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Improving cash flow corporate taxation (CFCT) and the Z-tax (ZT) approach

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Abstract

This paper proposes a method to improve the cash flow corporate tax and in particular to make it better applicable to financial corporations. This takes the S-CFCT – which is a tax on net flows to shareholders - proposed by the 1978 Meade Committee a step further and allows us to tax 'pure profits' on debt as well as equity. The other adjustment is to avoid negative tax receipts when cash flows are net inward and replace these with a rebate, which is adjusted upwards over time. The rebate offsets tax when it falls due. This also provides a mechanism to deal with corporations which accumulate cash and don't distribute, which is a serious issue for the S-CFCT. I call this the corporate Z-tax as it mimics the mechanism provided under the personal Z-tax (as described in Working Paper 6/2019).

Keywords: Z-tax, corporation tax, cash-flow corporation tax (CFCT), capital income taxation, tax reform, economic rent, allowance for corporate equity (ACE), allowance for corporate capital (ACC).

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1 Introduction

Cash flow corporation taxes would appear to have a number of advantages, and are superior to ad hoc means of increasing corporate investment such as accelerated depreciation. This is because such depreciation, when combined with interest deductibility, results in a subsidy for new investment, as documented e.g., by Meade (1978). By contrast the cash flow corporate tax (CFCT) gives 100 per cent capital allowances but disallows interest deductibility, so the effective marginal tax rate on new investment is zero. This R-CFCT cannot be used to tax financial corporations however, and Meade proposed a tax on net cash flows to equity holders (the R+F-CFCT and equivalently the S-CFCT¹) to overcome this. The S-base = dividends paid + purchase of shares – issues of new shares. However this tax has some problems, which I will discuss.

In Ingles 2015b and 2019 I outlined a new form of personal capital income tax called the Z-tax (ZT), which was designed as a cash-flow alternative to the rate of return

¹ The 2 taxes are equivalent in an accounting sense.

allowance favoured by the Mirrlees Committee (2011), which is a tax on returns above a risk-free rate - e.g., the Government bond rate.

The idea underlying the ZT is that, while it is difficult in practice to tax accruing capital gains as income, it is possible to tax all capital income as capital gain – i.e., with deferral until consumed. This sounds like a conventional cash flow consumption tax. But it differs in this respect. When savings are made a rebate is generated which carries forward at an uplift rate and becomes an offset to tax due on dissaving. This allows automatic rollover relief for savings within the notional ZT ‘box’, which holds personal savings similar to the registered accounts proposed for administering a cash flow consumption tax.

The individual ZT does not really require a corporation tax at all, as tax can be deferred either inside the corporation or within the ZT account, and it makes no difference where this occurs – the same tax is payable in the wash-up when consumption occurs (Ingles 2017). However it may be desirable to retain a corporation tax (CT) to tax inbound foreign investment. It would seem appropriate that such a tax mainly apply to location-specific economic rents, and this points to a cash-flow or cash-flow equivalent tax. Murphy (2018) finds that this is the most efficient form of corporate tax.

Problems with the S-CFCT can be overcome by combining it with some features from the Z-tax, and by making an adjustment for loan cash flows.

2 The S-CFCT and issues with it

Many commentators have argued for a cash flow corporation tax to replace the corporate income tax (e.g. Edward 2003). There are several forms of CFCT; for example Garnaut et al have recently (2018) advocated a cash flow corporate tax, and suggested that this could raise at least as much revenue as the current corporate income tax (CIT). The tax is of the R (real)-CFCT variety (also called a Brown tax). There is full expensing of investments but no deduction for interest etc., and no inclusion of interest income. This tax is not suitable for taxing financial corporations like banks. For these, Meade (1978) suggested using the R+F (real plus financial flows)-CFCT, which (inter alia) includes interest income and allows interest deductions. For a summary of inclusions and deductions under an R-CFCT and an R+F -CFCT, see Garnaut et al table 1 pp 16-17. Meade noted that the R+F CFCT (a

tax on *sources*) is identically equal to the S-CFCT, which is a tax on net flows to shareholders (*uses*). Sources and uses are equal; this is an accounting identity.

Garnaut et al propose taxing financial firms with the existing corporate tax regime but with immediate expensing of investment (Garnaut et al 2018 p17). They also wish to provide for tradability of losses where cash flows are negative, or else carry-forward of losses at the 10-year bond rate. The carry forward rate is an explicit policy variable in the Z Tax proposal.

On the face of it a tax on economic rents (which by definition excludes the 'normal' return) has a narrower base than a tax on income, which includes it. However the CFCT is also an implicit lump sum tax on 'old' capital and this may be the reason the Garnaut et al tax does not, in their modelling, have a net cost and indeed increases revenue².

An alternative which can tax both financial and other corporations is the S-base CFCT system, which in principle is very simple. Corporations are taxed on their net payments to shareholders. Meade (1978) did not recommend the S-CFCT, preferring the R+F-CFCT, but this was just a question of easing the transition as the 2 taxes are identical in effect and differ only in their method of calculation (Meade 1978 pp.235-245).

