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An Analysis of a Cash Flow Tax for Small Business

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An Analysis of a Cash Flow Tax for Small Business

Peter Wilson

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An Analysis of a Cash Flow Tax for Small Business

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December, 2002

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D I S C L A I M E R

This working paper represents the views of the Treasury as at December 2002

Abstract

This paper analyses whether it might be possible to design a cash flow tax (CFT) for small businesses in New Zealand to replace the existing income tax.

Certainly, it is feasible to design the core rules of a CFT that applies to new small businesses. As with all examples of a CFT, these rules are very simple and easy to understand and apply. Integration with existing Goods and Services Tax and Pay-As-You-Earn systems provides significant simplification potential.

Designing a set of rules to define what is a “small business” is possible, although there is a risk that these rules would involve some arbitrary features.

The main barrier to a CFT relates to the transition from an income tax. Research in New Zealand and overseas has been unable to develop a workable set of rules that involve acceptable fiscal, economic and compliance costs.

Designing a set of transition rules from a CFT to an income tax for businesses that cease to be small also appears to be an insurmountable task.

Even if the considerable difficulties with a transition could be overcome, integrating a CFT into a world where most of the economy is subject to an income tax would also pose difficulties. There is a risk that the rules needed to maintain CFT treatment on distributions to owners and financiers, while at the same time protecting the income tax base, might negate significant portions of the simplification gains from a CFT.

Given these difficulties, an income tax will remain necessary, if the Government wants some progressivity in the tax system and to apply “ability to pay” to determine tax liabilities.

J E L C L A S S I F I C A T I O N **H25 - Business Taxes and Subsidies including sales and value-added (VAT)**

K E Y W O R D S Cash flow tax; small business; tax policy

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An Analysis of a Cash Flow Tax for Small Business

1 Introduction

One probably insurmountable barrier to simplification of any income tax is the innate complexity of the concept of income, especially when it comes to the annual measurement of business income. A particular difficulty is that income tax calculations are inherently firm-specific, since they are based on things like the value of assets, trading stock on hand and debtors and creditors. Firm-specific record keeping is required.

In a recent submission to the Minister of Finance and Revenue, the Canterbury Manufacturers' Association proposed a number of changes to how small businesses are taxed. A common theme of these suggestions, although not expressed as such, was that the income tax should be converted to a cash flow tax (CFT).

This paper is an investigation of whether it is both possible and desirable to change the way small businesses in New Zealand are taxed from an income tax to a CFT.

The income tax involves a complex set of calculations surrounding what is included in taxable income.¹ Complexity arises from the accrual nature of an income tax: when income and expenditure (especially expenditure on items of capital) are to be taken into account for calculating tax liabilities. A CFT, on the other hand, is much simpler, as calculations are on a "cash in, cash out" basis.

Under an income tax, the nature of payments and receipts is key in determining tax liability, as is when they occur. For example, deductions for expenditure on a capital item are spread over the life of the asset. Payments received now for services to be rendered in the future are brought to tax when the services are rendered, not when the payment is received.

Under a CFT all that matters is the amount of payments and receipts: there is no distinction between items of current expenditure or capital and payments and receipts are counted for tax purposes when they are made.

For some firms, there might not be much difference between income tax treatment and CFT. For a firm with limited amounts of capital, little externally-provided finance and small amounts of trading-stock, CFT and income tax will give approximately the same results, in terms of tax to pay. CFT is, however, much easier to understand for all firms. Compliance and administration can be better integrated with the GST system, since the GST base and the CFT base are similar (the CFT base is the GST base less wages).

¹ These calculations do not just revolve around issues like whether capital gains should be taxed, but are inherent in the economic nature of an income tax.

Despite the simplification potential of a CFT, there appears to be only one recent example of a country replacing an existing income tax with a CFT, that being Croatia in the period 1994 to 2001. For a discussion of the Croatian experience, see Keen and King (2002).

The most likely reasons for this are the novelty of a CFT, compared with an income tax; and the transition: with an existing capital stock in place, it has proved impossible to develop a set of feasible rules to move from an income tax to a CFT. “Feasible” here means having an acceptable combination of fiscal cost, compliance costs and economic impacts. These issues are discussed in more detail below.

1.1 Outline of the paper

The remainder of this paper is arranged as follows.

Section 2 briefly outlines the economics of a CFT, compares a CFT with the income tax and describes the main types of CFT that have been proposed in the past and how they would operate at the firm level and at the level of owners and financiers. In the particular context of New Zealand, this section also looks at how a CFT could be integrated with GST and PAYE for administration and compliance purposes.

Section 3 describes two apparently insurmountable barriers to the implementation of a CFT for small business: transition of existing capital into a CFT and a transition rule for when the firm ceases to be small.

Section 4 sets out some particularly difficult (but not insurmountable) issues with a CFT for small business. The first is a sustainable, non-arbitrary boundary between “small” and “big”, while the second is how to integrate a CFT with taxpayers (especially owners and funders) subject to the income tax.

Section 5 concludes with an analysis of whether a CFT for New Zealand small businesses would be desirable.

2 Cash flow taxes²

This section describes the basic nature of cash flow taxes compared with other taxes and outlines the basic rules of a CFT. Further details of the economic differences between a CFT and an income tax are contained in an annex.

The best-known examples of CFTs, or variants thereof, are the proposal in 1978 by a Commission established by the UK Institute for Fiscal Studies chaired by Sir James Meade (Meade (1978)); and the “flat tax” proposals that were prominent in the United States in the early 1990’s (Hall and Rabushka (1995)). The New Zealand Treasury has looked at a CFT for New Zealand on a number of occasions, most recently in the late 1990s (see Katz (1999) and Treasury (1997)).

2.1 Overview of consumption taxes

2.1.1 The relationship of cash flow, consumption or expenditure tax to an income tax and a GST³

Cash flow, consumption and expenditure taxes, including GST, have in common the feature that tax is levied only at the point in time when individuals spend their money and consume what they have previously earned and saved, or, indeed, spend what they have borrowed.⁴ The economic effect is that the return from savings is not taxed - removing the tax-driven incentive to consume now rather than later. Under an income tax (which by definition includes interest as income), however, the return on savings is taxed, which means that there is an economic disincentive to saving. Indeed, the difference between an income tax and a consumption tax lies entirely in the treatment of savings.⁵

Consider an example of a person who earns \$1,000, saves it (at interest) for one year and then spends it. Under an income tax, they would pay tax on both the initial income and on the interest earned while spending is deferred: savings is treated as a new source of income. Under a consumption tax, the only tax impost is at the point of final consumption: interest income is exempt.

A CFT is a particular form of an expenditure or consumption tax. And a GST differs from an expenditure or consumption tax only in terms of from whom the tax is collected.⁶

The fact that direct consumption taxes are collected directly from individuals means that the tax impost can be made to vary with individual circumstances: it can have a progressive tax rate structure. This is, of course, not possible with a GST.

