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The Design of Capital Income Taxation:
Reflections on the Mirrlees Review

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Abstract

This commentary reflects on the recommendations of the Mirrlees Review on tax reform with a special focus on capital income taxation. Regarding the alternatives of moving to a consumption based tax system, the commentary discusses the relative merits of choosing an ACE system (allowance for corporate equity) rather than a cash-flow tax on the company level. It reviews the arguments in favour of full elimination of tax on the normal return to savings at the personal level which contrasts with alternative tax reform proposals recommending a positive but low and flat tax rate on personal capital income. It also discusses how existing computational models would have to be extended for a meaningful quantification of the gains and costs of implementing a tax reform along the lines of the Mirrlees Review.

1. Introduction

Reviewing a fundamental tax reform proposal such as *'Tax by Design'* of the Mirrlees Review (see Mirrlees, 2011, and the background studies with comments in Mirrless, 2010) is a daunting task. Economists usually ask how a specific tax reform scores with respect to the following criteria: simplicity, fairness and efficiency. *Simplicity* requires that the tax code is transparent, easy to understand, simple to administer by tax authorities, and involves low compliance costs of the private sector. Simplicity hinges more on the rules that define the tax base, rather than the rate structure. With few exceptions to general rules, *Tax By Design* is probably a significant step towards simplicity. Quantitative studies usually fail to capture the economic gains and costs of simplicity. So it remains difficult to evaluate the relative importance of simplicity in an overall evaluation of tax reform. *Fairness* relates to how taxes and other forms of government intervention change the income and wealth distribution. The desired degree of redistribution reflects value judgements. However, it is widely agreed that the relative ranking of households should not be turned around by the tax transfer mechanism. The abrupt phasing out of social benefits and the uncoordinated nature of the social insurance system and the income tax schedule can and often do lead to unintended and unfair changes in relative income positions that grossly violate redistributive objectives. *Tax By Design* follows an integrated and systemic approach in designing the tax transfer mechanism by considering the redistributive effects of the system as a whole, including the induced changes in pre-tax income resulting from the behavioural response of households and firms. It should thus lead to significant improvements with respect to fairness. Finally, *efficiency* requires that raising tax revenue needed to finance government activity should not introduce new avoidable distortions that impose costs on the private sector larger than the volume of tax revenue extracted. Usually, efficiency calls for a low excess burden, with some modification in the presence of externalities. Efficiency considerations have been, of course, a major driver in the design of this radical tax reform proposal.

The 'optimality' of a tax system is not compatible with a one-size-fits-all approach. Countries differ by the degree of openness, the sector composition as well as skill and R&D intensity of production, the quality of financial and legal institutions, the reliance of production on entrepreneurship, the riskiness of employment relationships, the age structure of the population, and other aspects. These characteristics not only determine the degree of inequality in the pre-tax distribution of income and wealth, but also make some behavioural adjustment mechanisms more important than others. One might expect that the equity efficiency trade-off in designing the tax transfer system differs across countries. Furthermore, the historical evolution of real world tax systems is probably shaped more by political economy forces rather than an optimal policy approach. Given different political institutions, countries have ended up with rather different tax

systems and, hence, differ significantly with respect to 'initial conditions' for policy reform.[1] Depending on initial conditions and country characteristics, the *Tax By Design* proposal might be (economically) more suitable and (politically) more feasible for some countries than for others.