The S-CFCT base is net payments to shareholders. Dividends and capital distributions are taxable, new share issues and IPOs reduce the tax base. Meade says of the S-CFCT that it levies tax on *"the total of dividends paid to outside shareholders less the amount of new share capital raised from them. In other words the tax is based on the net amount of cash which the shareholders take out of the corporate business"* (1978 p.234).

It is not clear to me why there has not been more interest in this tax, but several reasons come to mind. A primary one is the issue of revenue, as the tax base is potentially less than under a corporate income tax. The government in effect becomes an equity partner in the enterprise and gains only to the extent that the return to equity exceeds the government's cost of funds. But (depending on the transition arrangements) there is also a stream of revenue attributable to the fact that the CFCT is a lump sum tax on 'old' equity capital. This is intuitively obvious, as the discounted

² See Garnaut et al 2018 table 2 p19-20

value of all future net cash flows to shareholders is in theory the equity value of a corporation. This tax on old capital means that a CFCT may in fact have a revenue yield at or even higher than the corporate income tax, assuming that tax credits for old capital are not given at the transition.

A second major issue is that application of the S-CFCT can be indefinitely delayed if corporations do not distribute profits. Shareholders can still raise cash by selling shares. However few corporations act in this manner (think Berkshire Hathaway in the US³) and if they do, the government gains an appreciating asset in terms of its present value of tax revenue. There is a real risk, however, that corporations will stash away cash on the expectation that at some point in the future a government would provide a tax holiday for undistributed cash, in order to address a budget shortfall on an ad hoc basis⁴. This is an objection to the S-CFCT which is shared with the R+F-CFCT. Under either tax base, tax can be deferred by not paying dividends⁵. However I will show that this can be overcome under the ZT proposal.

Another issue is that of the transition (which Meade addressed through his preference for the R+F-CFCT); another that of international tax treaties (which were not framed with cash flow taxes in mind) and a fourth the issue that, for neutrality, the S-CFCT requires that the tax office refunds corporations when net cash flows to shareholders are negative.

A final important issue is that the S-CFCT needs a clear distinction between debt and equity; this distinction is less clear than at the time of the Meade report. There are issues around, for example, hybrid capital, as Meade recognised.

The ZT proposal herein attempts to remedy some of these defects of the S-CFCT. There are three features of the ZTCT which make it different to a conventional S-CFCT. The first is that there are no cash payments to corporations when outward cash flows are negative. Instead, a ZT rebate is provided which is an offset against future positive tax liabilities. This rebate is up scaled each year according to an indexation

³ Berkshire, run by Warren Buffett, does not pay dividends. This is in part a response to 'double taxation' of some dividend income in the US.

⁴ This is the history of US government policy for cash reserves held by corporations in overseas jurisdictions.

⁵ Or pursuing buybacks. These are taxable under S-CFCT.

factor, such as the bond rate. This is not a new idea – Meade contemplated some such mechanism.

The second feature is that we deal with the scope for corporations to avoid tax by not paying out, and accumulating cash. So net cash accumulations become taxable as if they were paid out, but this tax generates an equal ZT rebate which offsets any tax which becomes payable if and when profits are eventually paid out.

The third feature, which can be applied to the S-CFCT as well as to the ZTCT, is that we include cash flows on loan account as well as on shareholder account. This last feature, which has also been suggested by Murphy (2017) in the context of a bank super-profit tax, is discussed below.

3 The modified S-CFCT (includes loan capital)

In particular my proposal is that the tax base should include total cash flows on loan as well as equity account. This is a relatively modest alteration to the basic S-CFCT (which is economically somewhat similar to an *Allowance for Corporate Equity* or ACE system) and makes it closer in concept to the *Allowance for Corporate Capital* or ACC. Under the ACC there is an allowance for both equity and loan capital, at the risk free rate (based on the book value), before income tax applies (as discussed for example in Ingles and Stewart 2018). In the cash flow version total inward cash flows such as borrowings would be rebateable and outward cash flows such as interest and loan repayments taxable. I call this the S+L-CFCT, where L signifies loans.

Inward (rebateable) cash flows include new share issues and net new borrowings; outward (taxable) cash flows include interest payments, dividends, capital distributions, loan repayments and share buybacks. There may need to be mechanisms to prevent double counting within the corporate sector along the lines discussed by Meade (1978 p.234)⁶. In theory the aggregate tax base is simply the net outflows of the corporate sector as a whole, as all flows within the corporate sector net out.

Net flows of dividends or interest (or capital) back to overseas parent corporations would be included in the tax base. This helps address profit shifting via inflated interest

⁶ 'Thus properly applied an S-based tax makes a levy on the net amount of money which the corporate sector as a whole pays out to shareholders in the unincorporated sector of the economy' Meade 1978 p234

payments, a notable issue in the current system which is partly addressed through 'thin capitalisation' rules. However it would not address profit shifting by way of IP or royalty payments, and some tax office oversight would be needed, as now, to keep these within reason. This is a downside of the S-CFCT's territorial basis as compared with a destination basis cash flow tax (DBCFT), as advocated for example by Auerbach et al 2017. Such a tax is based on domestic consumption. But the DBCFT can't easily tax financial corporations, and is not suited to taxing mining companies when they export most of their produce.