² This Section is based on Katz (1999), which in turn draws heavily on Treasury (1997).

³ For a more detailed description of the relationships between these various tax types, see Slemrod (1997).

⁴ A distinction can be made between spending, which is the outlay of funds and consumption, which is the receipt of services. In many cases they are the same. The difference comes in the case of long-lived items, like household goods and, indeed, houses themselves: you spend money buying a TV today, but you consume the entertainment it provides over its life. The distinction between spending and consumption can be important when thinking about the appropriate tax treatment of long-lived assets.

⁵ Bradford (1979): 6.

⁶ This is the legal incidence of the tax: who is responsible for collecting the money and accounting to the revenue authority. The economic incidence relates to on whom the burden of the tax falls. For example, the legal incidence of GST in New Zealand falls on suppliers, but the economic incidence is on consumers to the extent that the introduction of GST increases consumer prices.

The following paragraphs set out these relationships in more detail. A more detailed examination of the important economic properties of income, consumption and cash flow taxes are contained in an annex.

What is an income tax?

Economists' generally accepted notion of income is the Haig-Simons-Shranz definition:

Personal income may be defined as the algebraic sum of (1) the market value of rights exercised in consumption and (2) the change in the value of the store of property rights between the beginning and the end of the period in question.⁷

No income tax in effect anywhere in the world uses this exact definition of income, and many have significant departures from it.⁸

Under a pure income tax, the tax would be levied on the ability to consume without reducing wealth. Table 1 describes what would be taxed under a comprehensive income tax.

Table 1 – What is taxed under an income tax

For individuals	<p>Net increase in wealth plus value of consumption (including the imputed rental value of consumer durables), or, equivalently:</p> <p>Net income from labour plus net income from investments (including realized and unrealised capital gains and income in kind).</p>
For businesses	<p>Increase in the value of net assets (if dividend and interest payments are deductible) or, equivalently:</p> <p>Increase in the value of net assets before dividend payments (if dividends are non-deductible) or, equivalently:</p> <p>Net profits from trading activities plus net income from investments, including capital gains (if dividends are non-deductible).</p>

Under a comprehensive accruals income tax, companies and other business entities would not need to be taxed except in order to save on overall compliance or transactions-costs. That is, the undistributed income of a company would be automatically included in the income of its owners. If companies are taxed, they are taxed effectively as agents for individuals. The tax on them is effectively a withholding tax on the investment income flowing to individuals (just as PAYE and FBT are withholding taxes on labour income flowing to individuals).

Real world income taxes tax companies and other legal entities separately from their owners, with varying attempts to integrate taxation at the entity and individual level.⁹ There are two main reasons for taxing companies. One is an efficiency argument to do with “corporate form neutrality”, the other is about compliance costs.

⁷ The definition quoted is from Simons (1938).

⁸ In New Zealand, for example, investments in forestry are granted CFT treatment under the “Income Tax Act”.

⁹ In New Zealand, for large companies, integration is by way of the imputation system: companies are taxed in their own right and then, if they distribute income via dividends, allowance for company tax paid is made in the calculation of the tax liability of the shareholder.

If companies were not taxed, taxpayers would gain from accumulating their income in the (untaxed) corporate entity. This is because the compounding effect of the reinvestment of retained earnings escapes tax. If tax is paid when earnings are distributed, the net present value of tax is less than if the company had been taxed on an annual basis. The longer the deferral, the greater the gain.

Taxing companies directly avoids this effect, and thus ensure that taxpayers are not influenced by taxes in deciding the form in which they do business.

The compliance cost argument relates especially to large firms. It is possible to tax shareholders on the income they earn through a company by imputing the appropriate share of the income (and expenses) of the company direct to the shareholder.¹⁰ For companies with few shareholders, the costs of doing so are probably little different than the costs of taxing the company directly and then applying the imputation system to integrate personal and company taxation. However, the greater the number of shareholders, the higher the compliance costs. So for very large entities, like publicly listed companies, the company tax/imputation system is preferable from a national perspective.

What is an expenditure tax?

Expenditure taxes all share one common feature: they do not tax savings. Direct expenditure taxes are levied on individuals and typically also on businesses as withholding agents, see Table 2.

Table 2 – What is taxed under an expenditure tax

For individuals	A tax on all expenditure. This is equivalent to taxing net income from labour plus returns in excess of the government-borrowing rate on investments. Because the tax rate could be varied according to the level of expenditure, the tax could be made progressive or to vary with individual circumstances (e.g. number of dependents).
For businesses	Cash inflows less cash outflows (hence a cash flow tax or CFT), or equivalently: Sales minus purchases of real assets and services (financial assets and related flows are generally ignored, including interest and dividend payments). An indirect expenditure tax is levied at the business level only, in effect as a final withholding tax. The GST is an example. The tax base is: sales minus purchases of real assets and services except wages. This is equivalent to the value of consumption (including imputed rental value of consumer durables) to the individual. This is also in effect a CFT.

A CFT therefore differs from an income tax in that a part of the rate of return on investment income is not taxed. This is important. A CFT is not just a simpler way of calculating tax liabilities. A most important practical implication of this difference is that to raise the same amount of revenue, a CFT must be levied at a higher statutory rate than an income tax.

Measuring comprehensive income

Before income can be taxed, it has to be measured. In the case of some forms of income from capital, this presents severe problems.

¹⁰ This system applies to partnerships in the current New Zealand tax system. While partnerships are required to file tax returns, the liability for tax falls directly on the partners.

There are three generic measurement problems in using a comprehensive definition of income as a tax base: (i) measuring changes in asset values (property rights) when there is either no market or only a very thin market in which to observe market prices, (ii) taxing income that accrues in a period but is not realised by the owner in cash or some other liquid form of wealth and (iii) determining the income of an individual when this requires a complex adjustment or attribution or there is uncertainty. Table 3 sets out some examples of these particular problems.

Table 3 – Problems with measuring and taxing different types of income

Type of income	Problems
Capital Gains	These should be taxed on accrual but due to problems (i) and (ii) they are almost always taxed only on realisation. This deferral lowers effective tax rates according to duration of asset ownership and creates lock-in distortions.
Profits	Measuring profits correctly depends on measuring true economic depreciation but this is difficult due to problem (i). There is also a host of problems involving the timing of the recognition of receipts and expenditures and many more arising from the capital-revenue distinction.
Imputed Rental Income	Measuring and taxing this form of income runs into problems (i) and (ii). As a result, it is usually not taxed, e.g. imputed rental income arising from owner-occupied housing.
Income earned indirectly via an entity	Examples are profits earned by companies on behalf of shareholders, and investment income earned by pension funds, life insurance companies, unit trusts and trusts on behalf of members, holders or beneficiaries. These give rise to problem (ii), and problem (iii) (particularly when there is a chain of entities between the source of income and the underlying individual owner). There can also be a problem because attribution to an individual is impossible because of uncertainty, e.g. defined-benefit pension schemes and discretionary trusts.
Income distorted by inflation	While the problem can be overcome in principle by indexation, this would involve great complexity and consequently high compliance and administrative costs. Examples are real versus nominal capital gains, real versus nominal interest receipts and payments, and depreciation allowances, when based on historic costs and inventory rules (FIFO versus LIFO)
Income from human capital	The problem here is distinguishing between returns to raw labour and to human capital. The former cannot be observed directly and they will vary from person to person depending on raw talent and ability.