Given its comprehensive nature and the radical departures from existing tax practice, implementing such a proposal is surely a formidable and maybe even too challenging political project. The *net* gains from reform should be substantial, should materialize rather sooner than later, and should be expected with reasonable certainty if there is any chance to overcome unavoidable political obstacles. Given the short-sightedness of the political process, a particular problem is that adjustment costs tend to emerge instantaneously while efficiency gains fully materialize only in the long-run after a prolonged transitional period of behavioural adjustment. This is most evident in the realm of capital income taxation. The required time period for accumulation of physical and human capital and of private asset wealth is measured more in decades rather than years. So it requires sophisticated transitional policies to shift forward in time the long-run gains to achieve a more balanced inter-generational distribution of gains and losses. Moving from a historically developed status quo towards a preferred new tax system unavoidably produces gainers and losers also in an intra-generational perspective. Greater fairness of a new tax system obviously means that a number of groups have benefited from unjustified tax privileges in the past and will find themselves to be losers compared to the status quo. While this is unavoidable, it also creates a political challenge in implementing reform. An attractive 'de novo' design of a tax system might not be as attractive anymore if the difficulties of moving from initial conditions to the new system and the need for compensating potential losers is appropriately taken account of (Feldstein, 1976).

In the following, I discuss and comment more specifically on the recommendations of *Tax By Design*. Given the comprehensive nature of the Mirrlees Review, this essay focuses primarily on capital income taxation and discusses other parts of the reform only in a rudimentary way. Section 2 discusses the design of capital income taxation at the personal and business level and the system's long-run neutrality properties. Section 3 then turns to possible quantification and argues how existing computational problems would have to be enriched for a meaningful evaluation of the distributional and efficiency gains of the reform. It also discusses the potential transitional problems encountered when implementing such a system. Section 4 concludes.

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[1] Even so close countries like Germany and Switzerland differ substantially in their tax and social security system.

2. Capital Income Tax Reform

The key elements of *Tax By Design* relating to capital income taxation are (see Mirrlees et al., 2011, Table 20.2 for a concise overview):

(i) The normal return to savings and investment is exempt from tax; A stepwise progressive income tax applies to above normal returns such as economic rents. Firms are allowed to deduct not only interest on debt but also a normal, risk-free return on equity (allowance for corporate equity, ACE). Households can deduct a normal return on all forms of savings (rate of return allowance, RRA).

(ii) Personal capital income taxation is complemented by a comprehensive life-time wealth transfer tax levied on the recipient, including inheritances, and inter-vivos gifts and wealth transfers.

(iii) A separate, source based corporate income tax is levied in addition to residence based personal taxation of interest, dividends and capital gains; The corporate tax rate is left unchanged.

(iv) Tax rates are realigned to avoid tax arbitrage. In each income tax bracket, reduced rates apply to dividends and capital gains earned on corporate shareholdings, reflecting corporate tax already paid. At the margin, the same cumulative tax applies to different forms of income such as wages, earnings of self-employed and sole proprietorships, and corporate income.

Tax By Design thus reflects several key decisions. The first is to move to a largely consumption based tax system that eliminates tax distortions against savings and investment by avoiding the over-proportionate taxation of deferred consumption. This is probably the most powerful pro growth feature of the reform proposal. Second, the corporate tax should not be abolished, and its rate should not be changed. Its key justification is to serve as a backstop to personal income taxation and to tax location specific economic rents at source. With purely residence based personal capital income taxation, for example, it would not be possible to tax the local earnings of foreign owned companies. Third, the presence of a corporate tax then dictates adjustments of personal taxation of dividends and capital gains to prevent tax arbitrage and to ensure that different forms of income are subject to the same overall tax burden.

(i) Personal Capital Income Taxation

In my view, the most radical aspect of *Tax by Design* is the zero tax on a normal risk-free return to personal capital income. For this reason, interest on bank deposits and building society accounts are left untaxed altogether, probably yet another element towards a simpler tax code. The return on risky equity or on business bonds is higher and exceeds the normal return by a risk-premium. The

normal return remains tax free on account of a rate of return allowance, RRA for short (see Sorensen, 2005, for an analysis).[2] Given complete loss offset and carry forward of unused allowances with interest, as is proposed in *Tax By Design*, the tax on this *excess return* is not harmful with respect to savings, risk-taking and portfolio composition. It also avoids the lock-in effect associated with current practice of capital gains taxation based on the realization principle, and it avoids the distortive effect of taxing nominal interest reflecting inflation rather than a real return. These must be considered important advantages. The administrative difficulties of running the RRA system are probably comparable to the administration and compliance costs of current practice of capital gains taxation.