Conceptually the S+L-CFCT is a lump sum equivalent tax on the total enterprise value, as compared to the S-CFCT which is a lump sum equivalent tax on the equity value.

C Murphy has arrived at an identical formulation in his consideration of economic rent taxes for the financial services sector (Murphy 2017 p8-9). He calls this the

'cash flow (R+B) base = fee income + interest on loans – interest on deposits – labour costs – intermediate inputs – (capex + new loans – new deposits)' (1)

This equation applies to sources, and can be reformulated to apply to uses as under the S-CFCT. *'The literature emphasis the equivalence of taxing either sources of cash flow or uses of cash flow'* (Murphy 2017 p9). Hence

'Uses of cash flow (R+B base) = (interest on debt – new debt) + (dividends – new equity) + corporate taxes' (2)

The first bracketed term in (2) corresponds to my 'L' and the second to 'S'; hence the two proposals are identical. Murphy proves that the R+B base meets the neutrality requirement for a rent tax in his Appendix A (2017a p.43-50). While Murphy's proposed rent tax is meant as a financial sector super profit tax, the tax can be generalised such that the further step of applying the tax to all corporate sector economic rents, not just the financial sector, is not a large one. But since the tax is implicitly a lump sum tax on enterprise value (including loan-financed capital) the issue of the transition needs attention if heavily indebted corporations are not to be disadvantaged (or driven out of business). I address this below.

4 The Z-Tax version of the CFCT (called here ZTCT)

Under the ZT version I propose to alter the CFCT by avoiding tax refunds to corporations when cash flow is net inward⁷. When the corporation's net cash flow to shareholders is negative (e.g. an initial public offer), rather than the government making a payment proportional to the net flow (as required in a 'pure' S-CFCT), it provides a notional tax rebate which is uplifted annually. The rebate can then be used to offset later tax bills on payouts. The rebate escalation factor can be either of the inflation rate (ZT-indexed), the bond rate (ZT-ACC), or the normal return on assets (ZT-ET⁸).

This proposal is the corporate tax equivalent of the personal Z-tax in Ingles 2019.

Meade's (1978 p239) suggested that any losses under a CFCT could be carried forward at an uplift rate, and the ZT method simply formalizes this. But it does have the advantage that the uplift factor is available as a policy variable, and so is a more flexible approach than the basic CFCT. In particular the ZT uplift rate can be manipulated to achieve a revenue target.

This manipulation is at some cost to tax neutrality unless the uplift factor is close to the normal return expected from corporate investment (in which case the tax is merely a lump sum tax on old investments and a redistribution within the corporate sector). However this is an acceptable trade-off given the revenue needs of governments. Note that replacing a refund with a rebate *fundamentally changes the character* of the cash flow tax (which is why I prefer to call it a Z-tax). In particular if the uplift rate is limited to something like the inflation rate the tax is more like a (deferred) income tax than a pure profit tax⁹. If the uplift rate is the risk-free rate (e.g. the government bond rate) the ZT becomes the cash-flow counterpart of the ACE or the ACC.

The ZT-ACC tax has a higher revenue potential than the S-CFCT, as that part of the cost of loans which represents 'pure' profit (i.e., the paid interest rate less the risk free rate¹⁰) would be taxable at the level of the corporation. In my modelling (Appendix 1)

⁷ This also avoids needing to provide for tradability of losses.

⁸ Expenditure tax – i.e. no effective tax on normal returns. This is still a tax on old capital, and hence raises net revenue.

⁹ A reviewer has pointed to similarities with the Auerbach and Bradford 2004 'generalised cash flow tax' where the cash flow tax can be transformed into an income tax by increasing the tax rate over time.

¹⁰ This is not strictly a pure profit as returns above the risk free rate are necessary to induce most investments. It is partly in the nature of a quasi-rent.

I use a 30% tax rate for the S tax (ZT-ACE) and 25% rate for the S+L tax (ZT-ACC) as the latter has a broader base and this adjustment makes revenue more equal. In referring to the ZT-E (equity) and ZT-E+L (equity and loans), I will normally assume that the uplift rate is the bond rate. Naming conventions are as follows:

Table 1: Z-tax company tax options - combinations and permutations

ZTCT BASE	ZT UPLIFT RATE		
	Inflation e.g. CPI	Gov't bond rate – e.g. 10 year bond	Normal return (around 7-8%)
Equity (ZT-E)	ZT-ind (indexed) or ZT-income tax	ZT-ACE (allowance for corporate equity)	ZT-ET (expenditure tax)
Equity plus Loan (ZT-E+L)	ZT-ind or ZT-income tax	ZT-ACC (allowance for corporate capital)	ZT-ET

In summary:

- ZT-E ZT on equity (corporation tax)
- ZT E+L ZT on equity plus loans (corporation tax)
- ZT-ACE ZT-E with uplift equal to the bond rate
- ZT-ACC ZT-E+L with uplift equal to the bond rate

Note that if the loan interest rate is equal to the rate at which the ZT rebate is uplifted, there is no difference in revenue between the E and E+L versions of the ZT. But in general interest rates will exceed the uplift rate, so the E+L base is broader and the company tax rate might thus be lower. This might, however, be counteracted at the individual level as discussed later.