These problems of measuring and taxing income from capital comprise a formidable list. They cause effective tax rates to differ (sometimes greatly) from the statutory tax rate. As a result, there will generally be production inefficiency with over-investment in tax-favoured projects and under-investment in tax-penalised projects. Researchers have done a large number of studies in different countries and for cross-border investments.¹¹ The results typically show large variations in effective marginal tax rates across investment projects.

¹¹ For an analysis of New Zealand's experience, see Moes (1999).

Measuring expenditure/consumption

Even granting that the measurement and taxation of comprehensive income is extremely difficult and impossible to achieve fully, can one necessarily expect the problems to be less formidable with an expenditure base? One must be careful not to compare an imperfect but functioning income tax with an ideal, untested expenditure tax. But as Meade (1978), Kay and King (1989), Bradford (1979) and others have explained, there are good arguments for believing that the measurement and collection-of-tax problems with an expenditure base would be much less serious than for a comprehensive income base.

The easiest and most effective way to appreciate these arguments is to use them to demonstrate how an expenditure base would avoid the three central problems with measuring and taxing comprehensive income. A key characteristic of an expenditure tax is that it is possible to base almost all measurements on cash flows. This has tremendous advantages. Cash flows are relatively easy to observe and measure, so that the problem of valuation (problem (i)) is much reduced (although not solved entirely). When people are taxed on cash flows they do not face tax demands on income they have not received in cash (so problem (ii) is solved). People are not taxed on income earned on their behalf until it is distributed to them, thus solving the problems of attribution (problem (iii)). Finally, since taxes are based on cash flows at a particular point in time, there is never any need to make complicated adjustments for inflation (problem (iii)).

2.2 Why do income taxes persist?

Given the complexity of the income tax and its alleged higher economic cost, why do most OECD countries use the income tax as a major source of revenue, especially as there are alternatives?

There are three main reasons a Government might want to operate an income tax as well as other taxes.

The first has to do with variability of revenue flows. Having a range of tax bases that are subject to different influences means that government revenues are less variable from year to year. For example, in New Zealand, GST flows are closely related to the increase in nominal GDP, while income tax relates to changes in employment and wage rates (for the labour income base) and business conditions (for the business base).

The other two main reasons go to equity. An income tax can be made progressive – the proportion of income paid in tax increases with income.¹² This is because it is possible, although at some cost to compliance and administration, to set tax rates that vary with the personal circumstances of the individual, like level of income or family circumstances (marital status, family size). This is not possible with indirect taxes like the GST.

The second equity issue is that an income tax is a good application of the “ability to pay” principle, whereby those with the greatest means make the greatest contribution to the state. This is not exactly the same as having a progressive tax scale. Under an income

¹² The most common example is an income tax scale where the marginal tax rate increases with income. Another example of a “progressive” rate scale is a constant marginal tax rate combined with either a tax-free threshold or a uniform government grant. In both these cases, the average tax rate increases with income, while the marginal rate (above the threshold in that case) is constant.

tax two people with the same income, but different spending patterns, pay the same tax. Thus, a person with high savings in any one year (and therefore a low consumption tax liability) pays the same in income tax as a person who spends all their income that year. For this reason, income is a better measure of ability to pay than consumption.¹³

Unlike indirect consumption taxes like GST, a CFT can be made progressive. Thus, proponents of such taxes have argued that a CFT is superior to an income tax in terms of its simplicity and economic efficiency, while being at least equal on equity grounds.

2.3 Types of CFT

The literature on cash flow taxes includes a number of variants on the basic theme of taxing on a “cash-in, cash-out” basis. The terminology the Meade Commission used to describe the two main variants – the “R” and “R+F” bases – has been adopted as the standard in the literature.

The “R Base” (R stands for real) involves businesses being taxed on all cash receipts arising from transactions in goods or services: financing transactions are ignored.¹⁴ The cost of acquiring a financial asset is non-deductible and returns and amounts received on sale or redemption of financial assets are exempt.

The treatment is derived from the idea that financing transactions are simply mechanisms by which firms’ value-added is distributed to the individuals who own the financial capital with which firms purchase real assets.¹⁵ So long as value-added has already been taxed (at the correct rate) in firms’ hands, no additional tax should be payable when their earnings are distributed. This is similar to the treatment of dividends under New Zealand’s imputation system: no additional tax is payable by shareholders on dividends paid out of tax-paid income. It is, however, different from the income tax treatment of interest, which is deductible to the payer and assessable to the payee.

The “R+F” base (F stands for financing) includes financing transactions in the tax base, again on a cash-in, cash-out basis. Under this approach, borrowers include loan principal (but not equity raised) in taxable cash income and deduct payments of interest and principal. Lenders deduct principal when they make a loan and include loan repayments – principal and interest – in taxable income.

In the case of tax on rents from assets acquired with debt finance, the effect of an R+F regime is to shift liability from the owner of the asset to the provider of the finance. Thus, the R+F base is economically different from the R base.

Take the example of a company that buys a machine in year 0 for \$100. The machine generates a single cash inflow, of \$120, in year 1 and is then scrapped. Under an R base tax, or if the company had used equity finance to acquire the machine, its taxable income would be simply minus \$100 in year 0 and \$120 in year 1. But under an

¹³ There are contrary views on this point. David Bradford, a leading US tax economist and policy adviser is of the view that the superiority of an income tax on equity grounds only applies over short periods of time. His view is that when viewed over a longer period, like a lifetime, a consumption tax is superior on equity grounds. See Bradford (1979).

¹⁴ Likewise, financing transactions are ignored under a GST or VAT.

¹⁵ This characterisation applies only to “pure” financing transactions. It is not correct to the extent that returns on financial instruments also embody payments for services provided by financial intermediaries.

R+F base tax, if the company had borrowed the machine's full purchase cost, at an interest rate of 15%, its taxable income in the first year would be zero and \$5 in the second. The financier would receive a deduction of \$100 in the first year (for the outgoing of the loan principal) and income of \$115 (principal and interest) in the second. The effect of the R+F base is to shift liability for tax for part of value-added, \$15 in this case, to lenders.

Differences between various CFT schemes primarily reflect varying treatments of financing transactions. Table 4 summarizes the traditional ways of dealing with financing transactions under different taxes on income from capital.