Leaving the normal return on savings untaxed, *Tax By Design* is considerably more radical than other reform proposals. Zero taxation of personal capital income is not undisputed in the academic literature. While classical results support zero taxation, there are recent theoretical arguments recommending a positive capital income tax, see Auerbach (2008). While the chapter by Banks and Diamond (2010) in the background studies emphasized all in all the need for a positive tax rate, Robert Hall's discussion of this chapter forcefully argued for a zero rate. The Mirrlees committee discussed existing arguments for positive capital income taxation but interpreted them as not being strong and robust enough to justify a deviation from zero taxation. Maybe in light of theoretical arguments in favour of a positive rate, or because of the expected, substantial loss in tax revenue from not taxing the normal return on financial wealth in a rich economy, or because of the potentially negative distributional effects of eliminating interest taxation, other prominent reform proposals such as the U.S. President's Advisory Panel of Federal Tax Reform (2006), for example, opted for a positive tax rate. The Growth and Investment Tax proposal of the President's Panel suggested a cash-flow tax at the firm level with an add-on personal capital income tax, applied at a flat rate on dividends, capital gains and interest.

Our own tax reform proposal for Switzerland (see Keuschnigg and Dietz, 2007) combines an ACE tax (allowance for corporate equity) on the firm level with a flat tax rate on personal capital income together with progressive wage taxation. It is thus a growth oriented version of a dual income tax. With much the same effect as in *Tax By Design*, tax rates are realigned in ways that should prevent tax arbitrage and reclassification of labour into capital income. Suppose the top rate of the progressive wage tax is t_L, while the proportional rates on corporate profits and personal capital income are t_I and t_S. Rates are set to satisfy the restriction

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[2] Suppose the normal return were 3% in nominal terms and a person owns an asset worth 100 Euros. If she received interest or dividends of 5%, she would a 3% RRA and add only 2 Euros to her taxable income. If the asset generated zero dividends, she would deduct a loss of 3 Euros due to RRA, to be offset with other taxable income or, if unused, carried forward with interest.

$(1−t_I)(1−t_S)=(1−t_L)$. An entrepreneur's personal contribution to the firm's earnings adds to profits and shows up as a supernormal return on capital. Since it results from the entrepreneur's personal effort rather than capital, it does not qualify for an ACE deduction. If the entrepreneur declares profit income, the earnings from her labour input get double taxed, first at the company level at a rate t_I and then at the personal level at a rate t_S. When an entrepreneur in the top tax bracket claims a managerial wage that reduces one by one her reported profit, she is subject to the top rate t_L, leaving net earnings $1−t_L$. By definition, the cumulative tax burden is the same. If the entrepreneur's income falls into a lower tax bracket, she can always obtain the firm's income in terms of a wage and thereby avoid a too high tax burden on profits. This eliminates the incentives for tax arbitrage by misclassification of owners' wages as capital income and vice versa.

The dual income tax proposed for Switzerland includes an explicit decision to tax capital income on the personal level at a low, but positive proportional rate. This is rationalized mainly with distributional arguments.[3] In reality, savings, financial wealth and capital income taxes are very much concentrated in the richer part of the population. A substantial part of low income people basically have no savings at all, beyond the claims accumulated within the old age social security scheme. Low income groups would not be able to benefit from eliminating intertemporal distortions, the welfare gains would concentrate in the upper income groups. This makes a life-time transfer tax including systematic taxation of bequests all the more important which is, indeed, a central pillar of the *Tax By Design* proposal. However, there is a widespread and increasing unpopularity of bequest taxes (see Kay's comment on Banks and Diamond, 2010, p. 658). One should add that bequest taxation usually allows for large exemptions and substantially reduced and even zero rates for close family members. Finally, like all proposals for moving to a consumption based tax system, *Tax By Design* is expected to substantially stimulate capital accumulation and growth (to be discussed below). Since there is quite some evidence for capital skill complementarity in production, one might expect that this will magnify income inequality by inducing a spread in the wage distribution which again favours the higher earnings groups where financial wealth is concentrated. For these reasons, our own proposal favours a moderate, flat, add on personal capital income tax.

