

HOW EQUITABLE IS AUSTRALIA'S PROGRESSIVE TAX RATE? A REVIEW AT HIGHER INCOME LEVELS

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ABSTRACT

Vertical equity is concerned with differences in ability to pay, where those able to should pay more — that is, the progressivity of the tax system. Fundamental to any assessment of progressivity of an income tax system is the rate structure, consisting of tax brackets and tax rates. This exploratory paper assesses the progressivity of the Australian income tax system, for yearly income levels of AUD100,000 to AUD250,000. It finds that, while the system is progressive, it is highly regressively progressive at income levels associated with changes in tax brackets, becoming less regressively progressive at the higher end of each tax bracket.

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I INTRODUCTION

A progressive tax system is one where the tax burden, being the total amount of tax paid as a percentage of income, increases as the taxable income increases. It is a tax system based on the principle of 'ability to pay'.

There is an inherent feeling of equity, of fairness, in the term 'ability to pay'. When 'equity' is considered in matters of taxation, it is usually considered in terms of horizontal and vertical equity. A tax is said to be horizontally equitable when individuals with similar income and assets pay the same amount in taxes. If individuals with more wealth, income and access to more resources pay proportionally higher amounts in taxes then it is said to be vertically equitable.

There are four instruments available to influence the progressivity of a tax system. The most fundamental of these is the rate structure, which consists of tax brackets and tax rates. Second are allowances and deductions, both of which influence the size of the tax base. Third are tax credits, which reduce net tax liability. Last is the exemption of certain types of income from taxation, which also affects the size of the tax base.

Australia's income tax system is said to be progressive.¹ In addition to its relatively mature income tax system, Australia has a well-developed transfer system, which also contributes to the progressivity of the income tax system. These two systems, the income tax and transfer systems, are generally considered together as a single tax-transfer system in studies assessing the equity of the tax system.²

Defining what constitutes an equitable benchmark has been elusive. As noted in the most recent review of the Australian taxation system, *Australia's Future Tax System*, '[w]hether elements of the current tax-transfer system improve equity or not depends on a range of judgements. People put different degrees of emphasis on different priorities of a tax-transfer system and these priorities can sometimes conflict.'³ Indeed, this report also notes that there are 'a number of perspectives on equity that people use to inform their assessments of the tax-transfer system'.⁴

¹ 'Tax White Paper: At a Glance — The Progressivity of the Tax and Transfer Systems', *Treasury, Australian Government* (Web Page) <<https://treasury.gov.au/review/tax-white-paper/at-a-glance>>; Peter Whiteford, 'Who Gets What? Who Pays for It? How Incomes, Taxes and Benefits Work Out for Australians', *The Conversation* (Web Page, 22 June 2018) <<https://theconversation.com/who-gets-what-who-pays-for-it-how-incomes-taxes-and-benefits-work-out-for-australians-98627>>.

² '6537.0 — Government Benefits, Taxes and Household Income, Australia, 2015–16', *Australian Bureau of Statistics, Australian Government* (Web Page, 20 June 2018) <<https://www.abs.gov.au/ausstats/abs@.nsf/mf/6537.0>>; Treasury, Australian Government, *Architecture of Australia's Tax and Transfer System* (6 August 2008) <<http://taxreview.treasury.gov.au/content/Paper.aspx?doc=html/Publications/papers/report/index.htm>>; Treasury, Australian Government, *Australia's Future Tax System, Report to the Treasurer — Part Two: Detailed Analysis* (December 2009) <http://taxreview.treasury.gov.au/content/FinalReport.aspx?doc=html/Publications/Papers/Final_Report_Part_2/index.htm>; Peter Saunders, *Equity and the Impact on Families of the Australian Tax-Transfer System* (Monograph No 2, Institute of Family Studies, 1982); Ann Harding, 'The Suffering Middle: Trends in Income Inequality in Australia, 1982 to 1993–94' (1997) 30(4) *The Australian Economic Review* 341.

³ Treasury, *Australia's Future Tax System: Part Two* (n 2) s 3.2.

⁴ *Ibid.*

This is an exploratory paper that examines an old topic from a new perspective. It is part of a larger project assessing the sustainability of the Australian income system. This paper takes a step back and only considers progressivity of the income tax system based on rate structure and only for middle to high salary and wage earners.

Specifically, this paper considers taxpayers earning annual salary and wages between AUD100,000 and AUD250,000, and assesses the impact of any increase in salary and wages. It is not a choice between 'to work' or 'not to work', but rather explores whether the increase in salary and wages under consideration is worth the necessary additional work commitment required in accepting a promotion and/or in changing employer.

The objective and scope of the research associated with this paper are given in Section II. This is followed, in Section III, with a literature review. The key terms 'progressivity' and 'equity' are discussed in Section IV, particularly with regard to their interpretation with respect to this research. Section V contains the data, its analysis and deliberation. Concluding comments are made in Section VI.

II OBJECTIVE AND SCOPE

Two factors can be highlighted with respect to the traditional approach to considering the equity of the income tax system. The first is that the progressivity of the Australian tax system is not questioned. The second is that a socio-economic approach is taken, where the target is the most economically disadvantaged sector of society. This approach is not being questioned by this research. Indeed, it is appropriate given that benefits under both the income tax system and transfer system are targeted mainly at low income levels (such as the low income tax rebate) or at particular circumstances (such as family tax benefits).

This paper differs in respect of its focus. It looks to examine how equitable the income tax system is at the higher income levels. Under consideration are vertical equity and the progressivity of the income tax system at the upper tax bracket levels. It is acknowledged that this is a very simplistic approach. However, it will form the basis of a larger research project with later papers introducing other aspects of progressivity determination to assess the equitable effectiveness of their objectives and on their targets. By commencing with salary and wage earners with of AUD100,000 to AUD250,000, one can determine a baseline unaffected by other aspects of progressivity, namely allowances and deductions, tax credits, exemptions and the impact of the transfer system.

The scope of this paper is delineated as follows.

Only salary and wage income is considered. Excluded are untaxed income (such as exempt income and non-assessable non-exempt income), passive income (such as interest, dividend and rental income) and capital gains and losses. This is very taxpayer specific, not permitting generalisations to be drawn.

Only higher income levels are analysed. This is taxable income from AUD100,000 to AUD250,000. In addition, only annual incomes are considered. It is acknowledged that a lifetime or lifecycle perspective is a better measure of permanent income over the course of a lifetime, and therefore more accurate in comparing different make-ups at any given

level of income.⁵ However, as the focus of this research is on a decision to be made at a particular point in time, an annual perspective is appropriate.