Table 4 – A Comparison of standard tax bases

Key characteristics	Comprehensive Income Tax	Value-added tax (GST)	R-base business tax	R + F CFT
What is taxed?	All returns	Above normal return	Above normal return	Above normal return
At what level are returns subject to tax?	At business level in respect of equity-financed investment. For debt-financed investment, above normal return at business level, normal return at individual level. ¹⁶	At business level	At business level in respect of value-added attributable to capital (equity and debt). At individual level in respect of wages.	At business level for equity-financed investment. At individual level for wages and debt-financed investment.
International trade and investment	NZ-sourced income of non-residents. Worldwide income of residents	Destination Base (exports zero-rated, imports taxed) = value-added of goods and services consumed in NZ.	Origin base (export receipts assessable, import costs deductible) = value-added on goods and services produced in N Z.	Base is smaller than R base if provider of debt outside NZ. If real asset outside NZ and provider of debt is New Zealander, then base is bigger than R base.
Financial institutions	Taxed on net income.	Financial services are exempt supplies.	A pure R-base tax cannot be applied to financial institutions because the price of financial services is part of interest rates.	R + F base can tax financial intermediaries but requires distinction between debt and equity.

¹⁶ The taxation of normal returns at the individual (rather than the business) level arises because of the deductibility of interest to firms.

3 A CFT for small businesses

This section outlines how a CFT could apply to small businesses. It is based on a CFT developed by Treasury in 1997.

3.1 The basic rules

The proposed regime can be characterized as a “modified R-base” regime – for most taxpayers and most transactions, real transactions in goods and services are taxed on a cash-flow basis, while financing flows are tax-exempt. Table 5 sets out the basic rules for how businesses are taxed on various cash flows.

Table 5 – Rules for taxing cash receipts and outgoings

Type of flow	Rule
All cash outgoings	Deductible immediately, if there is a connection between the outgoing and the derivation of taxable income
All cash receipts	Taxable, unless they are derived in respect of a financial arrangement
All distributions of dividends, interest, principal and subscribed capital by a business	Tax-free in the hands of recipients
Distinction in respect of expenditure or revenue connected with assets subject to cash flow treatment	None
Losses that cannot be utilized	Carried forward and uplifted by a risk-free rate of interest (a government bond rate).

3.1.1 Treatment of financing flows at the business level

The CFT designed by the Treasury 1997 proposed taxing value-added at source by providing that for almost all businesses, cash flows in respect of real assets will determine net taxable cash flow, financing flows will be ignored in calculating taxable income (non-deductible, non-assessable) but firms will be required to pay additional tax in respect of distributions other than from past contributions of capital, the risk-free rate of return on contributed capital, or income on which tax has previously been paid. This mechanism by which this is achieved relies on tracking qualifying capital and distributions through the operation of a “qualifying distributions account”.

The “qualifying distributions account” (QDA) was a mechanism designed to preserve the simplicity of an R-base CFT, while protecting the tax base. In the absence of the QDA there would be considerable pressure on the real asset/financial asset boundary – taxpayers would, for example, face strong incentives to characterise expenditures as real flows (perhaps as the cost of goods sold) and inflows as financial flows (perhaps as interest on trade finance extended to purchasers of the firm’s goods). Table 6 contains the rules for taxing financial flows.

Table 6 – Rules for taxing financial flows

Type of flow	Rule
Amounts lent to (subscribed in) a business	Expenditure on debt and equity instruments issued by a business is not deductible since returns to such assets are tax-exempt.
Tax treatment of borrowed money	Principal on amounts borrowed by any business is non-taxable. Repayments of principal and interest are non-deductible. Where money is borrowed for non-business purposes, the lender will have dealt with the loan on a cash flow basis, effectively exempting from tax the risk-free rate of return in the lender's hands.

3.2 Simplification potential of a CFT

A CFT offers two simplification potentials. First are those inherent in the tax, which are that many of the measurement and all of the timing issues of an income tax would disappear. For example, firms would not need to depreciate property over its life, since they receive an immediate deduction on acquisition. Likewise, on disposal, there are no issues of depreciation claw-back or a revenue/capital boundary: all proceeds are assessable. Importantly, a CFT is easy to understand and could, therefore, lead to a significant increase in the confidence that the owners of firms have in their understanding of how their tax liabilities have been generated.

The second set of advantages relate to how a CFT would be administered. The tax base of an “R Base” CFT is the same as the base for GST, less wages. This means that the GST and PAYE systems contain most, if not all the information needed to calculate a firm's CFT liability.

For a firm trading exclusively in New Zealand, their CFT liability would be:

$$\text{Liability} = (8 \times \text{GST returned to IRD}) - \text{Gross wages paid}^{17}$$

All of the information contained in this formula is returned to IRD for other purposes, meaning that CFT liability calculations would involve zero additional compliance costs. A firm exporting goods or services would need to add in cash flows from exports that are zero-rated for GST purposes. This is because of CFT operates on an “origin basis” – firms receive a deduction for the cost of imported inputs and are assessed on the gains from exports, while GST operates on a “destination basis” – imports are taxed and exports are zero-rated.

¹⁷ The figure 8 appears in the formula because the current rate of GST is 12.5%.

4 Seemingly insurmountable barriers to implementing a CFT

While a CFT looks significantly more desirable than an income tax, especially from a simplification point of view, analysis to date, both within Treasury and elsewhere has failed to develop a workable transition from an income tax to a CFT. The recent independent review of the New Zealand tax system (Tax Review 2001), concluded that transition issues were an apparently intractable barrier to the implementation of a CFT.¹⁸

4.1 Transition from an income tax to a CFT¹⁹

Transition refers to how to take the world from one with an income tax to one with a CFT. In many cases of tax policy, transition is not a serious issue: a date is set from which the new regime applies. With a CFT, the transition issue that appears impossible to solve is that relating to existing assets. Remember, under an income tax, income-earning assets are deductible over their economic life, while under a CFT a firm receives an immediate deduction. On disposal, proceeds from the sale of assets held on capital account are exempt from income tax, while under a CFT all proceeds are taxable.

There are three options for dealing with existing assets. The first approach is referred to as the "free entry" transition and allows firms an immediate deduction for the value of undepreciated assets. In this approach, on the implementation date, all taxpayers get an immediate tax deduction equal to the undepreciated value of their existing capital. This approach will not bankrupt any firms, but it might get close to bankrupting the government, as the fiscal cost would be huge.²⁰ It also entails large wealth transfers, from those without savings (who will have to pay a larger tax on labour income to finance the fiscal cost) to those with savings (who get an unanticipated increase in the after-tax rate of return on their investments). But more importantly, from an efficiency point of view, the higher tax on labour means an increase in dead-weight economic costs that will partially or wholly offset any economic gains from moving to an expenditure tax.