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[3] However, Hubbard (2005) denies that a consumption based tax is more regressive than income tax. Low income people mainly hold assets with a normal return which is not taxed under a consumption based system. High income groups mainly save in assets with above average returns including a premium on risk-bearing and entrepreneurship. This 'excess return' would be taxed both by a conventional income tax and a consumption based system.

(ii) Corporate Income Taxation

There seems more unanimity that the normal return on investment, as opposed to savings, should remain tax free although there are rivalling concepts of achieving this. The main alternatives are cash-flow and ACE taxes. Cash-flow taxes were early on advertised by the Meade committee (Meade, 1978) and allow for a full upfront deduction of investment expenses in place of normal tax depreciation but deny any deduction of financing costs, neither interest on business debt nor an opportunity cost of equity.[4] An ACE system was early on analyzed by Boadway and Bruce (1984) and introduced in the political debate by the Institute for Fiscal Studies (1990). An ACE tax denies any upfront investment deduction and, instead, allows deduction of interest on debt as well as a normal return on equity, together with normal tax depreciation of capital. Hence, there are several alternatives for a system that is largely neutral with respect to intensive investment and capital structure choice. All exempt from tax the normal return to capital and effectively tax only rents and other 'excess' returns.

The Mirrlees committee opted for an ACE system while the U.S. President's Panel instead opted for a cash-flow tax. These different choices are somewhat surprising since the academic literature has shown that ACE and cash-flow tax systems are equivalent on a basic level (see Bond and Devereux, 1995 and 2003). This equivalence requires that both tax systems raise the same present value of tax revenue and, for this to be possible, the ACE tax must be applied with a higher tax rate since the tax base is smaller.[5] If investment could only respond on the intensive margin, a higher rate would not be damaging since the effective marginal tax rate is zero with an ACE tax, independent of the statutory tax rate, leading to the equivalence of these alternative two approaches in the classical case where no other investment margins are relevant. However, if the statutory tax rate cannot be changed for other reasons, as is argued in *Tax By Design*, an ACE tax tends to give up more tax revenue than a cash-flow system. Consequently, more of the required tax revenue must be raised with other distorting taxes. Presumably, raising other taxes might become easier when they are reformed as in *Tax By Design*. For example, in eliminating exemptions and zero rating, the VAT should become much

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[4] This holds true for the R-base tax. Another variant is the S-base cash-flow tax which differs in the treatment of debt. Interest on debt remains deductible but new debt is added and repayment of existing debt is subtracted from the tax base.

[5] Ignoring other details, investment spending in a stationary equilibrium would be $I=(g+d)K$ where K is the capital stock, g the growth rate and d the depreciation rate. Using a risk-free interest i, the deduction under an ACE tax would be $(i+d)K$. Since $i>g$ in a dynamically efficient economy, the ACE tax base tends to be smaller. This insight is replicated in simulation exercises with a detailed model that fully takes account of the entire transition, see Keuschnigg and Keuschnigg (2011).

more of a pure consumption tax and should be much less distorting, implying that government, for efficiency reasons, should use this tax source to a larger extent.