The tax rates used are those for the 2018–19 income year, for an individual who is an Australian resident for tax purposes. The Medicare levy is included as it affects all taxpayers. The Medicare levy surcharge is disregarded.

Government transfers, particularly welfare-type programmes, accrue disproportionately to the lower levels of income distribution and reduce inequality in disposable income. Conceptually, such transfers should be included in any assessment of progressivity of a tax system. Given the focus of research is on the higher levels of income distribution, and considering that transfers represent a small fraction of upper-middle and high income earners' incomes, ignoring these transfers should have little impact.

Behavioural responses, such as tax avoidance and tax minimisation, are ignored. These vary in size and impact, requiring general equilibrium modelling to determine their effect on total tax burdens.⁶ Considering the basic case with no behavioural response is therefore a useful starting point. It is also to be noted that salary and wage earners do not have a choice between 'working' and 'not working'. Any reduction in hours will generally result in a corresponding pro rata decreasing adjustment of their salary and wages. Further, salary and wage earners at the higher income levels are usually contracted to complete tasks rather than complete a predetermined number of hours, as may be the case under enterprise agreements. Thus, working more than the standard 38 hours per week will almost never result in any additional, or overtime, pay.⁷

Finally, and to avoid all doubt, only income tax is considered. All other federal and all state taxes are ignored. The GST is considered to be regressive, as lower-income individuals spend a larger fraction of their income on taxed consumption goods and services. As the state taxes impacting on individuals are generally related to property (stamp duty) or personal choices (gambling tax), ignoring these will have no consequence on the research.

The research, therefore, considers what is normally referred to as middle and high income levels. These terms are, however, not defined. Studies that do relate to income levels tend to focus on household income,⁸ whereas the income tax system is concerned with individual income. In the Australian income tax system, income is divided into levels referred to as 'tax brackets', to which a particular tax rate applies. The Australian Bureau

⁵ Thomas Piketty and Emmanuel Saez, 'How Progressive Is the US Federal Tax System? A Historical and International Perspective' (Working Paper No 12404, National Bureau of Economic Research, July 2006) 8. See also Productivity Commission, Australian Government, 'Tax and Transfer Incidence in Australia' (Working Paper, 7 October 2015).

⁶ Don Fullerton and Diane Lim Rogers, *Who Bears the Lifetime Tax Burden?* (Brookings Institution, 1993).

⁷ Fair Work Ombudsman, Australian Government, *Maximum Weekly Hours and the National Employment Standards* (Fact Sheet, July 2017) <<https://www.fairwork.gov.au/how-we-will-help/templates-and-guides/fact-sheets/minimum-workplace-entitlements/maximum-weekly-hours>>.

⁸ See, for example, Australian Council of Social Service and University of New South Wales, *Inequality in Australia 2018* (2018); Tim Edwards, 'Australia's Household Income and Wealth Distribution', *Mccrindle* (Blog Post, 2019) <<https://mccrindle.com.au/insights/blog/australias-household-income-wealth-distribution>>; '6523.0 — Household Income and Wealth, Australia, 2015–16', *Australian Bureau of Statistics, Australian Government* (Web Page, 13 September 2017) <<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6523.02015-16?OpenDocument>>.

of Statistics, on the other hand, divides income and wealth into quintiles, and often at the household rather than individual level.⁹ One way of determining what are considered low, medium and high income levels is by considering the offsets available. The low income tax offset cuts out at income levels above AUD66,667. Eligibility for the low and medium income tax offset, on the other hand, is taxable income up to AUD125,333. Therefore, for tax purposes, a medium income level is one where the taxable income is more than AUD66,667 and does not exceed AUD125,333. By definition a taxable income exceeding AUD125,333 is considered to be a high income level.

III LITERATURE REVIEW

When taxes increase, there are both positive and negative outcomes. The positive is an increase in revenue that can be used to fund governmental spending or to redistribute under governmental policies. The negative is that tax increases may discourage taxpayers from working. Thus, there is an inevitable trade-off between raising revenue and distorting taxpayer behaviour.¹⁰

A Optimal tax models

As a result of this trade-off, optimal tax models have been developed to provide insights into what a tax system should look like.¹¹ Piketty and Saez consider the 'classical trade-off' between promoting social welfare through taxation and preventing negative influences on economic productivity.¹² Zelenak and Moreland's optimal tax model seeks to answer the question: 'What is the ideal tax and transfer system?'¹³

Other models explore how individuals' preferences shape the tax system. They therefore capture how taxpayers of different incomes have disparate preferences with respect to the tax system. For example, Meltzer and Richard conclude that, when the income of the 'decisive voter' is less than the median, they would choose to increase taxes and fund more redistribution.¹⁴ For Roberts, '[i]f the median income is less than the mean income ... then majority voting will lead to the tax schedule with the highest marginal tax rate being adopted'.¹⁵ Taking a different perspective, Romer concludes that, '[f]or a given government revenue requirement, the poorer individuals tend to favour higher marginal tax rates' and, as a result, '[t]he conflict between high national income and distributional

⁹ Groupings that result from ranking by the level of economic resources (income or wealth) and then dividing the population into five equal groups.

¹⁰ Edward J McCaffery and James R Hines Jr, 'The Last Best Hope for Progressivity in Tax' (2010) 83(5) *Southern California Law Review* 1031, 1054; Thomas Piketty and Emmanuel Saez, 'Optimal Labor Income Taxation' in Alan J Auerbach et al (eds), *Handbook of Public Economics* (North Holland, 2013) vol 5, 391.

¹¹ See, for example, Piketty and Saez, 'Optimal Labor Income Taxation' (n 10); JA Mirrlees, 'Optimal Tax Theory: A Synthesis' (1976) 6(4) *Journal of Public Economics* 327; JA Mirrlees, 'An Exploration in the Theory of Optimum Income Taxation' (1971) 38(2) *Review of Economic Studies* 175.

¹² Piketty and Saez, 'Optimal Labor Income Taxation' (n 10) 392-3.

¹³ See, for example, Lawrence Zelenak and Kemper Moreland, 'Can the Graduated Income Tax Survive Optimal Tax Analysis?' (1999) 53 *Tax Law Review* 51.

