TTPI

Tax and Transfer Policy Institute

Superannuation tax concessions are overestimated*

Jonathan Pincus FASSA
Visiting Professor, School of Economics and Public Policy
The University of Adelaide

Abstract

The (Callaghan) Retirement Income Review suggested that superannuation tax concessions are excessive, especially for those on higher incomes, and questioned their use other than to fund the superannuant's living expenses. Favourable fiscal arrangements for superannuation are pervasive across the OECD. A common justification is that applying the tax treatment of ordinary investments would result in unreasonably harsh and inequitable burdens. This is illustrated in a scenario in which additional income is earned for the purpose of boosting the person's superannuation account. As indicators of favourable treatment, the Review reported estimates of marginal effective tax rates, calculated for investment scenarios. I show how these rates vary greatly with reasonable variations in the formulation of the index being used. Moreover, an intuitive index of the rate of tax concession is to be preferred; on the OECD estimates, Australia's rate is around the median, at 24 percent. I justify an economic formulation of effective tax rates which better expresses the impact of taxes on behaviour and on welfare than the conventional legalistic formulation. Especially in relation to retired middle-income earners, the claim that the taxation of superannuation is unduly concessional turns out to be at best unproven, and so, as a result, that claim cannot properly be used to support further public policy interventions affecting the use of savings in retirement, nor for not increasing the rate of the Superannuation Guarantee Levy.

Keywords: Retirement Income Review, Callaghan Review, tax rate calculations, superannuation tax concessions, Superannuation Guarantee, behavioural puzzle.

The Tax and Transfer Policy Institute (TTPI) is an independent policy institute that was established in 2013 with seed funding from the federal government. It is supported by the Crawford School of Public Policy of the Australian National University.

TTPI contributes to public policy by improving understanding, building the evidence base, and promoting the study, discussion and debate of the economic and social impacts of the tax and transfer system.

The Crawford School of Public Policy is the Australian National University's public policy school, serving and influencing Australia, Asia and the Pacific through advanced policy research, graduate and executive education, and policy impact.

1 Introduction

It is indisputable that, for most of those subject to them, the statutory tax rates for superannuation are concessional relative to the personal income tax rates proper and their application to other financial investments. However, it is well accepted that these statutory rates are poor indicators of the effective tax rates on the transfer of purchasing power through time.

An important set of normative and policy questions relates to whether superannuation is being and has been taxed appropriately: too heavily or too lightly; at the right junctures or not; equitably or inequitably between taxpayers. The answers should depend, among other things, on factual or objective claims about the current and past taxation arrangements, and their incidence and other effects. To support those objective claims, various indices have been used to measure the effective rates of taxation as well as the rates and quanta of tax concessions. This paper questions the validity and interpretation of those indices and proposes alternatives. It makes no attempt to sketch the optimal tax system for superannuation: the Tax and Transfer Policy Institute has issued a useful paper on that—see Varela, Breunig and Sobeck (2020). My objective is more modest: to critique the prevailing indicators of the burden of taxation, and of the rate and quantum of tax concessions.

That superannuation is relatively lightly taxed or, for those on the higher marginal rates of personal income tax, heavily subsidised, is a central finding in the Retirement Income Review (RIR). This has been used to support proposals of government interventions to influence or override individuals' decisions as to how to dispose of their Superannuation balances: after all, if these assets are substantially *per* courtesy of other taxpayers, and if the purpose of superannuation is to support living standards in retirement—as RIR asserts— then surely the government has a right or duty to interfere in retirees' spending decisions or, at least, to mandate that the funds offer products the consumption of which are considered to be in the best interests of the retired members. Moreover, the finding that superannuation tax concessions are large and growing, in conjunction with the projection that the living standards of superannuated retirees' will be adequate, could be used to support maintaining the Superannuation Guarantee Levy at its current level.

For all forms of savings, the Treasury's preferred counter-factual is the 'comprehensive income tax', or Schanz-Haig-Simons system, in which savings are made out of income that has been subject to the individual's marginal personal rate of income tax (PIT), with nominal fund earnings similarly taxed. The Treasury's benchmark incorporates the effects of dividend imputation and the capital gains discount on the standard PIT, and so isolates the quantum of concessions specific to superannuation.[2] A major reason that a sizeable majority of OECD countries do not apply a comprehensive income tax schedule to retirement accounts, without superannuation-specific concessions, is to be found in the dimensionality argument put in AFTS (2000), relating both to interest and capital gains, and applicable to all saving. In brief, even low rates of inflation can boost the taxable nominal income, received by way of capital gains or interest, by a much larger proportion than for, say, wages, and lead to an unreasonable tax burden on the real income of the former, and a much-diminished incentive to save and invest, unless some adjustment is made, either to the tax base or to the tax rate;

---

[2] However, in Varela et al. (2020), the benchmark tax rate on investment earnings is zero, and so dividend imputation credits and the capital gains tax discount are treated as subsidies.

and that the unreasonable burden accelerates with the length of the holding period. A comprehensive income tax system that lacked superannuation-specific concessions, would greatly distort intertemporal price signals affecting decisions about when to consume. Varela et al. (2020) adopted a less confiscatory comparator, being the 'expenditure tax' approach in which investments are made out of post-PIT income, but there is no tax on fund earnings or on withdrawals. Under this benchmark, TTPI calculated the effect of tax on the return from the investment, that is, on the gain in wealth. For someone on the 34.5 percent income tax rate, and for a holding period of 20 years, the effective tax rate, as measured by TTPI, is over 60 percent for saving accounts; for a person in the top income tax bracket, the effective tax rate is over 80 percent; hefty imposts indeed: see Panel A of Table 1, first row. For a holding period of 45 years, the effective tax rate would be over 70 percent for someone on the 34.5% income tax rate, and 87% for a person in the highest income tax bracket. [3]

The proposition about distortion of intertemporal price signals is reinforced by the second rows of Table 1, which show, again for savings accounts and with the investment scenario modelled by Varela et al. (2020), that a person on 34.5 percent marginal personal income tax would pay an effective tax of $113 per $100 of disposable wealth at the end of 20 years, and $225 per disposable $100 at the end of 45 years under the comprehensive income tax. [4] For those on 47 percent PIT, the effective tax is $429 per $100 disposable wealth at the end of 45 years. These burdens cannot be described as fair and reasonable.

When, in its 2017 Tax Expenditures Statement, Treasury applied the 'expenditure tax' benchmark standard to superannuation, its estimate of superannuation tax concession was reduced by three-quarters, and the taxation of superannuation entity earnings changes from a concession of around $20b to a burden of almost $10b. Breunig and Podger (2021 p.14) cite work that "suggests that the current tax regime, since the introduction of some progressivity in the taxing of contributions under the Turnbull Government, has a similar outcome at least at median income levels to that of an *EET* regime despite its *ttE* design. Accordingly, it is arguable that there are few if any tax 'concessions' at present and no significant skewing to those on higher incomes." The choice of benchmark matters greatly for estimates of tax concessions for superannuation (as Table 3, discussed later, illustrates).

Turning now to the Superannuation Guarantee (SG) system: because SG contributions are mandated, there is no savings margin, only an earned income margin: taxpayers cannot respond to the SG taxes by directly changing their SG contribution but only indirectly, by changing their mix between income and leisure, or shifting between earning income that is liable to the SG Levy and that which is not. Thus, the incentive effects of marginal effective tax rates for voluntary savings cannot legitimately be compared to those of the SG system: the effective rates of the SG system do not convey information about the relative price ratios that directly influence choices of the volume of saving and of the vehicle for it.