Bradford (1998) has proposed a variation on the "free entry" regime which does not involve an increase in other taxes to finance the transition. Under his proposal, taxpayers are allowed a deduction for the undepreciated value of existing assets on the day of introduction of the tax. Rather than grant this deduction immediately, the transition could provide a path of tax rebates or other transfers over time with the same discounted value. He suggests a payment schedule that matches the deductions they would have taken over the life of the asset, with interest. For example, if taxpayers purchased a computer worth \$10,000 depreciable over three years on a straight-line basis, they would be paid \$3,333 in each year, with interest added to payments in years two and three.

Bradford's proposal is economically equivalent to the Government allowing immediate deductibility and issuing debt. Rather than borrowing on the open market, the borrowing is from the owners of the existing capital.

¹⁸ See Tax Review (2001) : 106.

¹⁹ While the discussion that follows relates to a transition from an income tax to a CFT, similar issues would apply to the introduction of a CFT in a world where this is no pre-existing income tax. Transition issues arise because of the existence of a capital stock, not because of the pre-existing tax system.

²⁰ In 1997, Treasury estimated that the first year cost of a "free entry" transition to be in the order of \$20 billion. Compare this with total annual tax revenue at that time of around \$34 billion.

The second transition is known as the "cold turkey" approach and involves denying any further deductibility for existing assets – this involves a multi-billion dollar cost for firms, especially those that have borrowed to finance the purchase of assets (they would continue to have a commercial liability for the gross amount of any interest payments, but would receive no offsetting tax deductions).

Suppose you borrow \$100 and buy a machine for \$100 that depreciates at 20%. Income is \$30 p.a., interest on debt is \$10, and \$20 is used to repay the principal of the loan (so that it is paid off by the time the machine ceases to be useful). Under an income tax, you expect to pay no tax (\$30 income less \$10 interest expense, less \$20 deduction for depreciation).

A CFT is introduced soon after purchase of machine. Sale of the machine would be taxable and there is no longer an allowance for depreciation. Real income is taxable and real (as opposed to financial) expenditures are deductible. In year 1, you are taxed on \$30 (at, say, 33%), leaving me \$20.10. This is insufficient to pay interest and amortise the debt. After 5 years you will have a worthless machine and outstanding debt of \$45.50 and will go bankrupt.

The final option involves continuing to operate an income tax for existing assets, including, and this is the key, assets sold to other taxpayers – this would significantly, if not totally, reduce the administrative and compliance cost savings of transiting to a CFT.

The necessity of applying a transition rule to assets that are bought and sold shows why only applying a CFT to new businesses is not a solution: a new company could simply purchase the assets of an existing business, and would receive cash flow treatment (immediate deductibility). That is, the free entry transition would apply.

Combinations of the three transitions are also possible. For example, free entry could be phased in over a period. With a five years transition, for example, firms would be allowed to depreciate their existing assets over five years, regardless of their economic life, with cash flow treatment applying to their new assets. Doing so, however, would require an element of the parallel systems transition, since rules would be needed to prevent firms selling their existing assets to other firms.

Treasury's previous conclusion that it is not possible to develop a feasible transition to a CFT still seems to hold. Limiting a CFT to a subset of the economy – small businesses – reduces but does not eliminate, the problems.

4.2 Transition from CFT to income tax

Not all small businesses stay small. If small businesses are taxed under a CFT, while large businesses are taxed under an income tax, then there needs to be a set of rules to allow firms to transfer from CFT treatment to income tax treatment.

As always with issues of CFT, the complexity surrounds the ongoing treatment of assets of an enduring nature. As noted above, income tax treatment involves the depreciation of assets over their economic life, while in a CFT the full purchase price is deductible in the year of purchase (with sale proceeds being assessable on disposal).

Consider a firm that is taxed under a CFT and has an asset that is still economically valuable. The firm ceases to be small and becomes subject to the income tax. A rule would be needed to deem the asset to be fully depreciated. Conceptually, this is not

difficult for assets that are simply used in the business and then disposed of when they have zero economic value. Difficulties could arise if an existing asset was improved, since depreciation would, under an income tax, be allowed on the improvements over the remaining life of the asset.

A particularly difficult issue would arise when the asset is sold, since the income tax includes the revenue/capital distinction. Thus, under an income tax, the proceeds from selling an asset that is held on capital account are not assessable, while under a CFT they are. Allowing firms to have cash flow treatment on acquisition (immediate deductibility) and income tax treatment on disposal (exemption of proceeds for assets on capital account) would leave the government with a potentially large fiscal cost. It would also be inappropriate to allow the purchasing firm (if it were subject to income tax treatment) to depreciate an asset for which deductions had already been taken under the CFT.

Any transition rule would need to avoid being a claw-back of CFT treatment. As with the transition to a CFT in a world with existing assets, it does not seem possible to develop a feasible set of rules to transit firms from a CFT to an income tax.

5 Particular issues for a CFT on small businesses²¹

This Section outlines two particular issues that need to be resolved if a CFT were introduced for small business, namely a definition of “small” and how to integrate a CFT with an income tax, which is especially relevant for the owners and financiers of firms if those people have other income that is subject to income tax treatment.

5.1 Limiting CFT to small businesses

As this paper is concerned with the issue of taxing small businesses it is necessary to develop a definition of small business. Any set of rules should comply with a range of criteria. First they should be objective: that is based on facts, not intentions or purpose. The rules should themselves be simple. All decisions should be based on existing or past events, not future events. Finally, where possible and desirable, any rules should be based on existing concepts in the tax system.

5.1.1 What is a business?

The first part of any definition is “business”. The distinction between “savings” and “being in business” is a fine one: both involve the idea of using capital for future gain. Intermediated savings might look considerably different from being in business, but in substance they are the same thing: a deposit in a bank becomes someone else’s (borrowed) capital.

Using existing concepts from the tax system, one possible distinction is that to qualify for cash flow treatment, a firm must be engaged in “taxable activities” within the meaning of the GST Act²². This closely accords with the everyday notion of being in business.

5.1.2 What is small?

A key difficulty in designing a definition of small business is not coming up with an adequate description; rather it is in designing a set of rules that cannot be manipulated by large businesses. That is, a set of rules that do not allow a large business to re-configure itself into a series of small businesses. This is only an issue if the intention is to limit a CFT to a sub-set of the economy.

Small can have a number of dimensions. It can relate to any one or more of the following criteria: the number of owners of a firm, the number of employees, turnover or profit.

²¹ An issue not discussed in this paper is the international dimension of a CFT: how to tax New Zealand firms on the income they earn offshore and how to tax non-resident owners of New Zealand small businesses. The reasons for this omission are two-fold: small businesses tend not to engage in much cross-border trade or have cross-border owners, thus rendering much of the possible discussion irrelevant. Secondly, while the international dimension adds further economic and revenue arguments against a CFT, it does not add any additional reasons for having one. Treasury (1997) contains a detailed discussion of the international aspects of a CFT. See also p 173 ff. of Shome and Schutte (1995).