The ZT-ind (indexed) is the cash flow counterpart of the comprehensive business income tax – CBIT. This is a company income tax with interest not deductible, and interest and dividends not necessarily taxable in the hands of individuals: see Ingles and Stewart 2018. ZT-ind pre-taxes cash flow to shareholders and loan providers, but because of tax deferral is more generous than a CBIT (it lowers the marginal effective

tax rate – METR - on investment). An option, as with CBIT, is that there would be no further tax payments at the individual level (and no withholding taxes on overseas interest payments).

The ZT-E+L is the cash flow counterpart of the ACC but is more generous in that it allows tax-free compounding over time if profits are re-invested. This might be seen as a good feature as it reduces METRs on investment, particularly in the versions with a higher uplift rate. The ZT-E+L is nearly neutral in the same way that the ACC is nearly neutral, as the uplift rate may not fully reflect the cost of capital for all companies.

Note that the ZT-E+L could be applied as a rent tax for the resource sector and this would neatly sidestep some issues bedevilling resource taxation, especially those relating to the appropriate uplift rate. However because it is not fully neutral it cannot avoid dis-incentivising some marginal projects; this however I would argue is a feature of any resource tax having a positive revenue expectation.

The ZT proposal can be modified to prevent unlimited deferral of tax, which is serious obstacle to the S-CFCT if earnings are stashed away as cash holdings. To address this, net new cash accumulations would be added to the tax base. This needs to generate a commensurate ZT rebate; when the cash is eventually disbursed the rebate is paid out and double taxation is avoided. Hence the corporation is (almost) indifferent to building up cash or paying it out, with a slight bias towards the latter¹¹.

However tax can still be deferred by reinvestment of earnings; this is intrinsic in the nature of a cash flow tax. I don't see that this is necessarily a bad thing although it may impose some risk to revenue in periods when investment is strong. Such periods are likely to see strong CT revenue in any case.

5 The transition

The ZT, like the S-CFCT, is an implicit lump sum tax on the value of the corporation, albeit one paid over time. This gives rise to transitional issues; for example it may be necessary to give out ZT credits, at the inception of the system, equal in value to the tax rate times (say) the market capitalisation. If not done there would be a tax on 'old'

¹¹ The degree of indifference will depend on the ZT uplift rate chosen. This provision would need to be reciprocal; when cash balances decrease a cash rebate would be payable (or there would be an offset to net tax due) but the ZT balance would decline.

capital. However there is already a tax on old capital, in the CIT, and there is a reasonable case for simply swapping the one for the other. Certainly that is the approach of Garnaut et al (2018), who as noted earlier find no loss of revenue.

The S+L CFCT is a lump sum tax on enterprise value – i.e. inclusive of loan capital. To avoid hurting heavily indebted companies, the transitional adjustment required is that a ZT rebate would be allocated proportionate to net debt outstanding at the time the tax was introduced¹². This converts this ZT to a lump sum equivalent tax on equity.

Although lump sum taxes are efficient, they can give rise to political issues and issues of fairness at the time they are imposed – witness the history of the resource super profits tax which helped to destroy the Rudd Government.

However such difficulties are likely to be less potent when replacing existing taxes on old capital, like the company income tax (CIT). Also, if rebates were given there might be little initial net revenue from the tax. I note that the same issue arises with the various forms of CFCT¹³. Additional revenue is picked up by way of the gap between the corporations' aggregate investment yield and the uplift rate for the ZT.

6 Advantages of the ZT

The ZTCT has several advantages over the CFCT. A big one is that it doesn't require payments to firms when cash flows are negative. Another is that the transition can be more easily handled, as described above. To be fully risk-neutral the ZT credit might be refundable on winding up a corporation, or tradeable.

The ZT-E system shares the same downside as the S-CFCT, which (apart from reduced revenue) is the opportunity for corporations to disguise payments to shareholders as interest, using e.g. hybrid financing instruments. Meade (1978 p241) states that 'The present requirement that interest in excess of a commercial rate should be treated as a dividend distribution would have to be continued'.

This is addressed in the ZT-E+L by rebating financial as well as equity inflows and taxing financial as well as equity outflows. I model this in the Appendix and show that, in aggregate the E+L base, with a lesser tax rate, produces outcomes comparable in

¹² There would be valuation issues – e.g. for impaired loans.

¹³ If these taxes do not apply to old capital the gain to the revenue is equal to the difference between the government's cost of funds and the average return in the corporate sector, times the asset base and tax rate.

terms of revenue to the E-base (on the parameters modelled). Indeed, if we define rents as the total economic surplus produced by the corporation, the E+L base taxes these in strict proportion.

So we have four potential definitions of 'pure profits', and four different means of taxing these. The ACE falls on pure profits on equity on an accruing (year by year) basis. The ACC falls on pure profits on total investment, also on an accruing basis. The ZT-E falls on pure profits on equity on a realisation basis. And the ZT-E+L falls on pure profit on total investment also on a realisation basis. Note that the ZT-E, like the S-CFCT, is more generous than the ACE as it allows tax-free compounding of profits within the corporation until they are paid out.