Earning time-transferable income is a necessary pre-condition of making a contribution into a superannuation account and so the tax on that income is part of the tax burden on

---

[3] Tables 1 and 2 assume that fund earnings are in the form of fixed interest. For investments in other than fixed interest, a higher earnings rate (and higher risk) would be expected, which would increase the effective tax rate; but the earnings would qualify for the capital gains discount and dividend imputation, which would reduce the tax burden: also, see section 5.3 and Table 3 below. (For the S&P 500, the 30-year average nominal and real returns are over ten and eight percent respectively.)

[4] In other words, a person would need to accumulate $213 after 20 years, gross of tax, in order to gain $100 to spend. The methodology of Table 1 is explained more fully below.

superannuation. Table 2 shows the total burden of taxation for a person who earns additional income for the sole purpose of enhancing the superannuation account balance: one-tenth of the income is caught up in the SG system, and the rest, post PIT, is assumed to become a personal superannuation contribution; the tax rate on fund earnings is the statutory flat 15 percent. In order to gain an extra $100 for disposition in year 45, a person on the middle rate of personal income tax pays an effective tax of $105; and this is for concessional superannuation.

Even setting aside the issue of the counterfactual, three additional factors ought to be taken into account in considering the taxation of superannuation.

First, the bulk of deposits into superannuation accounts have been generated by compulsory contributions under the SG system. There is something paradoxical about assessing the tax treatment of involuntary savings in the same way as for voluntary savings. Presumably, the SG tax concessions, if applied to and confined to voluntary savings, with the SG Levy rate setting the limit on favoured contributions, would be insufficient to elicit similar overall levels of financial savings as through compulsion, especially from younger employees with dependent children and from the low-paid. If so, for them the 'tax-equivalent' of compulsion and of strong restrictions on early access, is greater than their SG tax concessions. To put the same point differently: because of the element of compulsion, the subsidy needed to be paid to elicit the same level of savings on a voluntary basis would have to be higher than the estimated tax concession. (Recall that one justification for compulsion was provided by the 'FitzGerald' report on the alleged deficiency of national savings.)

Second, the main rationale for introducing the SG was to boost the 'social wage'. Superannuation—considered as a form of deferred income—was viewed as reducing the pressure for wage rises. Moreover, analytically, at least some of the incidence of the SG is likely to be on labour (see Breunig and Sobeck 2021). Therefore, regarding the SGL, there is—in contrast to what is conventional in this field—a strong case for distinguishing statutory and economic incidence. If, as is widely asserted, some of the Levy falls on wage rates, then the SG has two effects on employees: (1) the impact on wages and (2) the effective tax on the worker's income and the earnings of the fund. The effective tax rate calculations of the RIR and TTPI only account for the second, thus under-estimating the true incidence on employees.

Third, ignored in RIR is a consideration that relates to intergenerational transfers. When the Old Age Pension scheme commenced in 1908, those eligible gained an advantage at the expense of then-current taxpayers; however, that cohort of taxpayers eventually enjoyed access to the pension at the expense of the next 'generation' of taxpayers: just as in a Samuelsonian 'consumption loan' scheme (Samuelson 1958), those in generation $N - 1$ paid for the pension of generation N and, in turn, had their pensions paid by generation $N + 1$ taxpayers. However, one of the avowed purposes of the introduction of the Superannuation Guarantee Levy was to modify this intergeneration scheme, by reducing the tax burden on future taxpayers. In consequence, the initial set of workers caught up in the SG–call them generation G—had an extra burden: in addition to paying for the pensions of those already retired (i.e., generation $G - 1$), as in the Samuelsonian scheme, they also were forced to relieve future taxpayers of some of the burden of contributing to generation G's own future pensions, thereby reducing the Samuelsonian tax burden on generation $G + 1$ to come. Generation G had two sources of financial burden relating to the public pension: their taxes

funded the pensions of retirees and their SG Levy contributions partly, if modestly, relieve future taxpayers of the burden of funding Generation G's pensions.

This is another way of looking at the fact that, when assessing the SG's tax concessions, neither Treasury nor TTPI take any account of a subsidiary fiscal purpose of the scheme, which is to reduce future entitlements to the public pension; and RIR accepted this omission.[5] Despite RIR asserting that the prime reason for superannuation tax concessions is to support living standards in retirement, the SG system was also designed to reduce the burden on future taxpayers in supporting pensioners; yet both Treasury and TTPI estimate tax concessions without accounting for the loss of entitlements to the age pension: the Treasury acknowledges that this is a problem, but presses on regardless to produce the largest remotely justifiable estimate of superannuation tax concessions.

These introductory remarks are expounded and supplemented below, starting with how the ratio called the marginal effective tax rate (METR), using saving and investment scenarios, meets the need for a summary measure of the multiple taxes on saving and financial accumulation. Section 3 shows how the value of METR varies, sometimes greatly, with the choice of the 'pre-tax' situation; with the choice between a 'pre-tax' and a 'post-tax' denominator; with whether the focus is on the effect of tax on the final disposable wealth or the gain in wealth; and with real or present values. Section 4 argues that the contributor's behavioural margin in the SG system is income, not contributions, and so METRs require re-conceptualisation, which is done for the limiting case when all the marginal income is devoted to enhancing the person's superannuation balance. Also discussed is an intuitive index of the rate of tax concessions, used by the OECD. Section 5 focuses on two aspects of Treasury's estimates of superannuation tax concessions: the choice of the 'comprehensive income tax' as the benchmark counterfactual; and the neglect of risk. Four tables follow the Conclusion.

2 Effective tax rates in the Retirement Income Review

With savings, there are four common taxation points, each with its tax-free alternatives:

1. at the generation of time-transferrable purchasing power (instead of engaging in leisure, home production or hobbies)
2. when contributing into savings accounts and other investments (instead of hiding the money under the mattress)
3. being in receipt of or credited with earnings from the investments (instead of saving in a vehicle offering zero returns)
4. and, in year N, realising all or some of the accumulated asset (instead of leaving it untapped).

Because of these multiple possible taxing points and because of the effect of compound interest, the burden of taxation on savings cannot be simply read off a legislated schedule but must be estimated for particular scenarios—and the resultant rates apply only to those

---

[5] A referee pointed out that the extent of this reduction, in entitlements to the age pension, is an unresolved empirical question: see the Intergenerational Report (Treasury 2021: chart 7.4.6). However, for the lower income and wealth groups, the effects can be large.

scenarios. The Review reports the summary measure, called the marginal effective tax rate or METR, defined below, a version of which is estimated in Varela et al. (2020).

Presented in RIR's Chart 5A-9 are estimates of the METRs on ten different forms of savings, derived from a scenario in which a single investment is held for 20 years, earning a three percent real pre-tax rate, with two percent inflation; and the person is subject to the same tax rates during those 20 years, including their marginal rate of personal income tax (MPIT). This chart shows the tax rates on savings accounts and investment property income are progressively higher than the taxpayer's MPIT—up to twice for those on the highest personal rate of 47 percent. Quite different and regressive is the pattern of METRs for concessional superannuation: for those on zero MPIT, the effective rate is 20 percent; for those on 21 percent MPIT, the METR is about eight, while the effective rates are shown as negative for taxpayers on the three highest MPITs, including about minus 47 for those on MPIT of 47 percent: most eye-catching.[6]

For savings generally and for superannuation specifically, it is usual to denote tax regimes with an ordered trio of symbols, like *ttE* or *TEE*, *etc*., with the first place being for the tax rate on the generation of the relevant purchasing power (which is represented as a tax on contributions or investment), the second that on fund earnings and the third for drawdowns; and with *T* being the person's marginal rate of personal income tax (or MPIT), *t* being some number or numbers other than the MPIT, and *E* meaning tax-exempt.