Before discussing the specific choices of *Tax By Design* in taxing the returns to investment, it is useful to shortly review the key behavioural margins of aggregate, national investment and the tax measures that relate to it (see Sorensen, 2004). The first margin is *intensive* investment relating to the marginal variation of investment choices and the size of firms. Intensive investment is driven by the user cost of capital which is pushed up by a high EMTR (effective marginal tax rate). An ACE tax implies a zero EMTR and, thus, has no impact on the user cost and on intensive investment which establishes the 'investment neutrality' of the concept. The second margin is *extensive* investment, referring to the location decisions of internationally mobile firms and to entry and exit of new entrepreneurial firms. These discrete investment choices determine the number of firms in an economy and are driven by the total tax burden per firm, as measured by the EATR (effective average tax rate). Since an ACE system taxes economic rents, it cannot reduce the EATR to zero and possibly continues to distort on the extensive margin, depending on how the alternatives of these discrete investments are taxed. Empirically, the extensive margin of investment seems to be more tax sensitive than investment driven by the usual user cost channel (see De Mooij and Ederveen, 2008, for a review). Noting also the rising importance of multinational investment, it has become much more important in an open economy to have a low average tax burden. Finally, firms adjust on other margins such as financing patterns, profit shifting and other channels. Incentives for profit shifting depend on the difference in statutory national tax rates. Profit shifting by transfer pricing manipulations and the use of internal debt is increasingly undermining the tax base in high tax countries and eroding tax revenue. For example, the estimates of Bartelsman and Beetsma (2003) imply that roughly 60% of the additional tax revenue generated by a unilateral increase in the corporate tax rate is lost again as a result of international profit shifting. The increasing dominance of multinational firms thus implies that national governments must keep the statutory corporate tax rate low in order to remain attractive as a location of multinational investment and protect the tax base against profit shifting. Devereux, Griffith and Klemm (2002) argue that these forces explain the downward trend in corporate tax rates as a result of international tax competition.

In light of this evidence, a higher tax rate may not be possible due to profit shifting by multinationals. It thus seems quite evident that an increase in the corporate tax rate was not an option in *Tax By Design* in order to compensate for the short-fall in tax revenue upon exempting the normal return on investment. Comparing ACE and cash-flow taxes with the *same* tax rate implies that the ACE tax gives up more tax revenue, to be financed by other presumably less damaging taxes such as a (reformed) VAT. However, giving up more tax revenue by accepting a smaller tax base also means that the EATR which is driving location

decisions of firms, will be lower under an ACE tax. Compared to a cash-flow tax with the same statutory rate, the ACE tax should thus be more successful in attracting inbound FDI and containing outbound FDI which makes a country more competitive with respect to location decisions of firms.

One could now summarize the anticipated *long-run* effects of introducing an ACE tax system combined with a RRA at the personal level as follows. First, exempting from tax the normal return to saving should strongly stimulate the volume of saving and remove distortions to portfolio composition. Second, the EMTR on investment, both at the personal and firm level, is reduced to zero. Depending on the size of initial tax distortions, this element should encourage capital accumulation and be a strong impetus to growth. Third, in symmetrically treating debt and equity at the personal and firm level, the new tax system would do away with a substantial tax bias for debt finance and would, thus, make firms financially more robust.[6] Although there is quite some evidence on the tax sensitivity of debt equity choice (e.g. Gordon and Lee, 2001, Egger et al., 2010, comparing national firms with foreign owned subsidiaries, and others), less is known about the size of the cost imposed by the debt equity distortion and, therefore, about the size of the efficiency gain resulting from establishing debt neutrality.[7] One might think that the efficiency cost of tax induced, overly high financial leverage of firms could be quite large, making these firms financially vulnerable to adverse shocks and send them into bankruptcy in times of economic crises. Fourth, introducing an ACE tax with an unchanged tax rate should substantially reduce the EATR and strengthen a country's attractiveness as a location of multinational investment. If applied with the same statutory tax rate as an alternative cash-flow tax, the ACE system should provide a larger stimulus to the *extensive* margin of investment and should thus be more attractive to a small and open economy than a cash-flow tax. Fifth, in keeping the statutory corporate rate constant, *Tax By Design* will not change any incentives for profit shifting in the presence of international tax rate differences.