²² Section 6(1) of the Goods and Services Act defines, “taxable activity” to mean: “Any activity which is carried on continuously or regularly by any person, whether or not for a pecuniary profit, and involves or is intended to involve, in whole or in part, the supply of goods and services to any other person for a consideration; and includes any such activity carried on in the form of a business, trade, manufacture, profession, vocation, association, or club”.

A quintessential small business in New Zealand has the following features: one or two principals who both own the firm and work in it, less than five other employees and the principals mainly provide the financial capital themselves, with external capital provided by commercial loans mortgaged over the assets of both the business and the principals.

Turnover and profit are much more variable. Any financial threshold above which income tax treatment applies will be arbitrary. A key issue is that the threshold should be determined before a tax year starts, since to do otherwise would give rise to the possibility of firms unexpectedly going over the boundary and thus having to be subject to income tax when their expectation was CFT. This might not be a great issue if the transition from CFT to income tax is relatively smooth, but this is unlikely to be the case.

Table 7 sets out one possible set of rules for deciding what is a small business.

Table 7 – Rules for being a small business

Criteria	Rule
Type of business	Must be incorporated
Number of shareholders	Five or fewer, all of whom are natural persons and none of whom is acting in their capacity as a trustee
GST status	Must be registered for GST purposes
Activity	Must undertake a “taxable activity” for the purposes of the GST Act.

5.2 Integration with the rest of the tax system

Treasury’s previous work on a CFT has examined the application of a CFT to the whole economy. The proposition here is to limit a CFT to small businesses. This raises particular issues in relation to the integration of the tax treatment of firms taxed under a CFT with their owners and creditors.

Under the New Zealand imputation system, the tax treatment of companies and the individuals who own them are integrated. That is, the policy is that New Zealanders should be taxed on the income they earn through a company once, as close in time as possible to when it is earned, at the marginal rate of the taxpayer. In practice, taxing the company on its income and taxing dividends paid to shareholders achieve this, with imputation credits meaning that tax at the company level can offset tax at the personal level. If the company’s tax rate and the marginal tax rate of the shareholder are the same, then no additional tax is payable by the shareholder. Likewise, returns to debt are only taxed once under the New Zealand system, but a different mechanism is used. Interest payments are deductible to the company (subject to a business test), with interest income being assessable to the creditor. This means, in effect, that the return on capital financed by debt is taxed at the marginal tax rate of the creditor.

Under an “R base” CFT, financial transactions between a firm and its financiers are excluded by tax: payments of dividends and interest (and principal) are neither deductible nor assessable, either within the firm or to investors. Under a “R + F”, financing is taken into account. Borrowers include loan principal (but not equity raised) in taxable cash income and deduct payments of interest and principal. Lenders deduct principal when they make a loan and include loan repayments – principal and interest – in taxable income. Provided the tax base of a firm is comprehensive, then an R and R + F base both provide the same economic result.

If a CFT were limited to small businesses and their owners, with income tax treatment applying to the rest of the tax system, there would need to be special rules for taxing dividends received from CFT businesses. Consider the example of a CFT firm in the early years of its life. If the firm has made large capital purchases, it is likely to have tax losses, but would still have positive cash flow that it wants to distribute to its owners. Under CFT rules, there would be no tax implications for the firm: the distribution is exempt. However, under the normal imputation rules, such dividends would be non-imputed, and therefore taxable in the hands of the shareholder. However, applying income tax treatment to dividends coming from a CFT company would simply be a clawing-back of CFT treatment. It would be necessary, therefore, to have a special rule to exempt all dividends received from CFT companies.

However, such an exemption might itself create further problems. If all dividends flowing from a company subject to a CFT were exempt, then there would be an incentive to interpose a CFT company between a taxpayer and other companies subject to income tax as a way of reducing income tax liabilities.

Consider a company subject to income tax treatment that has earned untaxed income (for example, capital gains). Under existing income tax rules, it would pay unimputed dividends to its shareholders, who would then have a tax liability. If an R Base CFT were introduced, then payment of such dividends to a company taxed under a CFT would not give rise to any tax liability at the CFT company level. Under the rule just discussed for taxing dividends paid by CFT companies, the payment of a dividend by the CFT company out of unimputed dividends received by the CFT company would also be tax free in the hands of shareholders. An R + F Base CFT would not seem to solve this problem, since the receipt and payment of a dividend would wash-out, leaving the company with no CFT liability.

The twin challenges of integrating a CFT on part of the economy with an income tax on the remainder are to preserve CFT treatment on payments made to owners and financiers of firms subject to that tax, while at the same time ensuring that a CFT is not used to avoid income tax treatment applying elsewhere. The principal difficulty seems to be that from an income tax perspective, companies taxed under a CFT look very much like onshore tax havens.

It would be possible to devise a set of tax rules that would successfully integrate a CFT and an income tax. Doing so in a way that does not eliminate the simplification advantages of a CFT might, however, prove impossible.

5.3 The undesirability of differential treatment

Even if the issues of integration could be overcome, it is not certain that applying a CFT to part of the economy and income tax to the rest would be desirable. Because an income tax has a wider base than a CFT, applying CFT treatment to one sector of the economy (new small businesses) would considerably distort investment decisions towards such businesses. This is because the tax base of a CFT is smaller than that applying under an income tax.

To see the implications, consider the example of an individual with \$10,000 to invest. They have two options: a small business to be taxed under a CFT and a large business to be taxed under an income tax. To make the differences stark, consider further that the two firms will be doing the same thing with the capital: buy an asset in year one that will

produce income of \$1,000 before tax and is then sold for \$10,000 one year later. The pre-tax rate of return to the asset is $1000/10000$, or 10%.

At a tax rate of 33%, a CFT would allow immediate deductibility in a first year, leading to a tax refund of \$3,300. So the after-tax cost of buying the asset is just \$6,700. In the second year, the sale of \$10,000 and the income of \$1,000 are also taxed at 33%, leaving \$7,370 after tax. The after-tax rate of return to the asset is $(7,370-6,700)/6,700 = 10\%$, the same as the before-tax rate of return.

In contrast, under an income tax the \$10,000 purchase price is not deductible until the asset is sold. The tax is calculated in the second year at 33% of \$1,000 in income plus \$10,000 sales revenue minus \$10,000 purchase price. The after-tax rate of return to the asset is $\$670 / \$10,000 = 6.7\%$.

5.4 The revenue risk of a CFT

In its discussion of the issue of a CFT, the Tax Review raised the issue of the revenue risk that such a tax would pose to the Crown. They expressed this risk in these terms:

By allowing immediate deductibility for new investment, the government would in effect provide almost a third of the total capital to new corporate ventures (and a still larger proportion of total equity finance in ventures partially financed by debt) without exercising any control and with uncertainty over whether taxable cash flows would materialise in future years.