As a summary of the effects of a set of taxes on the outcomes of activities that give rise to an investment into a specific savings vehicle, METR can be defined generally as

$$METR = \frac{Counterfactual\ outcome - Actual\ outcome}{Counterfactual\ or\ Actual\ outcome} \qquad (1)$$

METR can be used for different purposes – as an index of the absolute burden of tax; or of the differential burden (tax concessions); or as an index of the size of the tax wedge. Different foci – on distributional or on relative price and incentive effects – require different choices of the counterfactual, of the denominator, of final wealth or investment return as outcome and whether in real or present value terms.

The subsections that follow explore the implications of each of these choices. Two claims are most important.

First, I argue that the absolute burden of tax should be measured relative to a 'pre-tax' counterfactual of zero tax, *EEE*. Then the comparative burden on one savings instrument, relative to that on others, is the difference in absolute burdens across instruments; and the comparative burden of one tax system, relative to another system, is the difference in absolute burdens. However, comparisons of burdens across actual and counterfactual tax systems or arrangements, are generally pursued by the shortcut of eliminating the intermediate step of calculating absolute burdens, so that the numerator is the difference in outcomes under the actual and the counterfactual benchmark, and the denominator is the

---

[6] However, in the course of drafting this paper, I brought TTPI's attention to an assumption that Varela et al. (2020) had made, which TTPI subsequently changed, and this substantially increased TTPI's estimates of subsidy rates (personal correspondence): also, see note 15 below.

outcome under one or other system. Unfortunately, there is a danger that such METRs could be interpreted as indices of the absolute burdens of tax.

Second, that although the METRs for the Superannuation Guarantee Levy (SGL) system are pertinent to the incentive to earn income that falls within the scheme, they are not to relevant the incentive to save or in what form.

3 METRs as indices of the burden of taxation

3. 1 The 'pre-tax' comparator

This subsection argues that, when the attention is on the incentive effects, we need to know the absolute effective tax rate, and that requires using the zero-tax base of *EEE* as the 'pre-tax' situation.

This is not to endow a zero-tax base with any normative standing, as a familiar example shows. To say that there is a 47 percent marginal personal income tax rate is taken to mean that the rate is 47 percent higher than zero, and not taken to mean that zero was chosen for its normative significance. In contrast, when the interest is in fiscal redistribution, and especially when the focus is on 'tax concessions' or 'tax expenditures', the comparator must be some alternative non-zero benchmark tax regime that, despite Treasury protestations, carries some normative freight.

While the RIR's main counterfactual is the comprehensive income test, the counterfactual assumption of RIR's Chart 5A-9 showing tax rates for different forms of savings and investments is that 'people pay the full marginal tax rate on labour income but no further taxes on savings.' That is, RIR, informed by Varela et al. (2020), used *TEE* as the 'pre-tax' regime in this table. Now, *TEE* was Treasury's alternative but unfavoured 'expenditure tax' benchmark for superannuation in its 2017 tax expenditure statement (but not mentioned in subsequent statements in 2019 and 2020).[7] It has a normative aspect but does not reflect a regime in which retirement saving can be made from tax-free income, as in some 29 of the main private pensions plans of 43 countries, reported in OECD (2018). Twenty of those 29 use *EET*; only three, including Australia, tax both contributions and earnings; see also OECD (2020).

An implicit assumption behind the *TEE* baseline is that the decision to earn and the decision to save are independent. Not only is this simply wrong when a person decides to earn additional income in order to boost her superannuation account, or not to retire for the same reason but, more importantly, it ignores the indisputable fact that new savings are funded from current income: earning the income is a necessary step and so the tax thereby incurred should be included in METR of the absolute tax burden. Using a baseline of zero tax—*EEE*—would not only avoid the restrictive assumption of independence, but would also avoid the apparent paradox that, although Superannuation Guarantee accounts pay positive taxes on contributions and earnings, RIR reports that they enjoy negative effective tax rates.

However, TTPI (2020: 40) oppose using *EEE*:

---

[7] Treasury has now renamed this statement "Tax Benchmarks and Variations" as an attempt to address criticism that the benchmark represented a normative view of some optimal policy.

It would be possible, but undesirable, to use pre-tax income as the zero-tax benchmark. In this case, the initial tax rate on superannuation would be 15 per cent (rather than negative 32 per cent for high-income earners) and it would result in a positive net tax rate on superannuation. However, using this benchmark, the METR on all other assets would also increase by the same amount. For instance, interest income for those in the top tax bracket would face a lump sum tax of 47 per cent in the first period. Therefore, if calculated using this benchmark, the relative differences between the METRs of different assets would be maintained and superannuation would remain heavily favoured as an investment option (TTPI 2020: 40).

For any marginal rate of PIT this is true. For the purpose that TTPI creates these METR calculations—that is comparison across different savings vehicles—their approach is unaffected by this choice. However other quantities, such as the absolute tax rate are also of interest. The excess burden of a tax depends on the absolute tax rate and, as a rule of thumb, on its square.

As is explained more fully in 3.3 below, the choice of *TEE* as the counterfactual shifts attention from the broader question of the effects of taxation on saving, to the undoubtedly important but narrower one of the effects on the inter-temporal terms of exchange. Nonetheless, when estimating tax concessions, *TEE* may be appropriate as a normative counterfactual, whereas *EEE* is not. However, in 4.2 I discuss an index of tax concessions that is an alternative to METR, and which is used by the OECD.

3.2 Choice of denominator: pre-tax or post-tax?

A person earns extra income, y_0, to fund a deposit into an accumulation account, in order to boost her consumption budget of year *N*. If there were no taxes on the income used for the deposit, or on the deposit or fund earnings or withdrawals, then the real balance at year *N* would be w_{NE}, with the second subscript indicating the saving was out of income exempt from PIT and any tax on deposits or withdrawals. However, due to taxes, the retained or disposable balance amounts to w_N'. Formalising, we have:

$$w_N' = (1 - \theta_1) * w_{NE} \tag{2}$$

$$\theta_1 = \frac{w_{NE} - w_N'}{w_{NE}} = \frac{Effective\ tax\ paid}{Final\ wealth\ if\ no\ taxes} \tag{3}$$

The numerator of (3) is the quantum of effective tax: it is the equivalent tax on withdrawal or final balance, which, if imposed on an otherwise tax-free set of transactions, would leave the saver with the same post-tax balance of w_N'. Thus, θ_1 shows the burden of taxes, per unit of pre-tax final balance. However, there is a preferable alternative METR to θ_1, with the same numerator but a post-tax denominator. (The conceptual grounds for 'preferable' are exposited later.)

Equation (4) shows how the post-tax balance w_N' can be 'grossed up' (as with the GST) to equal the tax-free balance, w_{NE}; this yields the definition of a METR in (5):

$$w_{NE} = (1 + \theta_2) * w_N' \tag{4}$$

$$\theta_2 = \frac{w_{NE} - w'_N}{w'_N} = \frac{Effective\ tax\ paid}{Final\ wealth,\ after\ tax} \tag{5}$$

θ_2 shows the burden of taxes, per unit of post-tax final balance. Since $\theta_2 = \theta_1/(1 + \theta_1)$, θ_2 gives larger absolute effective rates; and as $\theta_1 \rightarrow \pm 1$, $\theta_2 \rightarrow \pm$ infinity. (Similar remarks apply whenever we compare two formulations of METR that differ this way in their denominators.)

θ_2 is the rate of subsidy that would exactly compensate for any taxes on the necessary initiating income, on the deposit and on the fund's earnings. (Notice that both θ_1 and θ_2 are commensurate with any actual withdrawal tax.)