An advantage of the ACE system is that it probably favours innovative growth companies relative to standard firms and could lead to larger aggregate investment and welfare than an equal yield cash-flow tax.[8] These firms have large investment

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[6] Both ACE and cash-flow taxes are largely neutral with respect to investment on the intensive margin and capital structure choice of firms.

[7] This is due to a lack of structural, micro-founded modelling of firms' financing choices in a way that could be included in a quantitative model, in place of the black box formulations of 'agency costs of debt' that are widely adopted in public finance.

[8] For more detailed analysis, see Keuschnigg and Ribi (2011) who compare ACE and cash-flow tax systems in an entrepreneurial economy with moral hazard and incentive problems. The advising and monitoring functions of active intermediaries, as discussed here, are analyzed in Tirole (2006, chapter 9), for example.

opportunities but are frequently finance constrained. A cash-flow tax provides tax relief upfront at the date of investment, i.e., investment costs are immediately expensed which reduces the need for external funds. In contrast, an ACE system allows interest deductions at a later stage when the returns to investment accrue. Although they need a larger credit when there is no investment subsidy, the lower tax liability strengthens the capacity to repay external funds. Under normal conditions, both taxes would still be equivalent even in the presence of financing constraints. However, young innovative firms must often rely on more active and more expensive sources of external financing, in addition to standard bank credit. In such cases, the success of investment not only depends on effort of cash-constrained entrepreneurs but also on the value increasing support of active intermediaries such as venture capitalists, relationship banks etc. In these circumstances, entrepreneurs and active financiers must share the firm's profit and therefore only appropriate part of the return on their own effort while each party must bear all costs of effort, leading to underinvestment of effort and physical capital. Efficient financial contracting is often prevented by liquidity constraints on entrepreneurs. In this case, the timing of tax payments becomes important. Compared to cash-flow taxes, an ACE system leads to a low tax burden at the late return stage which strengthens the reward to effort of both the entrepreneur and active financiers. Consequently, investment and welfare is higher with an ACE tax compared to an equal yield cash-flow tax.

The ACE might favour innovative, finance constrained firms also by an alternative mechanism due to firm heterogeneity. Instead of adding value to firms, financial intermediaries might boost pledgeable income and raise debt capacity by monitoring. Monitoring capital is more expensive, leads to larger financing costs and is, thus, demanded only by constrained firms which might otherwise not get funding. Other firms exclusively rely on cheaper standard credit. An ACE tax favours constrained growth companies when these firms are in need of monitoring capital and, thus, generate larger interest deductions per unit of capital. Compared to an equal yield cash-flow tax, an ACE system thereby redistributes from unconstrained towards constrained firms and relaxes financing constraints on investments that earn an excess return on capital. This mechanism again implies that aggregate investment and welfare is higher under an ACE tax. These advantages of the ACE system might support the expansion of the most dynamic parts of the business sector, driven by innovative growth companies with large and not fully exploited investment opportunities.

Yet another advantage of the postponed tax burden under an ACE system relates to transitional problems. A growth oriented tax reform starts a phase of high transitional growth with high rates of investment in the early adjustment period. When moving to a cash-flow tax, tax revenue is expected to decline quite dramatically in the first few periods where investment spending is unusually high compared to normal levels on a balanced growth path. To finance government

spending, policy would have to resort to other distorting taxes or take up more public debt to smooth tax revenue. It might be politically very difficult to push through a fundamental tax reform if the consequences are so disadvantageous in the short-run. Moving to an ACE system tends to involve a much smaller short-run revenue loss since the deductions for the cost of finance do not instantaneously increase by the same amount. In consequence, the short-run loss in revenue should be substantially smaller under an ACE tax, making it much easier to introduce it.[9]

At least in the realm of capital income taxation, *Tax By Design* aims to achieve the greatest possible tax neutrality with respect to economic decisions, and to avoid tax arbitrage opportunities which could be costly in terms of tax revenue. Avoiding tax arbitrage puts a restriction on the structure of tax rates so that the cumulative tax burden remains unchanged at the margin, irrespective in which form income is earned. This has been a problem of dual income taxes as practiced in some of the Nordic countries where many individuals were able to partly escape a high wage tax burden by earning the income from the same activity as a self-employed or owner of a small business. Such tax avoidance threatens the wage tax base and can be costly in terms of tax revenue. To prevent tax arbitrage, the same activity must be taxed in the same way, irrespective of whether it is carried out as an employee, as a self-employed in a sole proprietorship, or as a closely held corporation paying dividends and capital gains instead of (managerial) wages.