¹⁴ Allan H Meltzer and Scott F Richard, 'A Rational Theory of the Size of Government' (1981) 89(5) *Journal of Political Economy* 914, 916-17.

¹⁵ Kevin WS Roberts, 'Voting over Income Tax Schedules' (1977) 8(3) *Journal of Public Economics* 329, 331-2.

equality is paralleled by a conflict of interest between rich and poor'.¹⁶ What these tax models clearly illustrate is that taxpayers, on the entire spectrum from poor to rich, prefer different tax systems based on how much they are personally taxed, how the behaviour of other citizens are affected by the tax system and how much redistribution occurs.

Any optimal tax system model requires several inputs. First, elasticity, which is a measure of how sensitive taxpayers are to tax rates. The higher the elasticity, the more taxpayers are likely to change their behaviour in response to higher taxes.¹⁷ There are several factors that can affect elasticity, including individual circumstances at a particular point in time, age and gender. In a study conducted in 2002, Gruber and Saez found that the overall elasticity of taxable income was 0.4, rising to 0.57 for those taxpayers with a level of income over USD100,000.¹⁸ This seems to indicate that the higher the income, the more elastic is the response to increased tax rates. French, on the other hand, calculated elasticity based on age. This study found that elasticity increases from a range of 0.19–0.37 before age 60, to 1.04–1.33 after age 60.¹⁹ As a general rule, there is a correlation between older taxpayers and higher income levels. There have been elasticity studies focused on the top tax bracket.²⁰ However, the focus has been on determining how high the revenue-maximising tax rate should be. That is, the location of the taxpayer along the income scale is 'critically important for revenue responses to tax rate changes'.²¹

The second input to be considered is the distribution of taxpayer earning ability.²² This includes not only numbers of taxpayers along the income-earning spectrum but also the gap between the earning ability of the rich and the poor. However, earning ability is unobservable and can therefore only be modelled rather than measured.

Finally, there is the social welfare factor that requires combining and valuing the utilities of the individuals in the population. That is, it is a measure of the 'useful-ness' or satisfaction that an individual obtains from its consumption. Therefore, the choice of social welfare function affects different members of society differently.²³

In designing an optimal tax system, these inputs matter. McCaffery and Hines note how 'optimal tax models are extremely sensitive to changes in key assumptions and parameters'.²⁴ If sensitivity to taxes is high/low (elasticity), if there is more equality/inequality (earning ability distribution), and if more care is given to the

¹⁶ Thomas Romer, 'Individual Welfare, Majority Voting, and the Properties of a Linear Income Tax' (1975) 4(2) *Journal of Public Economics* 163, 171.

¹⁷ Piketty and Saez, 'Optimal Labor Income Taxation' (n 10).

¹⁸ Jon Gruber and Emmanuel Saez, 'The Elasticity of Taxable Income: Evidence and Implications' (2002) 84 *Journal of Public Economics* 1, 3.

¹⁹ Eric French, 'The Effects of Health, Wealth, and Wages on Labour Supply and Retirement Behaviour' (2005) 72(2) *Review of Economic Studies* 395, 411–12.

²⁰ See, for example, E Saez, JB Slemrod and SH Giertz, 'The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review' (2012) 50 *Journal of Economic Literature* 3; SH Giertz, 'The Elasticity of Taxable Income: Influences on Economic Efficiency and Tax Revenues, and Implications for Tax Policy' in AD Viard (ed), *Tax Policy Lessons from the 2000s* (AEI Press, 2009) 101.

²¹ John Creedy and Norman Gemmill, 'Measuring Revenue-Maximising Elasticities of Taxable Income: Evidence for the US Income Tax' (Working Papers in Public Finance No 02/2014, Victoria University of Wellington, January 2014) 20.

²² Mirrlees, 'An Exploration in the Theory of Optimum Income Taxation' (n 11) 176–7.

²³ Zelenak and Moreland (n 13) 53.

²⁴ McCaffery and Hines (n 10) 1057.

poor/rich (social welfare factor), then the optimal tax system changes. Thus, for example, if the elasticity of taxpayer behaviour is high, the optimal tax system will generally feature lower rates; the optimal top tax rate will change if the distribution of earning ability at the top end of the population is different.²⁵

B Application to research

While it is necessary to consider the literature on optimal tax systems, the parameters of this research are more limited. The focus is on taxpayers with salary and wages of AUD100,000 to AUD250,000. The inputs for this research, as determined from the literature review, are:

- elasticity is high, meaning taxpayers are sensitive to increases in tax rates
- earning ability is measured as annual salary and wages
- social welfare is not applicable, as only a portion of the total population is considered.

IV TERM DEFINITIONS

This research is concerned with 'progressivity' and 'equity'. This section examines the meaning of these terms and how they are interpreted for the purposes of this research.

A Measure of progressivity

An income tax system may be regressive, proportional or progressive. A regressive tax system is one where the increase in tax liability is less than the increase in income, while the increase in tax liability and increase in income is uniform in a proportional tax system. A progressive tax system means that the rate of increase in tax liability is higher than the rate of increase in income.

Another way of phrasing this is that, in a proportional tax system, the average tax rate equals the marginal tax rate. In a progressive tax system, the average tax rate is lower than the marginal tax rate, whereas the opposite holds true for a regressive tax system.

A progressive tax system itself may be regressive, proportional or progressive. If regressive, the rate of progression decreases when entering into higher tax brackets. A proportional progression means that the rate of tax increases uniformly with the rate of increase in income. And therefore, by definition, a progressive progressive tax system is one where the rate of increase in tax exceeds the rate of increase in income.

While these definitions of regressivity, proportionality and progressivity are universally accepted, measuring the degree of income tax progressivity is not as settled. There are two conventional ways of measuring progressivity. The first measure is according to the difference between the tax rates paid by high-income and low-income groups. For this, the focus is on tax brackets (including the tax-free threshold) and marginal tax rates. The second is where progressivity is measured as the greater the share of income received by

²⁵ Piketty and Saez, 'Optimal Labor Income Taxation' (n 10) 412.

the rich, the greater their share of taxes paid. Here the focus is on the proportion of the population who are high income earners and on the share of tax paid.