More importantly, θ_2 shows the burden of taxes, *per* unit of disposable wealth. When METR is used as an index of the incentive effect of taxation, the post-tax outcome is more behaviourally and motivationally salient than is the tax-free outcome, as is now argued.

(A summary of the various indices in the paper is provided in Table 4.)

The second rows of Table 1 show that my preferred definition θ_2 yields appreciably higher effective rates than does the definition used by TTPI (the first rows): double for the three highest PIT rates, holding period 20 years and up to five times for the 45-year holding period, including 225 percent for those on the middle PIT. (Not shown in Table 2 is that the effective rates increase with the earning rate: see TTPI 2020.)

When discussing the gaps between METR and the statutory rates, Varela et al. (2020) remark that

> However, if people *primarily save to finance consumption in retirement*, then the tax wedge will be much larger than the nominal tax rate. Finally, if individuals *save in order to provide bequests* to their descendants, then the implied tax rate on future consumption will be much higher than the annual rate on savings and possibly close to 100 per cent (TTPI 2020: 11, emphasis added).

Given that a retiree consumes or bequeaths out of the post-tax balance, should the denominator of METR not relate to the post-tax outcomes?

Consonant with my position is how the *Review* framed its 'income adequacy' approach: first, setting a target living standard, then estimating the sufficient post-tax balance on retirement and lastly, computing the contributions profile needed to achieve it, given assumptions about the future rates of earnings, inflation and taxation. This echoes the approach often taken by financial counsellors and advisors, including those in government and the superannuation funds themselves.[8] Saving outside of superannuation is also frequently and maybe generally motivated by or aimed at accumulating, by some future date or event, disposable, post-tax wealth within a target range.

Thus, I am drawing attention to the difference between a quasi-statutory formulation—the effective tax paid per unit of the 'tax base', which is gross of tax—and what could be called the behavioural or economistic formulation—the effective tax paid per unit of disposable wealth or accumulation.

---

[8] See the conflicting submissions on the Treasury position paper of July 2021, on the proposed retirement income covenant: Treasury (2021) as reported in Read (2021).

To illustrate, consider the income tax. A statutory tax rate of, say, 45 percent is defined as the ratio with the numerator being the difference between the pre-tax income and the post-tax income (which difference in this case is the tax paid), and the denominator being the legal tax base, which is the pre-PIT income. This means that, for every extra dollar earned, a taxpayer whose marginal rate of income tax is 45 percent retains 55 additional cents to dispose as she wishes. *If the purpose of earning additional pre-tax income is to gain command over more disposable income,* then the behaviourally relevant tax rate is 82 percent: 45/55 = 0.82: for every extra dollar of disposable income, she has to pay 82 cents in tax. The 'dual' of the argument is this: say a person works extra hours in order to obtain an extra $100 to spend (or save). If her hourly wage were $100 then, absent taxation, she needs to work one hour to gain her goal. With a 45 percent legally defined income tax rate, she has to work 1.82 hours, so the tax has added 82 percent to her cost, in hours, of obtaining her goal: the behaviourally relevant rate is again 82 percent.

Interestingly, the statutory and the behavioural rates of indirect taxes coincide: the denominator in both instances is the post-tax value; similarly, for the GST on labour service income.[9]

Generalising, what is being suggested is that, when interest is chiefly in the incentive effects, the appropriate way to calculate the *rate of tax burden on a specific activity* is as a ratio, with the denominator being the retained or post-tax outcome that enters positively into the person's utility function or is the motivation for generating the taxable activity (e.g., disposable income or an enhancement in future consumption possibilities), and with the numerator being the difference that tax makes to that denominator, that is, the tax-free value that the denominator would take, less its tax-paid value (that is, the effective quantum of taxation).

Misers who accumulate wealth for its own sake being in a small minority, it is reasonable to assume that the main behavioural objective of voluntary personal savings is to transfer post-tax purchasing power from 'now', into 'the future', including possibly to heirs or to cover contingencies. The prime rationale for involuntary savings under the Superannuation Guarantee regime is to increase disposable wealth in retirement, and that consists in post-tax wealth.[10]

Of course, people usually have more than one motivation, but the analyst must choose one, when devising an index like METR.

The assumption that the main behavioural motivation relates to the post-tax outcome is not uncommon in other tax fields. For example, in their review on the elasticity of taxable income with respect to marginal rates of income tax, Saez, Slemrod & Giertz (2012: 5 - 6)

---

[9] In Treasury's modelling of the burden of various taxes, the GST on service income is treated as a flat rate labour-income tax. However, the formal, statutory ways of presenting the tax differs from that of the actual income tax: the 'legal' GST rate is the ratio of tax paid to *net-of-tax* income; the 'legal' income tax is the ratio of tax paid to *gross-of-tax* income.
As is conventional, the discussion this far disregards the distinction between the statutory and the economic incidence of taxes.

[10] The Review asserts that the prime objective of government for involuntary personal saving is to fund additional personal consumption in retirement, not bequests. This assertion, which ignores the policy objective of reducing the fiscal cost of the pension, is discussed later.

posit that utility depends positively on disposable income, *c,* and negatively on reported (pre-tax) income, *z*; this generates an individual supply function of reported income as $z(1 - t, E)$, where *z* depends on the net-of-marginal-tax rate $1 - t$, where *E* is extraneous income; see also Scheuer & Slemrod (2021: 209-10) on wealth taxes.

3.3 Choice of 'outcome'

Two plausible 'outcomes' of interest are the values of the 'final balances', as used in θ_1 and θ_2, and of the real 'return' (or accumulation), as defined in TTPI (2020: 37):

$$METR = \frac{Pretax\ real\ return - Posttax\ real\ return}{Pretax\ real\ return} \quad (6)$$

Although Varela et al. (2020) gave little interpretative guidance, they have confirmed that what is meant is the following:

$$\theta_3 = \frac{(w_{NT} - w_0) - (w'_N - w_0)}{w_{NT} - w_0} = \frac{w_{NT} - w'_N}{w_{NT} - w_0} = \frac{Effective\ earnings\ tax\ paid}{Pretax\ return} \quad (7)$$

Here, w_{NT} and w'_N are respectively the real-valued 'pre-tax' and 'post-tax' final balances, and w_0 is the initial 'pre-tax' deposit out of post-PIT income (hence the second subscript on w_{NT}): given that TTPI uses *TEE* as the 'pre-tax' regime, then $w_0 = (1 - T)y_0$, and $w_{NT} = (1 - T)w_{NE}$.[11]

When the comparison is between *TEE* and *TTE* or *TtE* , as in Varela et al. (2020), METR θ_3 would show the impact of the fiscal system on accumulation itself, that is, solely on the rewards from deferring consumption: in particular, θ_3 shows the single tax which, if imposed in year *N* on the otherwise tax-free gain or earnings, that is, on $(w_{NT} - w_0)$, would replicate the effect on the final balance of the actual annual tax on earnings. Thus, the numerator of (7) is equal to the effective earnings tax paid; the denominator is the return when there is no earnings tax.

However, to reiterate: a necessary prior step to savings is the earning of time-transferrable income; and TTPI's approach assumes that the acts of earning income and of voluntary saving are independent, which is never the case when the person has an income-earning margin. The Varela et al. (2020) approach focuses on the effects of taxes on the inter-temporal terms of exchange—undoubtedly an issue of importance—but misses one crucial step in voluntary savings, which is the generation of the income necessary for the quantum of saving: because one use of income is to fund future consumption or spending, taxes on saving have a disincentive effect on the earning of income. Again, this does not affect the comparisons they make about the relativity of different savings vehicles but implies that their METRs may not be useful for assessing the level of the overall burden of superannuation taxation.