To avoid tax arbitrage, alternative forms of income generated by the same activity must bear the same cumulative tax burden at the margin (see also Keuschnigg and Dietz, 2007, p. 194, and the discussion in subsection 2i above). *Tax By Design* leaves a normal return untaxed by means of an RRA while 'excess returns' are taxed under a stepwise progressive income tax schedule. In case of dividends and capital gains earned on shares in corporations, the tax rate in each income bracket is reduced by an amount that reflects corporation tax paid by the firm. This structuring of tax rates prevents tax avoidance by reclassifying income. The total tax liability remains unchanged, irrespective of whether income is received as a wage of an employee, as a profit income of a sole proprietorship, or as a distributed dividend of a small closely held corporation. Importantly, *Tax By Design* proposes a full integration of social insurance contributions into the income tax schedule since different contribution rates and benefit rules for workers, self-employed persons and manager owners of small corporations can also lead to substantial distortions of the choice of income type and organizational form.

The realignment of tax rates on distributed corporate profits leaves a degree of freedom that allows for some flexibility of adjusting the tax system to globalization pressures. Should international tax competition require an even lower corporate tax

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[9] See the computational analysis of Keuschnigg and Keuschnigg (2011), comparing transition problems when moving to ACE and variants of cash-flow taxes.

rate, a higher tax rate on dividends and capital gains would automatically apply at the personal level. A lower corporate tax rate would reduce incentives for profit shifting and strengthen the country as a location of multinational investment. The higher taxation of dividends and capital gains, in contrast, would largely be irrelevant for investment decisions for multinational companies whose shares are internationally traded. The systematic application of RRA and ACE allowances also implies a zero EMTR independent of the composition of dividend and corporate taxes. Hence, investment of nationally operating, mostly smaller firms would not be adversely affected as well.

3. Quantification

Implementing *Tax By Design* would imply a large change in the tax system and may be seriously considered only if significant net economic gains are to be expected with some reliability. The key problem is that budgetary and adjustment costs tend to show up rather soon, are highly visible, and can be reasonably well predicted. The gains from reduced distortions and better incentives, in contrast, materialize only after a prolonged period of behavioural adjustment and are much less certain, at least in the perception of the public. This timing holds true in particular in the realm of corporate and capital income taxation, as wealth and capital accumulation driven by savings and investment is a rather slow process. Given the short time horizon of political decisions, this timing seems a major obstacle to reform.

Quantification is important to give a comprehensive picture of the potential gains and costs of reform in terms of efficiency and distribution. Given the large budgetary repercussions and the significant changes in incentives for investment, savings and aggregate labour supply, a dynamic general equilibrium model is required. How would a model have to look like for a rough meaningful evaluation? There are a number of computational models with a relatively rich economic structure that could go a long way to capture the most important efficiency gains and distributional implications of implementing such a reform. One of the most refined models is probably the one applied by Altig et al. (2001) to analyze fundamental income tax proposals in the U.S. The model includes 55 overlapping generations together with 12 earnings groups in each generation. Investment and savings are derived from forward looking optimization. It includes labour supply at the intensive margin and endogenously determined bequests driven by a 'joy of giving' motive. Rich as it is, it nevertheless misses several elements that would be important in capturing key economic channels that are importantly addressed in *Tax By Design*. The following is a possibly incomplete list of model elements that would be needed in my view to capture key aspects of *Tax By Design*:

- Decomposition of the business sector into locally operating and multinational companies and including location decisions of multinational firms as well as profit shifting.