Various methods are proposed that express the ratio of change in the variables used in the calculation. Pigou developed two measures, the first being average rate progression, which measures the change in the average tax rate, and the second is marginal rate progression, which is the ratio of change in the marginal tax rate to the change in income.²⁶ Alternative measures are liability progression, which measures the percentage change in tax liability to the percentage change in income, and residual income progression, which measures the ratio of the percentage change in income after tax to the percentage change in income before tax.²⁷ A variety of other measures have been proposed,²⁸ including using the share of taxes paid,²⁹ and comparing the impact of a tax with more general measures or indexes of income inequality.³⁰

For this research, progressivity is defined as the gap between pre-tax and post-tax income. It is not the amount of tax paid.

B Equity

Equity is often associated with redistribution. Indeed, 'the equity or redistributive goal' has been stated to be one of the 'overall objectives, or principles, of taxation'.³¹

The concept of equity, or fairness, refers to the fact that the tax system should be equitable in the way taxpayers are treated. It is usually defined in terms of 'economic position'. That is,

[h]orizontal equity requires individuals in the same economic position to be treated the same by the tax-transfer system. Vertical equity is generally considered to mean that individuals in different economic positions should be treated differently, usually with those having greater economic capacity paying more.³²

Here 'economic position' is defined by reference to criteria such as family circumstances and geographical area, not merely to individual income. Thus, two taxpayers with equal incomes, the first being single and the second married with two children, are not regarded as being in the 'same economic position'. This impacts only on horizontal equity.

Vertical equity, on the other hand, is concerned with differences in ability to pay, where those able to pay should pay more — that is, the progressivity of the tax system. Vertical

²⁶ AS Pigou, *A Study in Public Finance* (Macmillan, 3rd revised ed, 1960).

²⁷ RA Musgrave and Tun Thin, 'Income Tax Progression' (1948) 56(6) *Journal of Political Economy* 498.

²⁸ See, for example, KS Peter, S Buttrick and D Duncan, 'Global Reform of Personal Income Taxation, 1981–2005: Evidence from 189 Countries' (2010) 63(3) *National Tax Journal* 447; I Joumard, M Pisu and D Bloch, 'Tackling Income Inequality: The Role of Taxes and Transfers' (2012) 1 *OECD Journal: Economic Studies* 37; NC Kakwani, 'Measurement of Tax Progressivity: An International Comparison' (1977) 87(345) *Economic Journal* 71; D Suits, 'Measurement of Tax Progressivity' (1977) 67 *American Economic Review* 747.

²⁹ Kakwani (n 28); Suits (n 28).

³⁰ An example is the Gini coefficient, which measures how unequal the distribution of income is among individuals and households. By estimating the Gini coefficient before taxes and transfers, and comparing it with the Gini coefficient after taxes and transfers, the progressivity of the tax and transfer system can be ascertained.

³¹ Saunders (n 2) 25.

³² Treasury, *Architecture of Australia's Tax and Transfer System* (n 2).

equity also involves the perceived equity of the taxpayer's burden relative to that of other taxpayers.³³ Indeed, it has been suggested that the perceived fairness of the tax rate is more important than its absolute level.³⁴

Of relevance to this research is vertical equity and the perceived fairness of the progressivity of the income tax system as determined by the objective analysis of pre- and post-tax income.

V DATA AND ANALYSIS

A The data

A progressive tax system is usually segmented into tax brackets that progress to successively higher rates of tax. Each tax bracket represents a marginal tax rate that increases in each tax bracket. That is, income is taxed on the extra income earned in each tax bracket at successively higher rates. At the highest bracket it becomes a flat tax rate. Australia currently has five tax brackets.

The data used in this study is taxable income from AUD100,000 to AUD250,000, at AUD10,000 intervals. These income levels correlate to the fourth and fifth tax brackets, with marginal tax rates of 37 per cent and 45 per cent, respectively. The tax payable and Medicare levy is calculated using 2018–19 tax rates. With AUD100,000 being the baseline, factors of income, tax and net income are calculated and an average tax plus Medicare levy rate determined. This data is shown in Table 1.

Table 1: Calculated data based on selected taxable annual incomes

Taxable income (AUD)	Tax payable (AUD)	Medicare levy (AUD)	Net income (AUD)	Factor from baseline			Average tax + Medicare (%)
				Income	Tax	Net income	
250,000	85,597	5,000	164,403	2.500	3.494	2.177	36.24
240,000	81,097	4,800	158,903	2.400	3.310	2.105	35.79
230,000	76,597	4,600	153,403	2.300	3.127	2.032	35.30
220,000	72,097	4,400	147,903	2.200	2.943	1.959	34.77
210,000	67,597	4,200	142,403	2.100	2.759	1.886	34.19
200,000	63,097	4,000	136,903	2.000	2.576	1.813	33.55
190,000	58,597	3,800	131,403	1.900	2.392	1.740	32.84
180,000	54,097	3,600	125,903	1.800	2.208	1.668	32.05
170,000	50,397	3,400	119,603	1.700	2.057	1.584	31.65
160,000	46,697	3,200	113,303	1.600	1.906	1.501	31.19
150,000	42,997	3,000	107,003	1.500	1.755	1.417	30.66
140,000	39,297	2,800	100,703	1.400	1.604	1.334	30.07

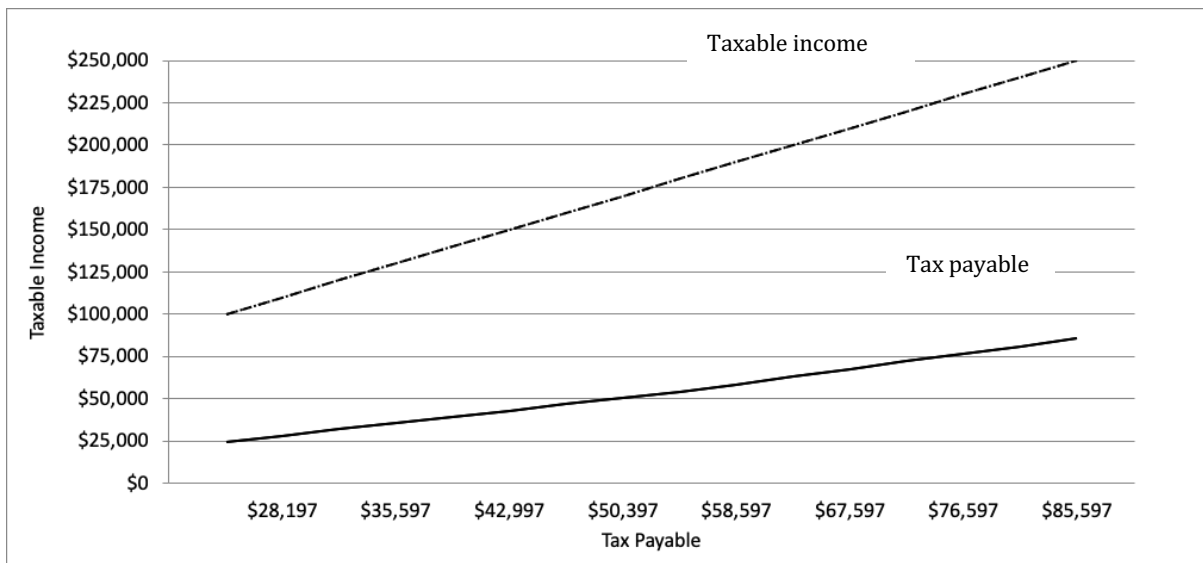
³³ BR Jackson and VC Milliron, 'Tax Compliance Research: Findings, Problems and Prospects' (1986) 5 *Journal of Accounting Literature* 125.