For completeness, let θ_4 be the same as θ_3, except with the tax-laden return, $(w'_N - w_0)$, as denominator. The purport of the earlier argument is that θ_4 is to be preferred to TTPI's θ_3.

---

[11] This elides the effect of the fiscal treatment on the deposit. It seems impossible to rank θ_3 and θ_1 or θ_2 in any intuitive way.

Finally, Craig & Chin (2015) define a METR, based on annualised real rates of return, p for pre-tax and r for post-tax:

$$\theta_5 = \frac{p - r}{p}$$
$$= \frac{Annualised\ pretax\ rate\ of\ return\ -\ annualised\ posttax\ rate\ of\ return}{Annualised\ pretax\ rate\ of\ return} \quad (8)$$

Definition (8) will not be pursued further.[12]

3.4 Real value or present value?

Economists often criticise those who total up a time series of current values without first converting them to present values, so as to compare 'apples with apples.' This issue arises in a modified form with respect to TTPI's METR θ_3, which was earlier defined as

$$\theta_3 = \frac{w_{NT} - w_N'}{w_{NT} - w_0} \quad (7)$$

Here, w_{NT} and w_N' are respectively the real-valued 'pre-tax' and 'post-tax' year-N balances, and w_0 is the initial 'pre-tax' year-zero deposit. Thus, the denominator is the difference between a year-zero amount (w_0) and a year-N amount (w_{NT}). Strictly speaking, these are not commensurate; however, they can be made so.

Convert the year-N real values to nominal values, by multiplying by I, the inflation discount factor, and then convert them to year-zero present values by dividing by D, the nominal discount factor that converts year-N nominal values to year-zero present values; simplifying gives θ_3^*:

$$\theta_3^* = \frac{w_{NT} - w_N'}{w_{NT} - Dw_0/I} \quad (9)$$

Comparison with (7) shows that $\theta_3^* > \theta_3$ when $D > I$ and the real discount rate is positive. Note that this issue does not affect METR θ_1 or θ_2, because they are defined solely in terms of wealth in year N and thus contain no term in w_0. In its international comparison of lifetime tax concessions, the OECD (2018) used present values but with an index, τ, discussed in 4.3, rather than a METR.

3.4 Non-concessional superannuation

The *Review* also reported the calculations in Varela et al. (2020) of the effective rate on non-concessional contributions into superannuation accounts, comparing the regimes *TEE* and *TtE*. METR is shown in Chart 5A-9 as equal for all marginal rates of PIT, including the rate

---

[12] Regarding definition (7), TTPI (2020: 37) claim to follow the 'Productivity Commission (2015)': as no such is listed in the bibliography, they must have meant Craig & Chin (2015). That TTPI uses the word 'return' to mean accumulation or gain in wealth, was confirmed in personal communication.

of zero: each term in $\frac{w_{NT}-w_N'}{w_{NT}-w_0}$ is proportional to $(1-T)$.[13] Clearly, however, this equality would not hold if the counterfactual were *EEE*.

4.1 METRs for the Superannuation Guarantee Levy

Because SGL contributions are compulsory, there are no incentive effects on savings for METRs to capture, however, there are some on the income margin.

With voluntary savings, once the income has been earned and PIT paid, the opportunity cost is the forgone consumption of the tranche of post-PIT income: that is a margin of relevance. However, with the SGL, *no 'consumption' expenditure is forgone in order to save more*: instead, the opportunity cost comprises the giving up of tax-free activities like leisure or a hobby or home production, or of making income outside the scope of the SG system; and the payoff is additional disposable income today as well as a higher superannuation balance for future consumption. Generalising to all taxes on savings, the 'Mirrless' tax review asserts that

> If someone is working in order to finance future consumption, then taxing savings— reducing the future consumption that can be bought with earnings— discourages work just like taxing earnings directly. Why discourage work more among those who prefer to consume the proceeds later? (Mirrlees 2011: 294).[14]

Through the wealth or income effect, the extra SG contribution may 'crowd out' voluntary savings or induce voluntary dissaving, but there is no direct relative price or incentive effect on decisions to save or in what form. However, there is a negative effect on the incentive to earn income, whether liable to the SG Levy or not; and the substitution effect reduces the flow of SG contributions.[15]

In summary, METRs for SGL can be formulated to be relevant to the incentive effects on income. Otherwise, the only possibly justifiable application of an METR to the SGL is as a measure of tax concessions and as discussed in 4.3, there is a more direct and intuitive index for that purpose.

4.2 Burden of tax when marginal income is devoted to superannuation

Following up the claim that income earning is the margin involved in the SG system, Table 2 shows the results of the following scenario: a person, who is caught up in the SG system, earns extra income with the intention to devote it all to superannuation contributions, 10 percent for the SG levy, and the remainder to a personal superannuation contribution. Table 2 shows the 20-year and 45-year effective tax rates, using the same parameters as in Varela et al. (2020), but with either 10 or 15 percent tax on fund earnings. The definition of METR is

---

[13]No wealth maximizer on zero PIT would voluntarily save in superannuation and suffer tax, when saving elsewhere would be totally tax free, unless the rate of return on the latter was sufficiently high.

[14] The 'Mirrlees' review advocated that 'normal' returns to investments be tax-free and that the 'super-normal' be subject to the ordinary personal income tax rates: a simple income tax was not considered optimal. See Feldstein (2012) for criticism of this proposal.

[15] Contrast 'the majority of money entering superannuation comes through compulsory contributions. The tax rate will not have any impact on the total size of compulsory contributions' (TTPI 2020: 23).

θ_2: the proportional reduction in the disposable wealth that is due to taxation. The counterfactual is the non-normative *EEE*, since the focus is on the disincentive effect.

Looking first at the columns for a person on the middle PIT of 34.5 percent, Table 2 shows that, in order to obtain $100 of disposable wealth in 45 years, the saver pays an effective $105 or $84 in tax, depending on whether the earnings tax rate is the statutory 15 percent or the TTPI's 10 percent. Even a lower income earner, on 21 percent PIT, would have a tax rate of up to 74 percent, while those on 47 percent PIT face taxes in the range of 96 to 147 percent.[16]

To reiterate: these rates incorporate the concessional, mandatory, system.

4.3 The OECD's index of tax concessions

Applying its definition of the effective tax rates to the Superannuation Guarantee Levy, the *Review* reported tax concessions for all but those on zero MPIT (that is, less tax is paid under *ttE* than under *TEE* for a deposit held for twenty years*)*, and negative METRs or tax subsidies (relative to *TEE*) for those on the three top MPIT rates.[17]

However, there is an index that I suggest is superior to METR. It is the intuitive index of the rate of tax concession, τ, the proportional reduction in tax afforded by one tax arrangement, against the benchmark or counterfactual comparator; it accords with the usual way of representing the rate at which a price or charge has been discounted from its usual level:

$$\tau = \frac{\textit{(Tax paid under benchmark counterfactual) - (Tax paid under actual)}}{\textit{(Tax paid under benchmark counterfactual)}} \quad (10)$$

(The 'tax paid' is 'effective', that is, the reduction in final balance that is due to tax.)[18]

Using the OECD formulation, τ, Table 3 reports the estimates of the rate of tax concessions for a scenario with a single SGL contribution that earns 10 percent and is held for various

---

[16] A referee asked why, if super is taxed heavily, there so much in voluntary contributions that limits have been legislated. In response: If, as seems plausible, there is a high-income elasticity of demand for consumption smoothing by way of financial assets, then that can manifest in high voluntary saving by medium- and high-income individuals, notwithstanding the substitution effect of taxation. Despite the concessions, the effective rates are very high, when correctly measured; however, they are lower than for most close substitutes. Finally, my argument about how to represent a tax rate behaviourally (with the post-tax outcome as denominator) suggests that the econometric estimates of the compensated tax elasticity of savings could be biased upwards (which, if the case, would reduce the substitution effect and, thus, reduce the appearance of a behavioural paradox).

