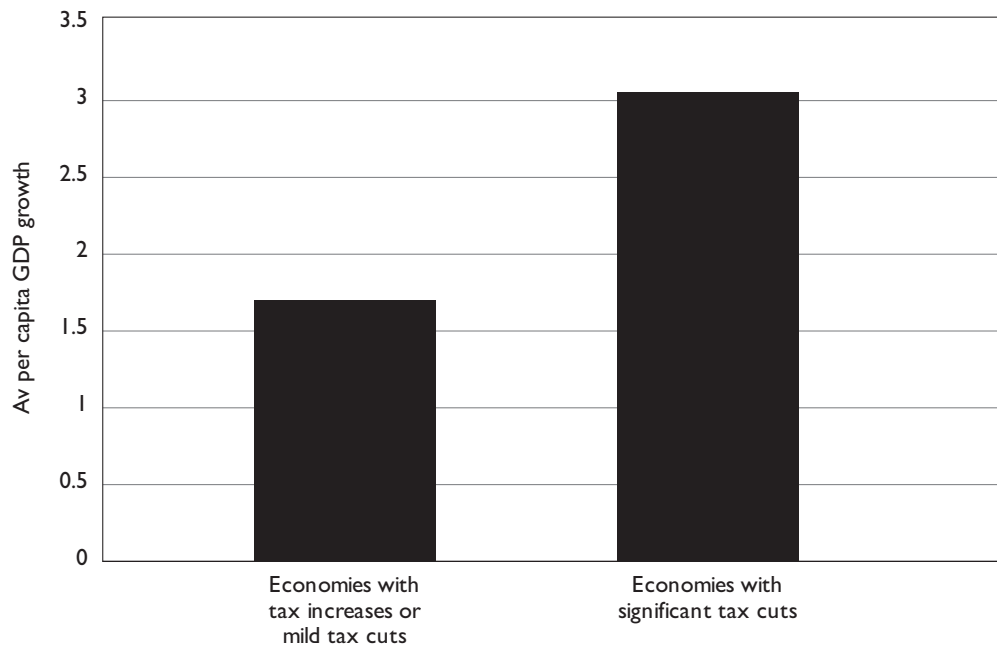


Sources: See Figure 4.

⁷⁷ New Zealand's ranking of 5 arises because its top rate of personal income tax (39 percent) applies at a relatively low level of income (under US\$25,000 in 1982/84 US dollars).

⁷⁸ Per-capita growth data are taken from the Penn World Tables data set, available at <http://dc2.chass.utoronto.ca/pwt/>.

Figure 4: Income tax cuts and per capita economic growth: Average performance of 98 countries, 1980–2000



Sources: Fraser Institute, *Economic Freedom of the World*, various issues. Penn World Tables 6.1, Real GDP Per Capita 1980–2000 <http://dc2.chass.utoronto.ca/pwt/>.

an average annual per capita economic growth rate of 1.84 percent, while those that did not only managed an average per capita growth rate of a meagre 0.66 percent. This is illustrated in Figure 4. *On average, countries that significantly cut taxes on upper incomes between 1980 and 2000 enjoyed average per capita economic growth rates of nearly **three times** those that did not.*⁷⁹

⁷⁹ Interestingly, performing the same exercise for transfers and subsidies using Fraser Institute data (not reported here) leads to the result that higher subsidies and transfers are associated with lower per capita economic growth, which supports the results of Barro's study and more recent evidence, see R Barro, 'Economic Growth in a Cross Section of Countries', *Quarterly Journal of Economics* 106:2 (1991), 407–443.

7

ARE FLATTER PERSONAL INCOME TAX STRUCTURES THE ANSWER?

Microeconomic analysis suggests that graduated or progressive personal income tax systems tend to be more distortionary than flatter tax structures.⁸⁰ This suggests that from a pure efficiency point of view flatter tax structures are preferable. There are other reasons why flat tax systems are desirable.⁸¹ Once a single marginal tax rate is chosen, further policy deliberations regarding changes in the tax system essentially involve only three choices – should the rate stay the same, be increased or reduced? A tax increase for one group of taxpayers is a tax increase for all. The same principle applies to tax cuts.

These observations immediately suggest why a system of graduated income taxes (and even, to a lesser extent, a flat tax with a tax-free threshold) tends to discourage reductions in tax rates, particularly at higher income levels. It is not at all obvious why one particular graduated tax schedule is ‘fairer’ than any other. Any proposal to change a graduated tax schedule cannot be based on first principles, since nobody can agree on what makes one tax system ‘fairer’ than another. Hence, proposals for change usually involve setting different taxpayers against one another as political competitors. When a change in a graduated schedule is proposed, a tax increase for one group of income earners could mean a reduction for others, and vice versa.