³⁴ DV Moser, JH Evans III and CK Kim, 'The Effects of Horizontal and Exchange Inequity on Tax Reporting Decisions' (1995) 70(4) *Accounting Review* 619, cited in Nicoleta Bărbuță-Mișu, 'A Review of Factors for Tax Compliance' (2011) 1 *Economics and Implied Informatics* 69, 70.

130,000	35,597	2,600	94,403	1,300	1.453	1.250	29.38
120,000	31,897	2,400	88,103	1,200	1.302	1.167	28.58
110,000	28,197	2,200	81,803	1,100	1.151	1.083	27.63
100,000	24,497	2,000	75,503	1,000	1.000	1.00	26.50

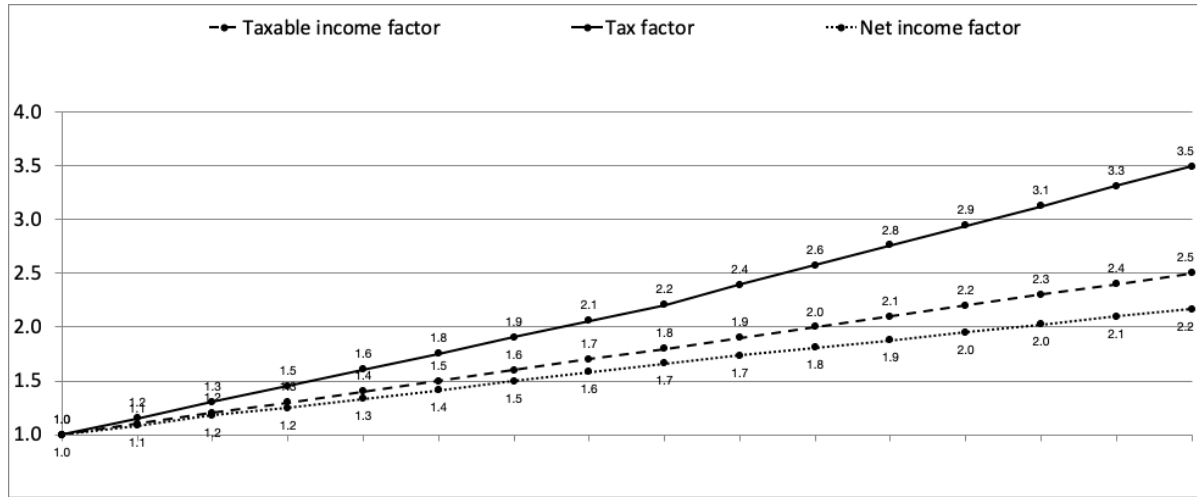
Figure 1 illustrates the relationship between taxable income and tax payable. Progressivity is depicted by the widening gap between pre-tax income and tax payable. It is the equitability of this gap, this progressivity, with which this research is concerned.

Figure 1: Relationship between taxable income and tax payable (AUD)



A baseline is a point of reference. Using a baseline allows comparisons to be made and also enables the identification of any correlations within the dataset. The factors, and therefore the comparisons and correlations made in this study, are income, tax and net income. The relationship between these factors is shown in Figure 2, which serves as another depiction of the progressivity of the Australian income tax system. As taxable income (dash line) increases, so net income (dotted line) increases at a declining rate, shown by the increasing gap between the taxable income and net income factors. While the increase in tax (straight line) progressively increases, it is at a substantially faster rate than taxable income.

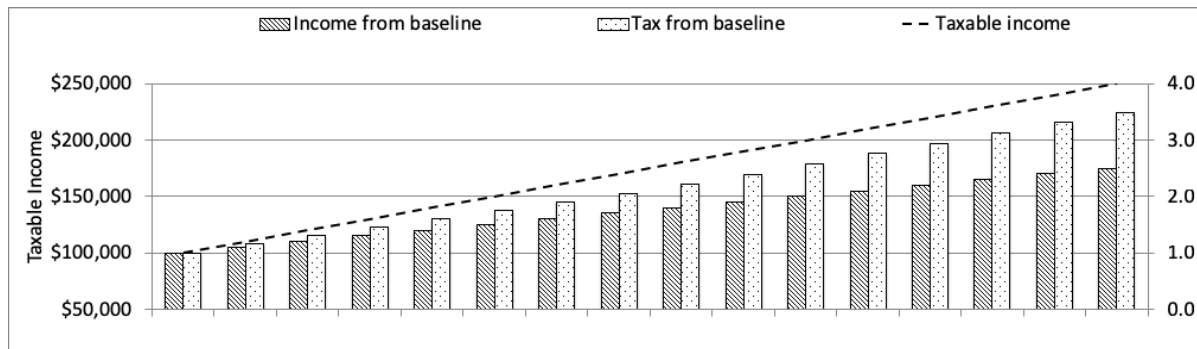
Figure 2: Relationship between the taxable income, tax and net income factors



B Graphical analysis

Figure 3 compares the increase in income over the data range with the corresponding tax payable. There is clearly a disproportionate increase in tax paid compared with income before tax.

Figure 3: Comparison of income and tax from the baseline (AUD)



The income factor means that a salary of AUD250,000 is 2.5 times that of AUD100,000. The tax factor, on the other hand, shows that an individual on AUD250,000 pays 3.5 times the amount of tax than an individual who earns AUD100,000. The disposable income relative to AUD250,000, shown by the net income factor, is 2.2 times that of disposable income from AUD100,000. The relationship between tax payable and net income is shown in Figure 4.