[17] During my drafting process, I questioned TTPI as to why I could not reproduce their results. One reason was that TTPI had made a conceptual mistake which, if corrected, substantially increases the sizes of the negative METRs: Varela et al. (2020) assumed that, when the post-tax contribution under *TEE* was $(1-T)$, that under *ttE* was $(1 + T - t)$, when the correct value is $(1-t)/(1+T)$. Thus, TTPI under-estimated the return under *ttE* and, therefore, the rate of tax concession.

[18] The numerator of θ_3 is equal to of $(w_{NT} - w'_N) = (w_{NT} - tax\ paid\ under\ counterfactual) - (w_{NT} - tax\ paid\ under\ ttE)$, which simplifies to the numerator of τ, sign reversed; the denominator of θ_3 is equal to $(w_{NT} - w_0)$, which is the return under the counterfactual. Given, then, that the absolute value of the numerator of τ is the same as that in θ_3, which is the METR in VARELA ET AL. (2020), we have $\tau > \theta_3$ in absolute value, so long as the denominator of τ is smaller than that of θ_3.

periods. The concessional tax rate trio is 15 percent on contribution, and 7 percent on earnings, the latter as in Treasury's assessment of the effective rate when earnings include capital gains and franked dividends. Two benchmark tax regimes are employed: a comprehensive income tax trio of 34.5, 24 and zero percent;[19] and an expenditure tax trio of 34.5, zero and zero percent.

Table 3 shows that the comprehensive benchmark gives much larger estimates of the rate of tax concessions. For example, for a holding period of 20 years, the rate of tax concession is 42 percent under the comprehensive benchmark, but 27 percent under the expenditure benchmark used by TTPI; and the gap widens with the holding period.

Table 3 also can be used to show that METR can give an exaggerated impression of the rate of tax subsidy or concession; for this scenario, METR is 40 percent, half again more than the value of τ, both on the expenditure tax benchmark.[20]

4.4 Lifetime tax concessions

The Treasury tax expenditure estimate for superannuation is designed to show how much income tax revenue is forgone in a single financial year from the tax treatment of that year's superannuation contributions and earnings and, therefore, is somewhat unsuited to the Review's purposes, which would have been better served by an estimate of the tax concessions from a series of investments, as in OECD (2018).

The OECD employed τ as the index of lifetime tax concessions of about forty countries' private pension plans, including the SG system. The counterfactual is the nation's income tax system as it applies to 'traditional savings accounts' (OECD 2020: 5); but it is not clear what tax rate was applied to the earnings of superannuation funds. [21] Using a discount rate of three percent, the OECD has estimated the present value of taxes saved by the average income earner in a country's main private superannuation scheme, starting at age 20 in 2018 and retiring at the country's official retirement age, and making yearly contributions at the mandated or minimum rate fixed by regulation (or 10 percent, for voluntary plans (OECD 2018)). Australia, with a 'tax advantage' of about 24 percent of the present value of all contributions, ranks 24th out of 41 countries.

The OECD approach overstates how well-off Australian superannuants are compared to those elsewhere. In particular, in most countries, private savings account for a small share of retirement plans, and most people benefit from generous public defined-benefit schemes where *EET* generally applies. Moreover, in Australia, the age pension is highly means tested

---

[19] The 24 percent assumes equal flows of fixed interest, capital gains and franked dividends.

[20] In a revision of the chart in RIR, TTPI estimated a METR of minus 40, but using a concessional earning tax of 10, not 7 percent (personal correspondence) – a lower earning tax rate boosts the absolute value of METR.

[21] 'The different tax treatment between private pension plans and other savings vehicles translates into a pecuniary advantage when people save for retirement in private pensions. In most cases, individuals save in taxes paid by contributing the same pre-tax amount to a private pension plan instead of to a benchmark savings vehicle. This tax advantage derives from the fact that the preferential tax treatment that contributions and returns on investment usually enjoy in a private pension plan outweighs the potential taxation of benefits' (OECD 2018: 2).

and the aim of the SG is to reduce eligibility for it even further. (See the earlier comments on the Samuelsonian 'consumption loan' scheme.)[22]

5.1 Schanz-Haig-Simons

Measuring tax concessions requires estimating revenue under a regime other than the actual *ttE* and *TtE*, and clearly *EEE* would not serve. Despite accepting TTPI's use of *TEE* as comparator for the calculation of METRs, the Callaghan review accepts that the best way to estimate the cost of 'tax expenditures' or 'tax concessions' is to use the Treasury's preferred Schanz-Haig-Simons 'comprehensive income tax' as base: in the taxation of superannuation, this is denoted *TTE*; any variation from that base is considered to be a concession.[23] Among alternatives are *TEE* and *EET*, neither of which cause a tax wedge (if *T* is invariant) but would generate tax revenue, albeit less than from a comprehensive *TTE* (assuming such a tax would not cause a large behavioural response, and be politically viable).[24] The choice of *TTE* matters: the alternative offered by Treasury (in 2017 but not subsequently) is an 'expenditure tax' base, or *TEE*, which converts the largest and dominant 2017-18 item of superannuation tax expenditure from a positive $19,250m to a negative $9,450m. Disregarding Treasury's sometime prohibition[25] on adding up the separately reported items for superannuation tax expenditures 2017-18, the grand total falls from $40,500m to $10,500m (Treasury 2017, Table 3.2). The words 'expenditure tax' do not appear in the 2019 or 2020 *Tax Benchmarks and Variations Statement* (Treasury 2019, 2020a).

One argument for using the Schanz-Haig-Simons baseline, repeated in the review, is that all other baselines are hypothetical. However, Australia does not have a comprehensive income tax; never has had and, probably, never will. There is no tax on income from hobbies, including from gambling, or on the imputed income and capital gains of owner-occupied residences; and, as Treasury notes, none on unrealised capital gains. Moreover, there is the GST, a major source of tax revenue, which the Treasury models as though it were a tax on labour income: a comprehensive 'comprehensive income tax system' would get rid of the GST.

---

[22] Gallagher (2012) provided life cycle estimates of total government support for retirement income, via superannuation tax concessions (comprehensive income tax benchmark) and the age pension. Clare (2021) criticised Gallagher's treatment of the capital gains discount and dividend imputation.

[23] 'The starting point for defining the income tax benchmark is the Schanz-Haig-Simons (SHS) definition of income. Under this definition, income is equal to the increase in an entity's economic wealth (stock of assets) between two points in time plus the entity's consumption in that period. Consumption includes all expenditures except those incurred in earning or producing income…The income tax benchmark treatment of superannuation is that contributions are made from after-tax income, earnings are taxed at marginal rates and benefits from superannuation are untaxed. Any costs associated with superannuation investments are deductible under the benchmark' (Treasury 2017, pp. 141, 145).

[24] CSRI (2016: 13) presents modelling results that, assuming an annual drawdown rate of 9 percent, 'suggest that for most income deciles there will be a tendency to over-tax superannuation relative to the preferred EET benchmark.'

[25] See RIR (Treasury 2020b: xii) and that, in the Intergenerational Report (Treasury 2021b: 117), Treasury added projections of pension cost to those of total superannuation tax expenditure.