I have defined pure profits as any returns in excess of the bond rate (5% in the modelling¹⁴) whereas in fact some such returns are quasi-rents: taxing them reduces the expected return from new investment, and may reduce that return below the hurdle rate in some cases. Hence none of these taxes are fully neutral, as 'pure profits' is an amorphous concept and in practice any tax with positive revenue expectancy (outside any lump sum nature of the tax) will impact some marginal investment decisions. As Reynolds and Neubig 2016 point out, there is no clear definition of a 'normal' return above which rents can be taxed. So the choice of which 'pure profit' to tax is essentially arbitrary and can be made with other factors such as revenue in mind. I will call the base of the ZT-E, PP1 (pure profit 1) and of the ZT-E+L, PP2 (pure profit 2).

7 Integration with the personal tax system

On the face of it the ZTCT system doesn't easily mesh with the income tax at the personal level, as the deferral of tax makes it more akin to an expenditure tax and this is especially so over long periods. In general CFCTs of any type sit uneasily with the personal income tax because the normal return is taxed at the personal level but not at the corporate level, thereby creating opportunities to avoid the personal income tax by investing in corporations and/or re-investing profits.

If imputation is retained for individuals, the personal income tax can be made compatible with a corporate cash flow tax, as imputation converts the tax system for domestic corporate investment back towards an income system. CT becomes, in the

¹⁴ This now seems high, but may revert to a more normal level over time.

main, a withholding tax and (at least for domestic shareholders) the economic characteristics of the system are defined by the personal income tax. If imputation is not retained then the avoidance issue persists.

The ZTCT is most compatible with a Z-tax or cash flow tax at the individual level. The personal ZT is a hybrid income-expenditure tax, but leaning towards the latter the longer an investment is held.

There is limited need for imputation as both taxes fall on 'rents' and we perhaps could allow double taxation. For example with a 30% corporate and individual ZT rate, the net tax on rents is 51%. But recall that the definition of rents is somewhat arbitrary and such high effective tax rates may not be desirable.

The ZTCT idea to some extent pre-supposes a personal tax system using similar cash flow principles. But if you had such a system, why would you need a corporate tax at all? (Ingles 2017). The individual consumption tax or Z-tax fully taxes domestic corporate-source income when it is eventually consumed (or realised as capital gains), and tax deferral is not an issue with the Z-tax as it is an integral part of the tax design. The case for the corporate tax in this circumstance becomes one that there is some opportunity to double tax corporate sourced rents (if there is no imputation) and that it taxes rents accruing to foreign capital.

'Double taxation' could be reduced by applying a discount to personal dividend and interest income emanating from corporations. Alternatively such income could be exempt at the individual level, which converts the individual tax system into a flat rate tax on 'rents'.¹⁵ On balance I prefer an imputation system combined with a ZT at the individual level, as being consistent with progressive taxation of 'rents'.

It must be conceded that if you retain a notional corporate tax for the purpose of taxing foreign investment, the base erosion and profit shifting (BEPS) arguments seem to point to it being an income tax or CBIT as the base is larger and the necessary tax rate lower. Another option is a destination based CFCT (DBCFT) which can take the form of a VAT with a rebate for wages (Devereux and Vella 2014, Auerbach et al

¹⁵ Yields in excess of the risk free rate are really quasi-rents, as they may be necessary in order to induce the investment or in the case of borrowings, the loan. Hence the attraction of double taxing such yields is not as great as it might at first appear.

2017). However this tax has problems in taxing financial corporations. The ZTCT is necessarily a territorial or source based tax.

There is a fundamental tension between the economic efficiency case for taxing rents and the BEPS arguments for widening the tax base and reducing the rate. It is the headline tax rate which influences profit shifting (Murphy 2018). However the Murphy model nonetheless indicates an economic case for a corporate tax on 'rents'.

8 Differences in revenue

We can note the differences in revenue under the various forms of CFCT. All these taxes act as lump sum taxes on 'old' corporate equity. In addition:

1. S-CFCT earns the difference between the government's cost of capital and normal return to corporate investment applied to the **governments' share of equity** as measured by the tax rate
2. ZT-E is the same as above, but the tax base is increased to the **whole of the equity**
3. ZT E+L is the same but applied to the **whole of the enterprise value**.

So the taxes raise more revenue in ascending order. However 2 and 3 raise greater issues of personal tax integration than 1, as 2 may require a discount on personal dividend income and 3 a discount on dividends plus interest.

9 CONCLUSION ON TAXING COMPANIES

The main conclusion I draw from the modelling in the Appendix is that the ZT-E+L, applying an uplift rate equal to the bond rate, is a viable system which taxes a uniform percentage of pure profits. This stability does not apply to ETRs on total profits (income) as conventionally measured, but this is not the aim of the cash flow tax system.

In Ingles and Stewart (2018) we contrasted company tax base broadening options of the CBIT type with base narrowing options such as the CFCT/ACC, with a preference for the former. However Murphy's 2018 modelling suggests that the latter is economically superior even taking into account the heightened potential for profit shifting as the cash-flow tax options have a marked impact reducing the marginal effective tax rate on new investments and this may be as important for the total excess burden of the tax as the headline tax rate. The ZT-E+L also involves lesser base

narrowing than the CFCT, especially at lower rates of rebate uplift (albeit that higher revenue comes with some cost to investment neutrality).