Figure 4: Comparison of net income and tax from the baseline (AUD)

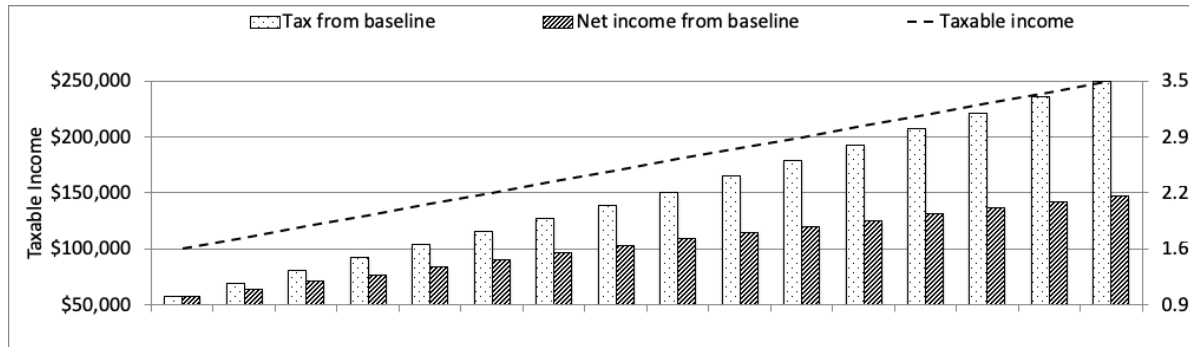
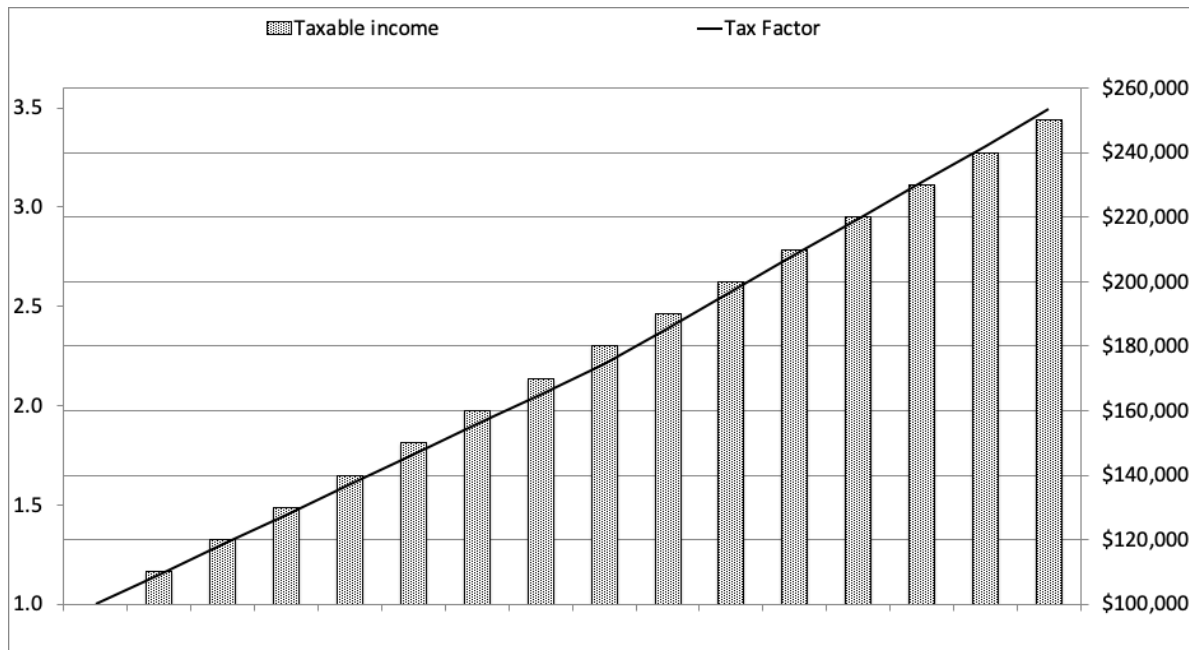


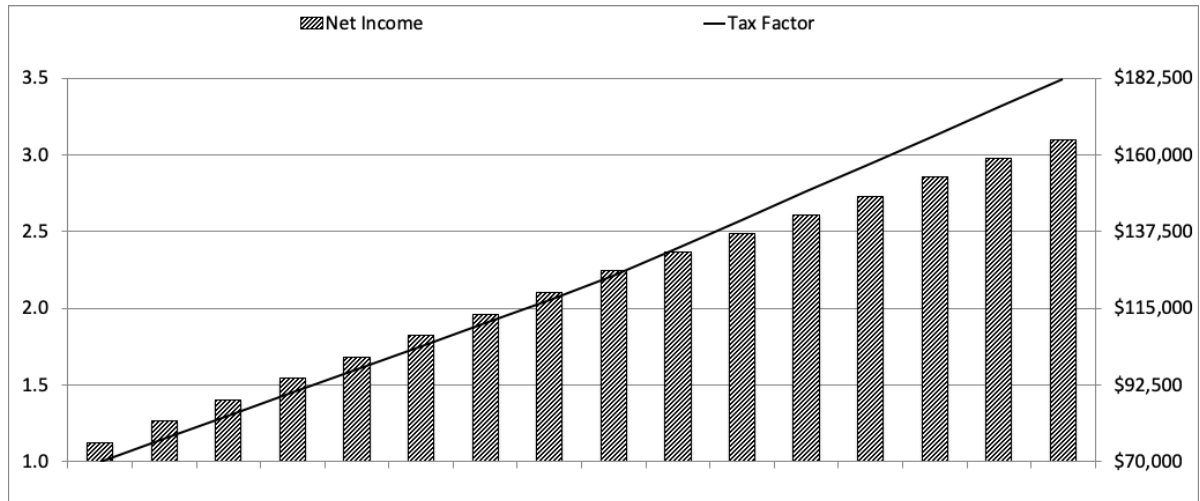
Figure 5 illustrates the relationship between taxable income and the tax factor. It shows that, up to AUD180,000, the taxpayer is keeping incrementally more of their increases. Above that (being the top tax bracket), the more income one gets, the less of that income one keeps.

Figure 5: Relationship between taxable income (AUD) and the tax factor



This is supported when comparing net income and the tax factor as shown in Figure 6. Note that the net income associated with a taxable income of AUD180,000 is AUD122,303.