The 'comprehensive income tax' is a hypothetical ideological construct. It would be *the single tax*, sweeping up to itself the Henry George version.[26]

Awkwardly, what the Review regards as the 'realistic' Treasury counterfactual assumes no change in the income tax schedule. However, if Australia adopted a comprehensive income tax at unchanged rates, then the tax receipts would change. Is it not relying on a hypothetical to assume that, if all 'tax concessions' were removed, then the PIT rates would not deviate from the future levels that they would otherwise be? To calculate 'concessions' compared to a comprehensive base without adjusting the rates on the assumed comprehensive tax to ensure revenue neutrality is merely one of the errors that the Review (but not Treasury 2019)[27] makes in its discussion.

Moreover, the Review even incorrectly interprets and applies the comprehensive income tax base. A truly Haig-Simons approach necessarily treats foregone benefits as a tax—benefits form part of 'comprehensive income'. As a result, marginal effective tax rates on labour income always take account of the transfer payments lost as a taxpayer's income changes. In exactly the same way, the reduced claims on the age pension (and associated benefits) and on aged care subsidies have to be included in any defensible estimate of tax rates on superannuation. Not to do so greatly overstates the consequences both to superannuants and to the Treasury of changes in the level of superannuation (Treasury 2019, p.14).

5.2 Risk and certainty equivalents

Fifteen percent earnings tax clearly applies to income from low-risk investments; the Treasury's 'effective' seven percent to risky income streams of dividends and capital gains. Thus, the portfolios being compared are different; their moments will also differ; as a result, their value to the taxpayer and to the Treasury is likely to differ; if so, it seems incorrect to compare the tax rates without converting the gross and net income streams into certainty equivalents. While this is ultimately an empirical matter, the standard 'no arbitrage' condition should result in the tax rates on certainty equivalents being identical, assuming both portfolios are observed in equilibrium (see Ergas, Harrison and Pincus 2010).

More generally, I suggest that pervasive in Treasury's approach and, consequently that of the *Review*, is a disregard of the significance of risk, and of the associated concept of certainty equivalents. The *Review*'s judgment of the prospective adequacy of retirement income flows and its assessment of the contribution of tax concessions to that adequacy, are based on projections of expected flows, not their certainty equivalents, which are lower. There is an implicit comparison between the adequacy of the retirement incomes of those who will benefit from a working lifetime's contributions under the SG system, and that of those solely or primarily dependent on the pension. But the riskiness of future pension income flows must be much less than that of the flows from superannuation accounts—as is evident in this era of unusually low nominal and real interest rates, let alone the Global Financial Crisis. With the *Review*'s emphasis on the generosity of tax concessions, it is easy to get the impression that

---

[26] Treasury commissioned CGE modelling for AFTS, the 'Henry review', which recommended more taxes on rents. The modelers estimated the economic effects of a tax, including the average excess burden, by setting its rate to zero, and then assuming that revenue neutrality was achieved by adjusting a hypothetical lumpsum tax. The modelling framework did not assume that revenue neutrality would be achieved by instituting a hypothetical comprehensive income tax.

[27] The Treasury (2019) provides estimates of the consequences of accounting for endogenous changes in the quanta of tax bases: see pp. 135ff, and Chart 4A-28 of RIR.

those who (as a result of a lifetime of forced saving) will entirely or largely be ineligible for the pension, will be enjoying the benefits of a splendid financial deal, well worth any sacrifices that they have been forced to make. In reality, the income stream they have been compelled to acquire is uncertain, and the risk could only be removed by acquiring an annuity—which is very costly. By not taking those costs into account, the review overstates the replacement rate, and ignores the disadvantage imposed on superannuants, as compared to pensioners.

6 Concluding remarks

The Retirement Income Review relied on estimates of superannuation tax concessions, provided by Treasury and by the Tax and Transfer Policy Institute, with the former being a snapshot of a year, and the latter being the results of modelling of specific, one-shot investment scenarios. I have argued that Treasury's preferred estimates use, as the benchmark counterfactual, the 'comprehensive income tax' that implies unacceptably high burdens of taxation, sometimes over 400 percent. For this and other reasons, most OECD countries impose less punitive tax regimes: when the OECD reported on the rate of tax subsidy provided by 41 countries' main private superannuation scheme on a lifetime basis—and not as a one-year snapshot or as a once-only investment—Australia's Superannuation Guarantee system, at around 24 percent, was close to the median.

Two rhetorical purposes of claiming that superannuation has been and still is being heavily subsidised, are to support proposals for the Government to interfere with the disposition of the retirees' balances and proposals to stop increasing the Superannuation Guarantee Levy. There is also policy relevance in the consequences for the fiscal budget and especially in comparing the projected cost to the Treasury of tax 'concessions' on superannuation, with the Treasury savings from reduced pension outlays as the Superannuation Guarantee system matures.

METRs that are calculated by focusing narrowly on the return from investment ignore that, because a pre-condition of saving is earning the necessary income, the tax on that income is a tax on the uses of that income, which include saving. All taxes on saving have a disincentive effect on the earning of income.

Final remarks: it is a well-known proposition in economics that a benefit of income transfers as against transfers in kind is that they leave the consumption decision to the recipients. Australia provides a great variety of income transfers, including the age pension, but no one for a moment thinks of banning their recipients from using some of that income to benefit future generations, should they choose to do so. It would presumably cause an uproar if pension recipients (who benefit from an even higher proportionate subsidy than superannuants) were prohibited from saving to leave a bequest or to make gifts to their descendants. Thus, even if tax concession in superannuation —contrary to what has been argued above—were as substantial as assessed by Treasury and the Institute and accepted by the Review, would that justify directing its use to current consumption in retirement (which neither the Review nor the Institute advocated)?

References

Australia's Future Tax System. Report to the Treasurer, Ken Henry, Chair, https://treasury.gov.au/review/the-australias-future-tax-system-review/final-report. Cited as AFTS 2010

Breunig, R and Podger, A 2021, 'Completing Australia's retirement income system', Tax and Transfer Policy Institute, https://taxpolicy.crawford.anu.edu.au/publication/ttpi-working-papers/18236/responding-callaghan-completing-australias-retirement-income

Breunig, R and Sobeck, K 2021, 'The economic incidence of superannuation', Tax and Transfer Policy Institute, https://taxpolicy.crawford.anu.edu.au/sites/default/files/uploads/taxstudies_crawford_anu_edu_au/2021-08/economic_of_incidence_final_report_2020.pdf

Callaghan Review: see The Treasury 2020b

Clare, R 2012, *Equity and superannuation – the real issues*, The Association of Superannuation Funds of Australia Limited https://www.superannuation.asn.au/ArticleDocuments/359/ASFA_Equity-and-super_Sep2012.pdf.aspx?Embed=Y

Committee for Sustainable Retirement Incomes (CSRI) 2016, 'Encouraging Sustainability and Self Provision in Retirement Incomes: Policy Conclusions,' https://cfsri.files.wordpress.com/2015/09/csri-sustainability-and-self-provision-position-paper-final.pdf

Craig, J and Chin, R 2105, 'Effective marginal tax rates on savings,' Working Document, Productivity Commission, Canberra, https://www.pc.gov.au/research/supporting/effective-marginal-tax-on-savings/effective-marginal-tax-on-savings.pdf

Ergas, H, Harrison, M and Pincus, J 2010, 'Some economics of mining taxes', *Economic Papers*, 29.4: 369-383

Feldstein, M 2012, 'The Mirrless review', *Journal of Economic Literature,* 50(3), 781–790

FitzGerald, VW 1993, *National Saving: A Report to the Treasurer*, Australian Government Publishing Service, Canberra

Gallagher, P 2012, 'The Distribution of Government Support for Retirement Income – Point-in-Time and Lifecycle Estimates', https://treasury.gov.au/sites/default/files/2019-03/Distribution_of_Govt_support_for_retirement_income.pdf.