Experience has shown that immediate deductibility for investment outlays can create severe revenue risks, particularly when the assets for which deductions are claimed are difficult to value and are acquired from parties outside the tax base (or on lower tax rates than those claiming the deductions). Foreign firms could undertake investments in New Zealand, creating losses through their initial capital outlays, and structuring their affairs so that future cash flows were received in other jurisdictions.²³

The risk in the first paragraph may be more of a truism than an argument against a CFT. It is true that by its very nature, a CFT involves immediate deductibility for payments that are, under an income tax, spread over the life of assets. But concomitant to that is the taxation of revenues on a cash flow basis. This seems to significantly reduce the possibility that firms could escape paying tax on their operations.

The experience with GST gives some comfort that the Review's concerns would not eventuate. Under the GST, firms receive a refund of their input tax credits without the Government "exercising any control and with uncertainty over whether taxable cash flows would materialise in future years", yet the GST produces sizable revenues for the Crown.

The risk in the second paragraph is real, although the experience cited is of the provision of immediate deductibility in the context of a far from comprehensive income tax. Providing CFT treatment on the expense side of the ledger, while allowing income tax treatment on the income side, does seem to involve significant risks to the Crown. But CFT treatment on both sides should not.

²³ Tax Review (2001): 106.

What would involve revenue risks is the application of a CFT to one part of the tax system, small business, with the remainder subject to an income tax. As noted under the section above on integration with the rest of the tax system, the partial application of a CFT seems to create further opportunities for escaping the income tax.

6 Conclusion

The theoretical case for a CFT is clear. It is simpler than an income tax, with lower economic costs. It can be made progressive, thus satisfying equity criteria for good tax design.

It is possible to design the core rules of a CFT that applies to new small businesses. As with all examples of a CFT, the core rules are very simple and easy to understand and apply. Integration with existing GST and PAYE systems provide significant simplification potential.

It does not seem possible, however, to design an acceptable set of rules that would cover the transition from an income tax to a CFT. While the “Bradford scheme” might hold out the prospect for a feasible transition, considerably more work would be required to validate this approach.

Allied to this, designing a set of rules to define what is a “small business” is possible, although there is a risk that these rules would involve some arbitrary features. A particular difficulty, however, is the transition from a CFT to an income tax for businesses that cease to be small. The main issues surround the treatment of enduring assets and mirror those involved in the general transition to a CFT.

Even if the considerable difficulties with a transition could be overcome, integrating a CFT into a world where most of the economy is subject to an income tax would also pose difficulties. There is a risk that the rules needed to maintain CFT treatment, while at the same time protecting the income tax base, might negate significant portions of the simplification gains from a CFT.

The differences between a CFT and a tax on economic income

This Annex sets out in some detail the economics taxes on economic income and a CFT. First to be presented is a discussion on why a CFT is equivalent to a consumption tax. Then the discussion turns to the economic differences between a CFT and an income tax. It does so by examining the “neutrality” properties of each tax, being the circumstances in which each tax will not distort the decision making of taxpayers.

Cash flows and the consumption base

One way to see why a consumption tax is equivalent to a CFT is to express an individual’s consumption as follows²⁴:

$$C = W + R - S \tag{1}$$

where C is current consumption, W current wage income, R current net (of depreciation) capital income and S current net savings. S can be positive (purchasing assets or repaying debt) or negative (selling assets or acquiring debt). The right-hand side of the expression (2) can be disaggregated by asset type, $1, \dots, n$:

$$C = W + (R_1 - S_1) + (R_2 - S_2) + \dots + (R_n - S_n) \tag{2}$$

In the case of a comprehensive income base, the capital income accruing from each type of asset R_i , $i = 1, \dots, N$ would have to be measured with all the problems we have seen that that would entail for at least some asset types.

For the consumption base, however, it is not necessary to measure R_i and S_i separately, only to measure $(R_i - S_i)$ and this is simply the cash flow to or from the individual with respect to asset i . For example, suppose asset i earns income in the form of an unrealised capital gain. Then $R_i = S_i$ and the cash flow is zero. As another example, suppose an asset accrues \$100 of income and the individual dissaves \$25. Again, the two values do not have to be separately observed and measured to reach the figure of \$125 for $R_i - S_i$. It is sufficient to observe that the individual withdraws \$125 in cash from his or her stake in asset i . Indeed the same observed cash flow event is consistent with an accrual of \$200 and net saving of \$75 or any other number of combinations.

There is one exception to the nice property that the consumption base can be observed and taxed by focusing solely on cash flows - the case of imputed rental income when income accrues and is then consumed in-kind without the interposition of a cash flow. A possible solution is to apply yield-exemption treatment to assets that earn imputed rental income, i.e. purchases of these assets would not be deductible but the imputed rentals would then not be assessable²⁵.

²⁴ This representation is based on Auerbach (1996).

²⁵ Note that this tax treatment is strictly equivalent to cash-flow treatment only if we ignore existing assets and supernormal returns and we assume the tax rate stays constant.

Equation (1) neatly depicts the differences between an income tax (*base = W + R*), a wage tax (*base = W*) and a consumption tax (*base = W + R - S*). The difference between the latter two taxes is primarily a matter of their treatment of existing assets. The consumption tax, by including a CFT on assets (the *R-S* term) essentially imposes a capital levy on existing assets. On the other hand the normal returns on new assets escape tax since the discounted values of normal-return cash flows are zero over the life of an asset. A wage tax (or equivalently the yield exemption form of expenditure tax) does not impose such a one-off levy on existing assets.

Difference between an income tax and a CFT²⁶

The most famous neutrality proposition with respect to a tax on economic income is Samuelson's (1964) "invariant valuations" theorem: if, and only if, changes in asset values are accounted for as they accrue for tax purposes will the discounted present value of a stream of cash flows be independent of the tax rate. In other words, the maximum amount that an individual is prepared to pay for an income-producing asset will only be independent of (invariant with respect to) the tax rate on income if the tax base is economic income.

To see this, define the following terms:

V_t^i is an asset's value at the end of period t , where the superscript $i=N$ if the asset is not taxed and G if it is taxed;

N_t is the sum of cash flows attributable to the asset over period t ;

r_t is the opportunity cost of capital (i.e., the discount rate) in period t ;

τ is the tax rate.