Figure 6: Relationship between net income (AUD) and the tax factor



C Data analysis

For each increase of AUD10,000 in taxable income, the income increases by a factor of 0.1 from the baseline. This is irrespective of the tax brackets. The change in tax bracket at an income level of AUD180,000 shifts the tax and net income factors from the baseline, given the increase in marginal tax rate associated with the change in tax bracket. Thus, the incremental tax factor for each AUD10,000 increase in taxable income is 0.151 in the lower tax bracket and 0.184 in the top marginal tax bracket. This is a gain of 0.033. For net income the incremental factor decreases from 0.083 to 0.073, a decrease of 0.01.

A hallmark of a progressive tax system is that average tax rates are less than marginal tax rates. That is clearly evident in the data. The current marginal tax rate for the income bracket of AUD180,000 and above is 45 per cent, and 37 per cent for the lower income bracket containing salary and wages of AUD100,000 to AUD179,999. By examining the incremental change in the average tax and Medicare rate, one can ascertain the degree of progressivity. This information is contained in Table 2.

Table 2: Incremental change in average tax (including Medicare) rates

Taxable income (AUD)	Average tax + Medicare (%)	Incremental change in average (%)
250,000	36.24	0.45
240,000	35.79	0.49
230,000	35.30	0.53
220,000	34.77	0.58
210,000	34.19	0.64
200,000	33.55	0.72
190,000	32.84	0.79
180,000	32.05	0.41
170,000	31.65	0.46
160,000	31.19	0.52
150,000	30.66	0.60
140,000	30.07	0.69
130,000	29.38	0.80
120,000	28.58	0.95
110,000	27.63	1.14
100,000	26.50	

As taxable income increases, the average rate of tax and Medicare levy increases. However, it increases at a declining rate in each tax bracket. This shows that a taxpayer is better off towards the top end of each tax bracket.

It is also worth noting that a taxable income of AUD140,000 gives an average tax rate close to the company tax rate of 30 per cent, and that a taxable income of a little under AUD110,000 equates to the 27.5 per cent tax rate of a base rate entity.

D Discussion

Obviously a salary and wage earner will have more net income, or disposable income, the more their taxable income increases. But it is the tax liability that will determine what the increase in net income is relative to the increase in taxable income.

A progressive tax system appears equitable and fair. Marginal tax rates increase as incomes go up. This means that individuals on higher incomes pay more in taxes than those on lower incomes. However, the structure of income tax brackets means that any change to the bottom of the rate schedule directly affects the tax liability of all taxpayers who make more than that amount.

Given that only the middle to top end of the total salary and wage earning taxpayer population is considered in this aspect of the research, it is necessary to consider the term 'inframarginal', meaning below the margin. For example, assume Taxpayer Bob earns AUD170,000 annually. An opportunity arises that will give Taxpayer Bob an annual salary of AUD190,000. However, he will need to work harder at this new job than where he is currently employed. In making the decision about whether to work harder in order to gain an additional AUD20,000, Taxpayer Bob is concerned with the marginal tax rate that applies to the extra AUD20,000. If the government were to raise the tax rate that applies to the first AUD90,000, this will have negligible effect on Taxpayer Bob's decision as to whether to earn additional income. Because he earns more than AUD90,000, this rate change is 'inframarginal' to Taxpayer Bob. Since there are many taxpayers earning over AUD90,000, raising this tax rate would result in considerable revenue but relatively little distortion in behaviour.

However, raising rates at higher levels of income has potentially the opposite effect. At least in theory. There is support for the contention that if the government raises tax rates at high levels of income, it distorts the behaviour of the rich.³⁵ However, this is not settled. It is also stated that 'there is no empirical evidence that marginal tax rates on moderately high incomes, of between 35% and 50% cause significant inefficiencies or discourage work or investment'. At a practical level, one can say 'of course not'. Only those individuals with an alternative source of income to salary and wages have the luxury of declining to work just because the tax rate has increased. Working for a wage is the price people must pay to live in society, put food on the table, educate their children, have access to medical treatment when required, and be able to take the occasional holiday.

What gives the tax system its progressivity are the tax brackets. The higher the number of tax brackets, the greater is the progressivity. Conversely, a reduction in the number of

³⁵ McCaffery and Hines (n 10) 1055; Gruber and Saez (n 18) 3; Mirrlees, 'An Exploration in the Theory of Optimum Income Taxation' (n 11).

tax brackets causes the tax system to become more of a proportional progressive tax system. The tax rates have a smaller, if any, impact on progressivity. Their impact is more on vertical equity. Reduction in tax rates flatten the rate structure, edging the progressive tax system towards being more of a progressive proportional tax system.

This study considers vertical equity and the progressivity of the income tax system at the upper tax brackets. It is concerned with salary and wage income, or taxable income, of AUD100,000 to AUD250,000. This covers two tax brackets with marginal tax rates (including Medicare levy) of 39 and 47 per cent, the change-over point being at AUD180,000, which is approximately 2.1 times the average wage in Australia.³⁶

As depicted in Figure 6 by the tax factor line intersecting with net income, an individual keeps incrementally more of their increase up to a taxable income of AUD180,000. Indeed, the difference in the income and net income factors is around 0.1, which increases to 0.2 and more from AUD200,000. The perception of fairness, or equity, from the taxpayer's perspective, therefore, diminishes as the taxpayer moves into the top tax bracket.

There is a definite advantage to being towards the top of a tax bracket. The more one progresses through a tax bracket, the lower the incremental increase in the average tax rate is, as shown in Table 2. Due to the change in marginal tax rates when changing income tax brackets, there is an increase in the incremental change in the average tax rate. A taxpayer who moves from a salary of AUD180,000 to AUD185,000 or AUD190,000 is at much more of a disadvantage than a taxpayer on, say, AUD150,000 or AUD230,000 who receives a similar dollar increase.

This creates specific motivations for the taxpayer to change employers. It is usually only by changing jobs that one is able to secure a substantial increase in taxable income. This can be illustrated using an increase of AUD170,000 to AUD200,000, where there is just under an average of 2 per cent increase in tax. When nearing the top end of a tax bracket there is an incentive to move jobs and secure a substantial increase in taxable income, otherwise the after-tax benefit of a normal or CPI-related increase (consumers price index) is marginal. That is, the increase in disposable income relating to an increase in taxable income of AUD180,000 to AUD190,000 is less than that derived from a lower taxable income. This also impacts on the perception of fairness.