OECD 2018, *OECD project on financial incentives and retirement savings Policy Brief No. 1*. https://www.oecd.org/daf/fin/private-pensions/Financial-Incentives-and-Retirement-Savings-2018-highlights.pdf

OECD 2020, *Financial incentives for funded private pension schemes. OECD country profiles 2020*, https://www.oecd.org/finance/private-pensions/Financial-Incentives-for-Funded-Pension-Plans-in-OECD-Countries-2020.pdf

Podger, A 2020, 'Responding to Callaghan: Completing Australia's retirement income system, Tax and Transfer Policy Institute *Working Paper* 16.2020 pp 2-3, https://taxpolicy.crawford.anu.edu.au/sites/default/files/publication/taxstudies_crawford_anu_edu_au/2020-12/complete_wp_a_podger_dec_2020.pdf

Read, M 2021, 'Spending message wrong: industry super', *Australian Financial Review*, 11 Aug., p.9.

RIR: see The Treasury 2020b.

Samuelson, PA 1958, 'An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money,' *The Journal of political economy*, Vol.66 (6), pp.467-482

Scheuer, F and Slemrod, J 2021, 'Taxing Our Wealth', *The Journal of Economic Perspectives*, vol. 35, no. 1, pp.207–230.

Saez, E, Slemrod, J, and Giertz, S. H. 2012, 'The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review,' *Journal of Economic Literature*, 50:1, pp.3–50

Mirrlees, J *et al*. 2011, *Tax by Design*, Institute of Fiscal Studies https://ifs.org.uk/uploads/mirrleesreview/design/ch13.pdf

The Treasury 2017, *Tax Expenditure Statement 2017*. https://treasury.gov.au/sites/default/files/2019-03/2017-TES.pdf.

The Treasury 2019, *Tax Benchmarks and Variations Statement 2019*, https://treasury.gov.au/sites/default/files/2020-01/complete_tbvs_web.pdf

The Treasury 2020a, *Tax Benchmarks and Variations Statement 2020*. https://treasury.gov.au/sites/default/files/2021-01/145906_2020-tbvs.pdf

The Treasury 2020b, *Retirement Income Review. Final Report*, Michael Callaghan, Chair, https://treasury.gov.au/publication/p2020-100554

The Treasury 2021a, 'Retirement income covenant Position Paper 19,' https://treasury.gov.au/sites/default/files/2021-07/188347-retirementincomecovenantpositionpaper.pdf

The Treasury 2021b, *2021 Intergenerational Report*. https://treasury.gov.au/publication/2021-intergenerational-report

Varela, P, Breunig, R and Sobeck, K. 2020, *The Taxation of savings in Australia: Theory, current practice and future policy directions*, Tax and Transfer Policy Institute (TTPI) Policy Report No. 01-2020, Canberra, Australia.

Appendix Tables

Table 1: Marginal Effective Tax Rates (%), Various Definitions and Personal Tax Rates, with Holding Periods of 20 and 45 Years: Savings Account

Panel A: Investment Held for 20 Years

Definition and Denominator of METR	Tax Regimes	Marginal Rate of Personal Income Tax (%)			
		21	34.5	39	47
θ_3; Pre-tax Real Return, as in TTPI 2020	'Pre-tax' is TEE; 'Post-tax' is TTE	41	64	71	82
θ_2; Post-tax Final Real Balance	'Pre-tax' is EEE; 'Post-tax' is TTE	55	113	140	198

Panel B: Investment Held for 45 Years

Definition and Denominator of METR	Tax Regime	Marginal Rate of Personal Income Tax (%)			
		21	34.5	39	47
θ_3; Pre-tax Real Return, as in TTPI 2020	'Pre-tax' is TEE; 'Post-tax' is TTE	50	72	78	87
θ_2; Post-tax Final Real Balance	'Pre-tax' is EEE; 'Post-tax' is TTE	100	225	285	427

Notes.
1: Real earnings rate 3 percent, inflation 2 percent. Tax rate on earnings is 15 percent.
2: See text for the definitions of effective rates θ_2 and θ_3; θ_3 is as in Varela et al. (2020).
3: Spreadsheet available on request.

Table 2: Marginal Effective Rates of Taxation on Disposable Wealth (%), Combining Superannuation Guarantee Levy and Personal Superannuation Contributions

Panel A: Holding period 20 years

	Marginal Rate of Personal income Tax				
	0%	*21%*	*34.5%*	*39%*	*47%*
Earnings tax rate 10%	12	38	63	74	96
Earnings tax rate 15%	17	45	71	82	106

Panel A: Holding period 45 years

	Marginal Rate of Personal income Tax				
	0%	*21%*	*34.5%*	*39%*	*47%*
Earnings tax rate 10%	26	56	84	96	121
Earnings tax rate 15%	41	74	105	119	147

Notes

1: The marginal effective rate is θ_2, here equal to the tax-caused diminution in disposable wealth, as a proportion of disposable wealth, comparing *EEE* with *ttE* applied to the Superannuation Guarantee contribution combined with *TtE* applied to the voluntary contribution. Ten percent of marginal income used for a compulsory SG contribution; 90 percent, after personal income tax, used for a personal contribution into person's superannuation fund.

2: Real earnings rate 3 percent, inflation 2 percent.

3: Spreadsheet available on request.

Table 3: Rates of Tax Concession for Superannuation Guarantee Levy (%), Holding Periods 20, 30 and 45 Years, Marginal Personal Income Tax Rate 34.5 percent.

	Tax Benchmark	
	Comprehensive income: TTE = 34.5%, 24%, 0%	Expenditure: TEE = 34.5%, 0%, 0%
20-year holding period	42%	27%
30-year holding period	36%	14%
45-year holding period	30%	-5%

Notes:

1 Rate of tax concession, τ, is equal to the quantum of tax concession as percentage ratio of benchmark tax bill: see text expression (10).

2 Once-only contribution, earning 10% nominal.

3 The triplets of tax rates refer respectively to those on contributions, fund earnings and withdrawals.

4 The concessional or 'actual' tax rates, ttE, are equal to 15%, 7%, 0%.

5 Spreadsheet available on request.

Table 4: Summary of indexes discussed in text

Panel A: Marginal effective tax rate, METR

Symbol	Equation	Definition	Comments
θ_1	3	$$\dfrac{Effective\ tax\ paid}{Final\ wealth\ if\ no\ taxes}$$	
θ_2	5	$$\dfrac{Effective\ tax\ paid}{Final\ wealth,\ after\ tax}$$	Author's preferred
θ_3	7	$$\dfrac{Effective\ earnings\ tax\ paid}{Pretax\ return}$$	Interpretation of TTPI 2020
θ_3^*	9	See text: θ_3 formulated in present value terms	θ_3 in present value terms
θ_4		$$\dfrac{Effective\ earnings\ tax\ paid}{Posttax\ return}$$	Variation on θ_3
θ_5	8	$$\dfrac{Pretax\ rate\ of\ return\ -\ posttax\ rate\ of\ return}{Pretax\ rate\ of\ return}$$	Annualised rates

Panel B: Average rate of tax concession

Symbol	Equation	Definition	Comments
τ	10	$$\dfrac{Benchmark\ tax\ paid\ \text{-}\ actual}{Benchmark\ tax\ paid}$$	Author's preferred. OECD 2018