- Portfolio choice over assets with a normal return and other assets earning an excess return, reflecting a reward to risk-taking or economic rents. The level of savings should be driven by the normal return which remains tax free on account of the RRA allowance. There should be tax revenue from taxation of assets with an excess return.

- Adding a margin of discrete labour supply such as a participation decision and search unemployment to capture the improved incentives for extensive labour supply deriving from the reform of life-time earnings.

- Extending the modelling of a progressive tax system by introducing RRA and ACE deductions and introducing a more detailed modelling of the social security system.

- Modelling of public debt and carry forward of unused allowances with interest to analyze alternative transition strategies.

Clearly, capturing all these aspects in a single and reasonably robust model is a daunting task. Probably there will be separate analyses focussing on different isolated aspects of the reform proposal, if at all. The simulation results in Altig et al. (2001) on alternative tax reforms, including a proportional consumption tax, show potentially significant long-run income gains for some reforms. However, the specific transition policy is crucial. Providing transition relief and protecting poor and initial older groups can substantially reduce long-run gains.

Our own analysis in Keuschnigg and Keuschnigg (2011) simulates the consequences of introducing an ACE tax and variants of cash-flow taxes in Germany, using an overlapping generations model featuring savings and investment in an open economy, intensive and extensive labour supply with equilibrium unemployment and a detailed modelling of capital income taxation. Our analysis emphasizes the importance of transition policies to avoid large windfall gains to the owners of old capital (see Kaplow, 2008, on this point, which is somewhat neglected in the conclusions of *Tax By Design*, see chapter 20) and to ensure a slow rather than an abrupt, instantaneous decline in corporate tax revenue. The comparison of the ACE tax with cash-flow taxes showed that the initial decline in tax revenue is much smaller under ACE which is also praised as an advantage in the *Tax By Design* report. However, the revenue loss remains significant. Raising wage taxes or VAT has adverse consequences for labour market performance, leading to a considerable income loss in the short-run before the beneficial effects of induced capital accumulation set in. Deficit financing to avoid an increase in other taxes would prevent the short-run decline in income but would reduce the long-run gains of the reform since higher future taxes are

required to pay for interest on the higher level of public debt. Increased public debt is probably also not a realistic political option, given the high levels of debt that most countries have inherited from the last economic crisis.

Our preferred transition policy is a system of 'delayed deductions' where firms are not allowed to immediately consume all tax allowances under the new system, thereby strengthening short-run corporate tax revenue. Firms are forced to carry forward with interest and deduct unused allowances in the future where tax revenue is stronger on account of induced growth effects. Quite interestingly, this system works much like the carry forward with interest of unused allowances in the RRA system suggested in *Tax By Design*, except that in our analysis of a transition policy, the carry forward would be mandatory over a prolonged period. In shifting tax revenue from the future to the present, our transition policy promises not only future income gains but also improves economic performance immediately after reform. Such a mechanism might thus be helpful in overcoming political obstacles to fundamental tax reform.

4. Concluding Remarks

Tax By Design is the result of a gigantic, academic project undertaken by a most reputed editorial team in the top league of economic research. The report draws on a large number of background studies by the most established researchers in each field. It synthesizes modern economic theory and empirical evidence from a large number of diverse areas of specialization, ranging from location decisions of firms, household bequest behaviour to labour market behaviour of families. Obviously, not all economists will draw exactly the same policy conclusions and not all might weigh the empirical evidence in the same way as the committee did. Notwithstanding this, I believe that *Tax By Design* is an impressive achievement in terms of logic and internal consistency which is expected to yield a long lasting impact on the policy community, should inspire new research on the various aspects of the reform proposal for a new tax system, and should initiate quantitative research to evaluate the potential gains and distributional effects of implementing such a system.

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