The opportunity to pay out profits using artificially high interest to bondholders is a drawback to ZT-E and S-CFCT, especially for closely-held private companies, and this is overcome under ZT-E+L and S+L-CFCT. I conclude that:

1. The S-CFCT deserves more attention, but needs further modification
2. The S+L variant of this is viable (or, on the sources side, the R+B base suggested by Murphy (2017a)), and would improve the tax
3. The ZT variant on S+L CFCT has a number of apparent advantages which appear to overcome some of the issues inherent in the CFCT itself.

10 Appendix 1 Modelling the ZT corporate tax

10.1 Option 1: equity base - ZT-E

Assume \$200 invested, being \$100 equity and \$100 debt. The tax rate (tax inclusive)¹⁶ is 30%. The assumed interest rate is 7.5 per cent. The asset (say, an office block) appreciates at 5% and delivers a 5% net income stream. Assume no inflation (this is unimportant as all the ZT uplift options implicitly allow for inflation). After 1 year the asset is sold (\$210), the loan paid out, and the total proceeds (\$220, less loan repayments of \$107.50 = \$112.50 less tax) paid to shareholders. The bond rate is 5% and this is the Z-tax uplift factor (ZT-ACE).

The \$100 investment creates a ZT rebate of \$30. After 1 year this escalates to \$31.50. CT of 30% is levied on the payment to shareholders of \$112.50, this being \$33.75. The ZT rebate is deducted from this, leaving \$3.75 tax liability to the corporation and an effective tax rate on pure profit = 30%. The ETR on pure profits (PP1) is independent of the period the investment is compounded, the ROR, and the interest rate. This is mechanically true as PP1 defines the tax base.

10.2 Option 2 (Equity plus loans): ZT on net flows to shareholders and bondholders

I call this the ZT-E+L or ZT-ACC. Both loan and equity cash flows are now included in the tax base. If the ZT on total cash flows sought to replicate the effective tax burden of the ZT on flows only to shareholders, the headline tax rate would need to be lower¹⁷. In the Figures below I use a 25% rate by way of illustration.

The effective rate of tax on PP1 under ZT-E+L is not a flat rate. However the variations are relatively modest over the parameter changes I model. If however we define 'rents' as the excess of the **total** return enjoyed by the corporation over the risk free rate (PP2), the ZT-E+L taxes this at a strictly proportional rate. So the difference between the two taxes is merely one of how we define 'pure profits'.

In some extent, both definitions are a bit arbitrary. The wider definition including loans (PP2) in fact pre-taxes some part of interest income for individuals (similar to the ACC or the CBIT) and may therefore require some discounting of this income when we tax

¹⁶ I use tax inclusive rates for easy comparison with a CIT. Meade 1978 p234 discusses tax inclusive/exclusive rates for the S-CFCT.

¹⁷ This assumes that interest costs are normally higher than the risk-free rate. There have been recent instances where companies have sourced funds from overseas there this has not been the case.

individuals (as suggested for example by the Henry Report – Treasury 2010a,b,c). This gets back to issues of CT – PIT tax integration discussed earlier.