The same reasoning applies to income tax deductions for special interest groups or classes of individuals or income earners. Once these are entertained for one group, they could potentially be entertained for all groups, setting off a costly process of lobbying and political competition. As discussed above, not only does this involve a direct waste of resources on lobbying and so on; it also creates greater administrative and compliance costs as the tax law becomes progressively more complex and voluminous. This is wonderful for accountants and tax lawyers, but is a net loss for the economy as a whole.

A flat tax which does not allow for any deductions or a tax-free threshold is administratively very simple, and easy to comply with. Whatever disincentive effects it might create are

⁸⁰ Illustrations of this general proposition can be found in most good public finance textbooks, see, for example, R Jha, *Modern Public Economics* (London: Routledge, 1998), 184–185. S Cassou and K Lansing, ‘Growth Effects of Shifting from a Graduated-Rate Tax System to a Flat Tax’, *Economic Inquiry* 42:2 (2004), 194–213, simulate changes in the income tax schedule from a graduated-rate tax system to a flat tax. They examine both an endogenous growth model and a standard neoclassical growth model. For the former, they predict that a flat tax would permanently increase per capita economic growth by up to 0.143 percentage points per year.

⁸¹ See, for example, R Epstein, *The Case for a Flat Tax* (Wellington: New Zealand Business Roundtable, 2004), and S Davidson, *Personal Income Tax in New Zealand: Who Pays and Is Progressive Taxation Justified?* (Wellington: New Zealand Business Roundtable, 2005).

not altered by inflation. In most existing tax systems, changes in nominal wages (but not real wages) move some individuals into higher tax brackets ('bracket creep') when their real incomes have in fact not changed. Individuals will also pay a higher average rate of tax without changing tax brackets if nominal wages increase and their marginal rates of tax exceed their average rate of tax. This is often the case with progressive tax systems. With a flat tax, there are no 'brackets' to creep into when one's nominal wage changes with inflation and the marginal and average rate of tax is the same. Individuals pay a higher real tax bill if and only if their real wage or the flat rate of tax increases. Moreover, individuals pay the same proportion of their income in taxes, which does not occur even when brackets are indexed for inflation, as they are in the US and as was proposed for New Zealand from 2008 but discarded in the 2007 budget.

However, an important caveat is in order: *a flat tax still distorts economic incentives and creates a deadweight loss*. Indeed, a graduated tax system with low marginal rates may be preferable to a flat tax system with a high marginal rate. This suggests that it is almost pointless discussing flat taxes if the level of government spending is not controlled.

In fact, some economists have gone further and argue that the implementation of 'efficient' taxes such as flat consumption taxes and flat income taxes may actually cause governments to spend more, since the economic costs of raising a particular amount of revenue under such systems are relatively lower than those under a graduated tax system.⁸² Because the 'price' of increasing spending is lower, demand for spending rises. Flat taxes, it is argued, are so efficient that they create an incentive for governments to spend more money, which, as we have already mentioned, tends to distort economic behaviour in other ways.

⁸² For a theoretical analysis and empirical evidence of this proposition, see G Becker and C Mulligan, 'Deadweight Costs and the Size of Government', *Journal of Law and Economics* 46 (2003), 293–340.

CONCLUSIONS

High personal income taxes not only reduce the ability of individuals to enjoy the fruits of their own labour and make workers worse off, they also create significant disincentives. Because all forms of taxation alter economic choices and drive economic activity from higher to lower valued uses, a dollar increase in government revenue ends up costing the economy far more in real terms than the dollar that is actually paid in taxes. These harmful effects of taxation are present for all kinds of taxation and exist irrespective of whether tax revenue is spent productively or wasted.

Conflation of costs with benefits is a sure recipe for expanding the size of government over and above that which can be justified rigorously on economic grounds, and can lead to ruinous public policy decisions.⁸³ The MCF provides a dollar measure of the pure economic effects of a tax on the incentives to produce, work, save, invest or consume. It is important to note that it does *not* include rent-seeking costs, the administrative costs of taxation, or the costs to business of filling out forms, or even the costs of avoiding taxes (this is not to say that these costs are not important or economically significant).

There is little evidence to suggest that higher taxation increases GDP growth rates, and much evidence to suggest that the opposite is true. Whatever view one takes of the merits or otherwise of higher taxes, it is simply erroneous to assert that, at current levels of taxation and spending, confiscating an additional dollar from individuals and transferring it to one's favourite spending programme would have little or no effect on economic incentives.

⁸³ The practice of counting costs as if they were benefits is widespread in many discussions of government spending projects, and is one of the primary reasons why 'pork-barrelling' is so widespread. For a detailed discussion and a recent Australian example, see A Robson, 'Sweet and Sour Pork Barrelling: The Case of Queensland Sugar', *Issue Analysis* No 45 (Sydney: Centre for Independent Studies, 2004).