As noted above, a progressive tax system can itself be regressive, proportional or progressive.³⁷ Essentially, it is regressive if the rate of progression falls when entering into higher income brackets.³⁸ This is shown diagrammatically when the line of tax progression lies above the income line, as in Figure 7. The closer the lines when moving up the income scale, the lower is the regressive progression. Conversely, if the distance

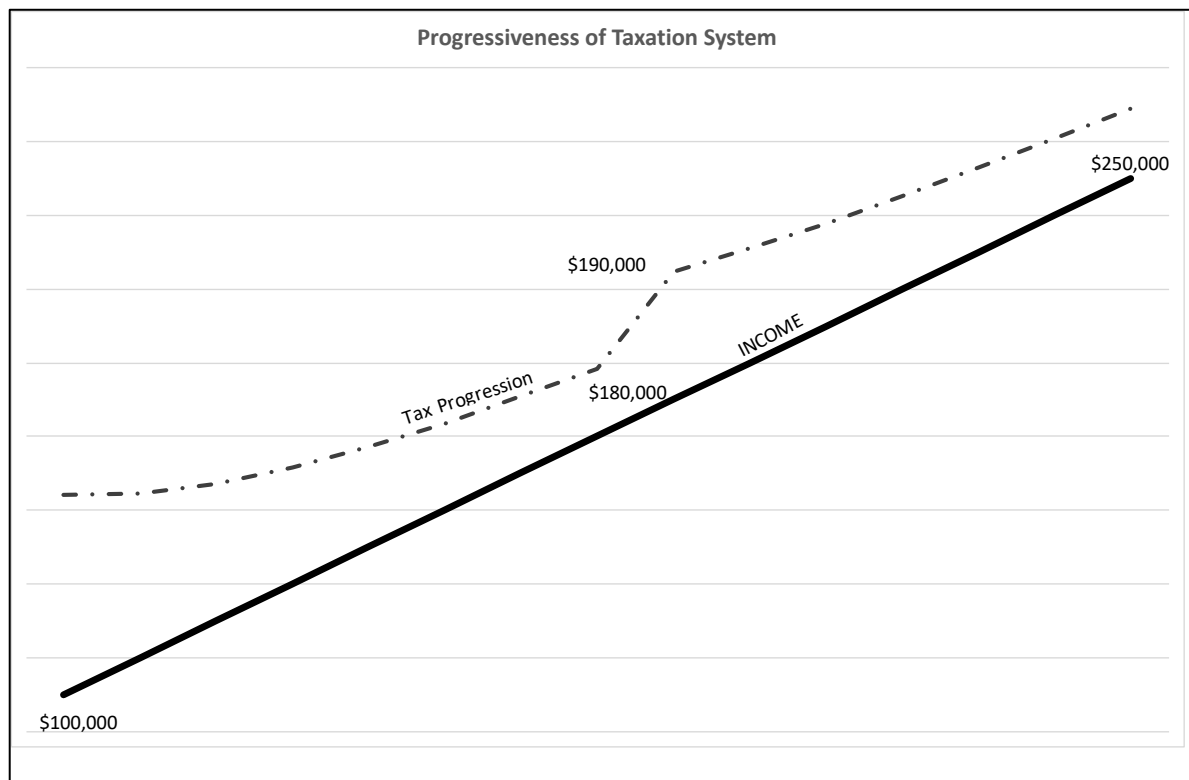
³⁶ '6302.0 — Average Weekly Earnings, Australia, May 2019', *Australian Bureau of Statistics, Australian Government* (Web Page, 21 February 2019) Table 1 <<https://www.abs.gov.au/ausstats/abs@.nsf/mf/6302.0>>.

³⁷ See Section IV.A.

³⁸ Florije Govori, 'A Different Approach of Tax Progressivity Measurement' (Working Paper No 62846, Munich Personal RePEc Archive, January 2015).

between the tax progression and income lines increases, the higher is the degree of regressive progression.³⁹

Figure 7: Progressivity of the tax system



This indicates that, at least at income levels between AUD100,000 and AUD250,000, the Australian income tax system is highly regressive progressive at the entry point of each tax bracket. As individuals move towards the top end of a tax bracket, the regressivity of the progressive tax system decreases.

It is also interesting to note that a taxable income of around AUD140,000 gives an average tax rate (including Medicare levy) equivalent to that of the statutory company rate. A taxable income of a little under AUD110,000 equates to the same tax rate applicable to base rate entities. The latter is well within the 'middle income' level.⁴⁰

VI CONCLUDING REMARKS

Reducing the number of tax brackets decreases the progressivity of the tax system. This is what has been proposed in the 2019 Federal Budget by the Morrison Coalition Government. The proposal is that, by 2024–25, there will be only four income tax brackets. The third tax bracket will cover taxable income of over AUD45,000 to AUD200,000, at a marginal tax rate of 30 per cent. The fourth tax bracket remains at 45

³⁹ Ibid.

⁴⁰ See the discussion on the low and medium income tax offset in Section II.

per cent for those individuals earning over AUD200,000. This will be a much flatter tax system than is currently the case. Nevertheless, it is stated that the progressive tax system will be maintained. Progressivity is measured as the 'share of personal income tax paid'. The example given is that an individual on AUD200,000 earns more than 4.4 times a person on AUD45,000 but will pay 10 times more tax.⁴¹

Therefore how progressivity is defined and measured does have an impact on how the message is perceived. Individuals are not concerned with where they sit with respect to the share of personal income tax they pay. Indeed, most taxpayers consider themselves to be 'middle income earners'.⁴² Individuals are concerned with the amount of personal income tax they pay. With respect to other taxpayers, the concern is largely limited to ensuring compliance with tax obligations and that those who need financial assistance receive an adequate redistribution.⁴³

While the tax system is inherently equitable, it must be perceived to be fair, too. And it is fair, at the higher end of each tax bracket. However, for an increase in income across the change in tax bracket, this increase must be significant if it is to provide material benefit to an individual.

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⁴¹ 'Budget 2019-20: Lower Taxes for Hard-Working Australians and Small Business', *Treasury, Australian Government* (Web Page) <<https://www.budget.gov.au/2019-20/content/tax.htm>>.

⁴² Matt Wade, 'Think You Are a Middle-Income Earner? You're Probably Wrong', *Sydney Morning Herald* (Sydney, 7 April 2019).

⁴³ See discussion in Section III.A.

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