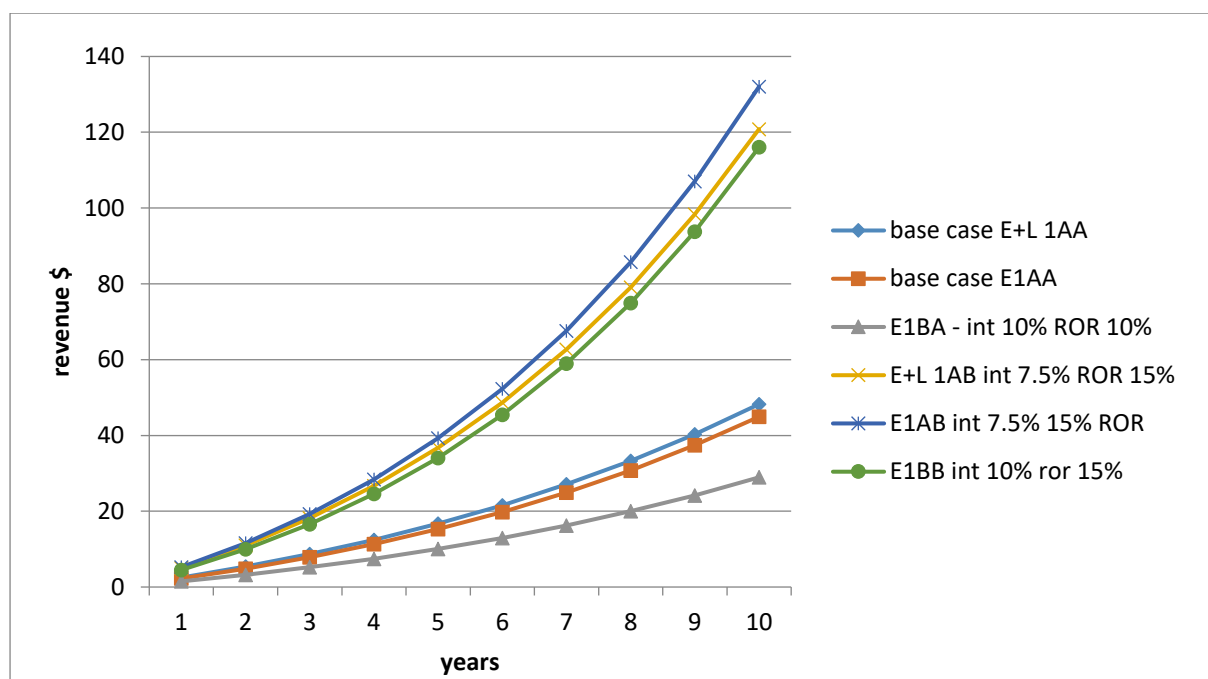
10.3 Results

The assumptions are as for the example above. The aim of the modelling is to show that, over a range of assumptions about rates of return, interest rates and gearing ratios, the ZT-E and the ZT-E+L yield quite similar revenue results, with the headline tax rate 5 points lower for the latter. This highlights the attractiveness of this tax.

The modelling shows tax revenues over time periods of investment from 1 to 10 years. In all cases there is a single investment event and realisation, and tax, is deferred for the relevant period. Tax rates against pure profit (PP) are not shown as they are fixed mechanically and only depend on the definition of pure profit, whether that be PP1 or PP2.

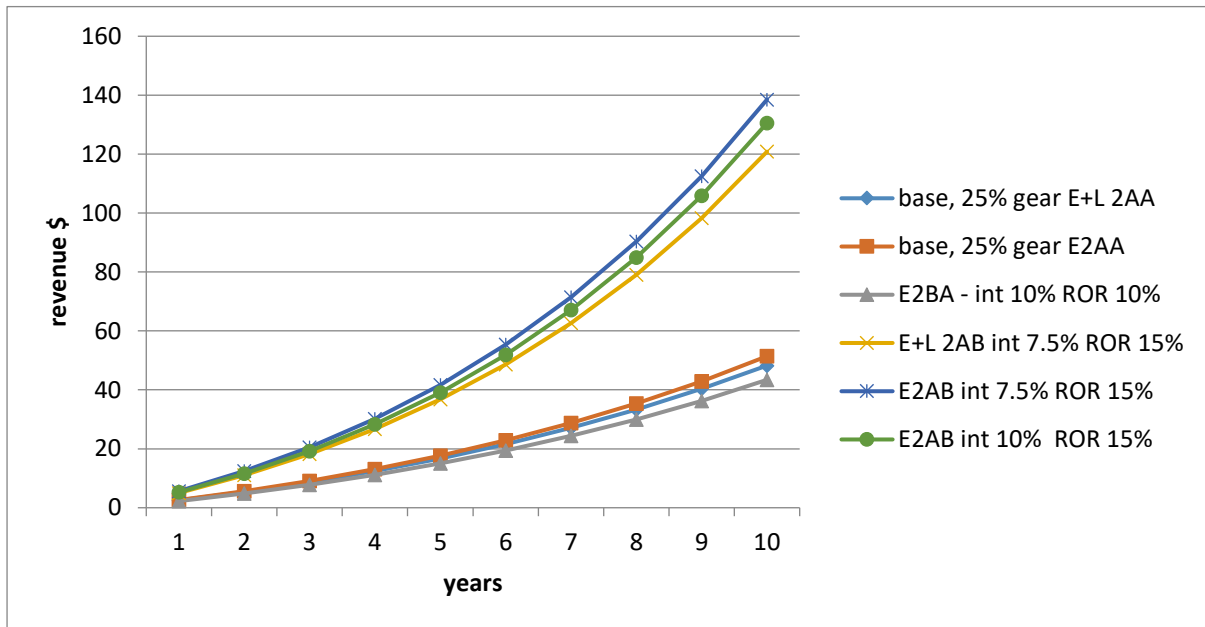
The variables considered are the gearing rate (25 and 50%), interest rate (7.5% and 10%), and rate of return (ROR, 10% and 15%). The 'base' case (1AA) is 50% gearing, 7.5% interest and 10% ROR. The bond rate (and uplift rate) is assumed to be 5%. It turns out (as seems obvious in hindsight) that tax revenue under E+L is independent of the gearing ratio and the interest rate, so I have omitted these results from the graphs. ZT-E is E in the legend; ZT-E+L is E+L in the legend.