In the absence of taxes, the asset's value at the end of period t is

$$V_t^N = \sum_{u=t+1}^T \frac{N_u}{(1+r)^{u-(t+1)}} \quad (3)$$

Since (3) will also hold in period $t+1$, we can re-express it as

$$V_t^N = \frac{N_{t+1} + V_{t+1}^N}{1+r_t} \quad (3')$$

²⁶ This part of the annex is mostly taken from Goss (1995).

which we can rearrange to obtain the following expression for V_t :

$$\begin{aligned}
 V_t^N (1 + r_{t+1}) &= N_{t+1} + V_{t+1}^N \\
 \Rightarrow r_{t+1} V_t^N &= N_{t+1} + V_{t+1}^N - V_t^N \\
 \Rightarrow V_t^N &= \frac{N_{t+1} + \Delta V_{t+1}^N}{r_{t+1}}
 \end{aligned} \tag{4}$$

where $\Delta V_{t+1}^N = V_{t+1}^N - V_t^N$.

The expression in the numerator of (4) is economic income in period $t+1$, while the denominator is simply the pre-tax discount rate in that period. Introducing a tax on economic income into the model, such that individual i faces the tax rate τ^i , will have two effects. It will reduce the numerator of (4) by a factor of $(1-\tau^i)$ and it will reduce the denominator by the same factor. Since, by assumption, the same tax rate applies to all alternative investments available to individual i , it follows that the opportunity cost of investing in this particular asset is the after-tax rate of return foregone by not investing in the next best alternative asset. Thus (4) becomes

$$V_t^i = \frac{(N_{t+1} + \Delta V_{t+1}^g)(1 - \tau^i)}{r_{t+1}(1 - \tau^i)} \tag{5}$$

Equation (5) is Samuelson's result. It shows that an economic income tax results in the valuation of an asset with a given stream of receipts being independent of the tax rate an individual faces, the extent to which returns to the asset comprise capital gains, depreciation, or cash²⁷, the extent to which returns to the asset comprise normal returns to capital or rents²⁸ and whether tax rates are constant or change over time.

In combination, these represent powerful results. They mean that an economic income tax will not create opportunities for arbitrage between taxpayers who face different rates, will not affect relative asset values, and will therefore not distort the composition of investment, will not affect absolute asset values, and will therefore not affect the level of investment²⁹ and will not affect decisions about when to acquire or divest an asset.

A tax on cash flows

Because a cash flow tax is just that - a tax on cash flows - we do not need explicitly to incorporate changes in an asset's value over time into the analysis, and can therefore commence our analysis with equation (3) rather than (3').

The base of a CFT comprises *all* incoming and outgoing cash flows. Consequently, the first step in incorporating taxes in (3) is to multiply each N_t by $(1-\tau)$.

²⁷ Since there are no restrictions on either the relative magnitudes or the signs of either of the terms in the numerator of (4).

²⁸ Since (5) obtains irrespective of the magnitude of V .

²⁹ At least so long as the tax does not affect the discount rate, r , say by decreasing the supply of funds available to finance investment.

The slightly more difficult problem is figuring out what effect a CFT has on the discount rate. In fact, the CFT leaves the discount rate unchanged from its no-tax value. To see this, consider a firm that can borrow at interest rate r to finance an investment of \$1 that will return (for certain) $1 + \hat{r}$ in one period's time. Under the CFT, the asset's after-tax present value is:

$$\begin{aligned} V_0^G &= -1(1 - \tau) + \frac{(1 + \hat{r})(1 - \tau)}{1 + r} \\ &= \frac{(1 - \tau)[(1 + \hat{r}) - (1 + r)]}{1 + r} \\ &= \frac{(1 - \tau)(\hat{r} - r)}{1 + r} \end{aligned} \tag{6}$$

which will equal zero when $\hat{r} = r$.³⁰ The intuition behind this result is straightforward: a CFT effectively exempts marginal assets from tax.

Since the CFT reduces cash flows by a factor of $1 - \tau$, but has no effect on the discount rate, it follows that the tax's introduction results in the asset's value being:

$$\begin{aligned} V_t^G &= \sum_{u=t+1}^T \frac{N_u(1 - \tau)}{(1 + r)^{u-(t+1)}} \\ &= (1 - \tau)V_t^N \end{aligned} \tag{7}$$

From (7), for a non-zero tax rate, a CFT will result in asset values being independent of the tax rate if the asset's value is zero. That is, a CFT is "tax-rate invariant" only with respect to marginal assets, unlike the economic income tax, which is tax-rate invariant with respect to both marginal and infra-marginal assets. Under the CFT, taxpayers on lower tax rates will value positive NPV assets more highly than taxpayers on lower tax rates,³¹ creating incentives for arbitrage and potentially resulting in distorted portfolio allocation decisions.

Unlike the economic income tax, a CFT is also not necessarily neutral in its impact on decisions about when to acquire or divest an asset. To see this, suppose the tax rate in period 1 is τ_1 but that in period 2 it is going to change to τ_2 , and that the cash flows received or payable in each period after the asset's acquisition would be identical whichever period the asset were purchased. If the asset is acquired in period 0, its value is:

$$V_0^1 = \frac{N_1(1 - \tau_1)}{1 + r} + \sum_2^T \frac{N_t(1 - \tau_2)}{(1 + r)^t} \tag{8}$$

but if it is acquired in period 1, its value is:

³⁰ A further step is required to show that the pre-tax discount rate is the appropriate discount rate, since the same result can be obtained for an income tax: under both bases, the required rate of return on a marginal asset equals the pre-tax discount rate. The difference in the case of the cash flow tax is that, unlike the income tax, it raises no revenue from the marginal asset, as shown in the final equation.

³¹ This result can be contrasted with that arising under an income tax with selective concessions, which results in *higher* rate taxpayers valuing tax-favoured assets more highly than lower rate taxpayers.

$$V_0^2 = \sum_1^T \frac{N_t(1 - \tau_2)}{(1 + r)^t}.$$

Thus:

$$V_0^1 - V_0^2 = \frac{N_1}{1 + r}(\tau_2 - \tau_1). \quad (9)$$

If first-period cash flows are positive, and the tax rate is expected to increase, $V_0^1 > V_0^2$; that is, the CFT creates an incentive to invest earlier rather than later. (The intuition is simply that the taxpayer benefits from having at least one period's returns taxed at the lower rate.)

But if first-period cash flows are negative, and the tax rate is expected to increase, the CFT creates an incentive to defer investment - deferral earns the taxpayer a larger tax saving in respect of the first period's outgoings.

To summarise the results presented in this Annex, a CFT is "neutral" in that it does not affect any taxpayer's relative valuations of different assets and it does not affect the sign of asset valuations, meaning it will not affect the level of investment. But unlike the economic income tax, the CFT will create opportunities for arbitrage between taxpayers who face different rates (albeit only with respect to infra-marginal assets) and *will* affect decisions about when to acquire or divest an asset in the presence of expectations that future tax rates will change.

In assessing the practical significance of these apparent disadvantages of a CFT relative to an income tax, it should be borne in mind that they arise in the comparison of two theoretically pure bases. A real world income tax that deviates from the tax considered above will also be non-neutral in the ways described in these last two dot points.

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