Figure 1 - ZT Tax Revenue after 1-10 years of investment – gearing 50 per cent



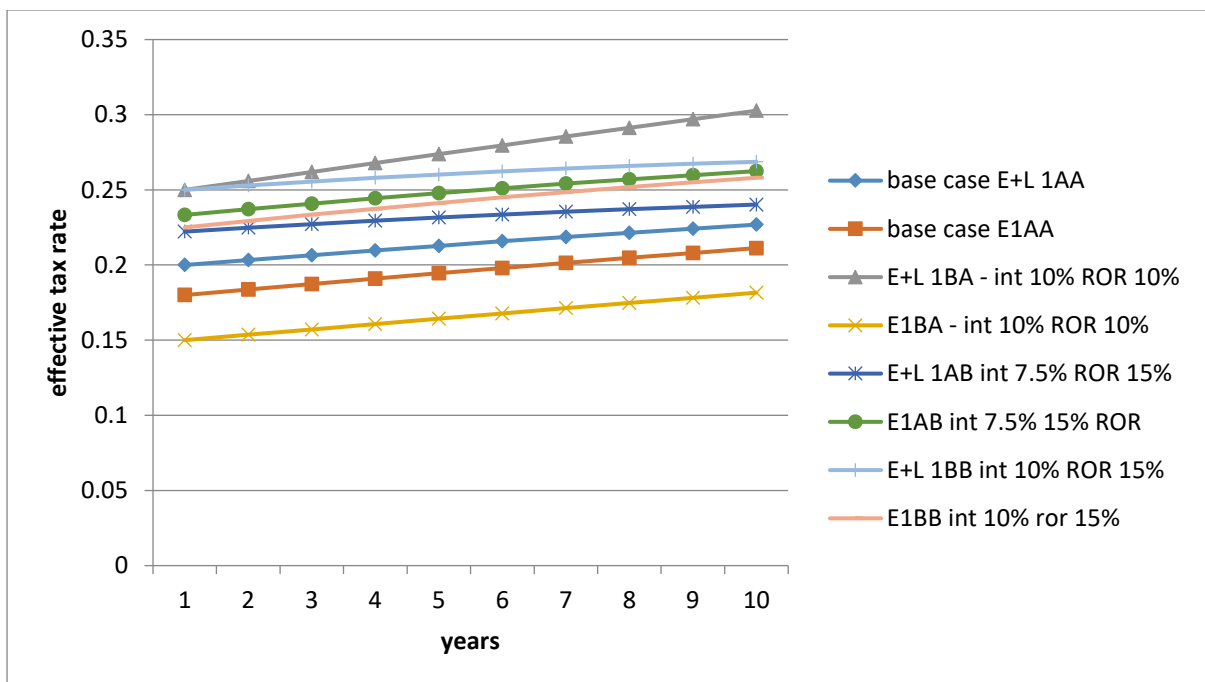
The big difference in revenue is between the 10% and the 15% ROR assumption. Otherwise, ZT-E and E+L are quite similar in terms of revenue except in the high (10%) interest case with the lower ROR (ZT-E is markedly lower).

Figure 2 – Tax Revenue after 1-10 years of investment; gearing 25 per cent



In general, at lower levels of gearing the difference between E and E+L decreases, as we expect. The big difference is again the ROR assumption.

Figure 3: tax rates (years 1-10) as a percentage of net income (50% gearing)



These tax rates are not strictly comparable with company income tax but with a deferred tax such as a capital gains tax. However they do suggest that the E+L tax might raise nearly as much as the CIT. The total revenue potential might be even more, as there is some opportunity to reduce or remove imputation at the personal level (discussed earlier).

I did some modelling on PP 2 as a percentage of PP1 (which is relatively stable but less so if the interest rate is high), but I realised that the choice between these tax bases is really an arbitrary one and there is no theoretical reason to prefer one over the other. The practical arguments point strongly towards a preference for taxing PP2 using the E+L base.

GLOSSARY OF TERMS

ACC	Allowance for corporate capital, loan as well as equity. As with the CFCT it taxes economic rents.
ACE	Allowance for Corporate Equity. This is the corporate analogy of the RRA, and works in the same way by allowing corporations to earn the risk-free rate of return on equity tax free. As with the CFCT it taxes economic rents.
CFCT	Cash flow corporation tax; taxes economic rents. The R-CFCT taxes real investment; the R+F CFCT can also tax financial corporations
CIT	Comprehensive Income Tax, also known as the Haig-Simons income tax
ET	Expenditure Tax, which I use as a generic name for that class of taxes which tax capital income more lightly than the CIT. These include CTs and wage taxes.
EET	This means Exempt contributions, Exempt earnings and Tax withdrawals. This is equivalent to CF-CT treatment
Pre-paid ET	This levies tax up-front by taxing wages only. It is equivalent to TEE.
Post-paid ET	This levies tax when income is consumed, and is equivalent to EET
PIT	Personal income tax
RRA	Rate of Return Allowance. This is a method to modify the income tax so as to exempt the risk-free rate of return, which can be proxied by the government bond rate.
TEE	Tax contributions, Exempt earnings and Exempt withdrawals. This is equivalent to a wage tax or pre-paid consumption tax.
VAT	This is form of consumption tax which is normally levied indirectly (i.e. on firms) but can be made into a direct tax on individuals using

a system such as Hall-Rabushka's (1983) or the Bradford (1986) X-tax.

X-tax	This is a form of VAT where wages are deducted from the tax base for firms and taxed progressively at the individual level.
Z-tax or ZT	This is Ingles' 2019 proposal for a cash flow version of the RRA
ZTCT	This is the company tax version of the ZT
ZT-E	ZT on equity (corporation tax)
ZT E+L	ZT on equity plus loans (corporation tax)
ZT-ACE	ZT-E with uplift equal to the bond rate
ZT-ACC	ZT-E+L with uplift equal to the bond rate

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