children $c$ weighted by the resource cost of a child relative to adults $\theta$ and a parameter $\delta$ that reflect the overall economies of scale of the household. We examine trends generated by different values of $\theta$ and $\delta$. Values of $\delta$ around 0.4 and $\theta$ close to 0.1 to 0.4 generates the closest trend with individual data. In contrast, parameter values of $\theta = 0.6, \delta = 0.8$ used by Herault and Azpitarte (2015) for Australia, and $\theta = 0.7, \delta = 0.6$ used for the U.S by Cutler and Katz (1992) generate significantly lower levels of progressivity. Overall, results from household level data from all equivalence scales support our results using individual level data.

### 6.3 Transfer programs and overall progressivity

In this section we extend our analysis to account for the government transfer programs including age pension and family benefits. In Australia, the government transfer programs are usually means-tested, using household income and assets. We use data from our HILDA sample to calculate household income, taxes and transfers. We examine the progressivity of the income tax system and the transfer system separately and then whole tax and transfer system together. The relative concentration curves and Suits index are our analytical tool to measure of progressivity of the tax and transfer system.

**The transfer system.** Figure 20b illustrates the relative concentration curve for transfers for 2004, 2009 and 2016.

As seen in Panel b of Figure 18, the Australian transfer system is progressive. The concave shape implies that higher income households receive a smaller share of transfers relative to their share of income. When cumulative share of income is plotted against the corresponding cumulative share of transfers a concave curve above the line of proportionality indicates that the system is progressive. Thus, the closer the Suits index is to 0, the lower the progressivity of transfers. Compared to 2004, the transfer system in 2016 is more progressive, while 2009 shows the least progressive transfer system.

**Overall progressivity.** Figure 21 compares the trends in the progressivity of the income tax (top most panel) with that of transfers (middle panel). Except for 2009, the progressivity of transfers have been relatively stable with a slight increase from 2004 to 2016.

The bottom panel of Figure 21 plots the trend in progressivity of the overall tax-transfer system. The Suits index for the overall system is a weighted average of the individual Suits indices where the weights are equal to the system's total revenue. From our sample, the tax system generates around 60-64% of total revenue and the transfer system generates a negative 35-40% of total revenue during the period. Thus the progressivity of the tax system dominates trends in the progressivity of the overall tax-transfer system. However, adding transfers increases the overall Suits index by around 0.1 point compared to the Suits index for tax.

**Redistributive effects.** Figure 22a plots the trend in the Gini coefficient for income before and after tax and transfers. Trends in income inequality has been relatively stable during the period. Transfers play a large role in the redistribution of income. This is observed from the large gap between the Gini coefficients for pre-transfer income and that for income after transfers before tax. Income inequality is further reduced by income tax. However, in comparison, the redistributive effect of income tax is small relative to that of transfers. For brevity we illustrate the redistributive effect of the overall tax-transfer system in Figure 22b using the difference in the Gini coefficient for income before and after tax and transfers. Trends in the redistributive

effect follows the trend in progressivity for the majority of years. As explained before, the size of the tax-transfer system also affects redistribution. This explains those years where the trends in redistributive effect and progressivity diverge.

### 6.4 Wealth distribution and progressivity

We examine the relationship between income tax and wealth using the household samples from HILDA for the years 2006, 2010 and 2014. Wealth is measured in terms of household net worth which are the total assets net of total liabilities of each household. Table 9 summarises the wealth and tax distribution for the years.

Table 6 provides evidence of significant inequality in the distribution of wealth. In this regard, the bottom 20 percent of households own less than 1 percent of total wealth, while the top 20 percent own more than 63 percent of total wealth - that is, a larger share compared to the all other quintiles combined. Although the share of tax paid increases as wealth increases, the share of tax paid relative to the share of wealth held decreases. In 2006, the share of tax burden of the bottom 20 percent was around 13 times larger than there share of wealth. Whereas, the share of tax paid by the top 20 percent was around half their share of total wealth. Decreasing relative tax liabilities with increasing wealth indicate that income tax is regressive in terms of wealth. The concave relative concentration curve plotting the cumulative share of income against the cumulative share of wealth in Figure 23 illustrates this regressivity.

## 7 Conclusion

In this paper we provide a comprehensive examination of income tax progressivity in Australia using two approaches. The first approach measures tax progressivity in terms of tax liability progression at a given income level, i.e., the elasticity of tax with respect to income (Tax progression-based measure). The second approach bases on the distribution of tax liabilities relative to the income distribution to measure tax progressivity (Tax distribution-based measure). We estimate these measures using two datasets: administrative data and household survey data. Our estimation results obtained from the two approaches are quite different. The result from the tax progression approach indicates a declining trend in tax progressivity throughout the study period. Meanwhile, the result from the tax distribution approach indicates a progressivity cycle.

Intuitively, the tax progression-based measure provides local estimates of tax progressivity. Such that the estimated value of the progressivity parameter obtained from least squares estimates differ significantly from those obtained from quantile regressions. The elasticity of tax liability varies considerably across income distribution and over time. The tax progression approach is limited in evaluating the overall progressivity of Australia's income tax system. On the other hand, the tax distribution based-measures, i.e., Suits and Kakwani indices, measure tax progressivity in terms of the distribution of tax liabilities relative to income distribution. They are more informative in assessing the overall level of tax progressivity.

Moreover, the tax distribution approach is more flexible in identifying driving factors behind changes in tax progressivity, including income distribution and tax policy. Keeping the income distribution unchanged, we are able to isolate the effect of changes to the tax schedule on the progressivity level. Similarly, holding the income tax schedule constant we are able to

isolate the effect of changes in the income distribution and examine the effect of bracket creep on the progressivity level. Our results show that the evolution of income distribution and interactions between income distribution and bracket creep strongly affect the progressivity level of Australia's personal income tax system.

In extension, we examine the distributive role of progressive income taxes. We estimate the redistributive effect of taxes by measuring the difference in the Gini coefficient of pre- and post-tax income. We find that there are diverging trends in the redistributive effect and progressivity. There has been a decline in progressivity; however, an increase in the size of the tax system maintained the redistributive effect at a steady level.

We highlight the quantitative importance of accounting for household heterogeneity when measuring tax progressivity using household survey data. The magnitude of the Suits index is highly sensitive to the parametrization of the adult equivalence scale. Taxes and transfers depend on age, family structure and a large variety of other factors. In addition, since Suits and Kakwani indices are independent of the size of the tax system, they can be used for international comparison of tax progressivity across countries. We leave these issues for future research.

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# A Appendix A: Main tables and figures

## A.1 Tables

Table 1: Income tax schedule 2004 and 2016

| 2004 | | 2016 | |
|---|---|---|---|
| Marginal tax rate | Income bracket | Marginal tax rate | Income bracket |
| 0 | Below 6,001 | 0 | Below 18,201 |
| 17 percent | 6,001 - 21,600 | 19 percent | 18,201 - 37,000 |
| 30 percent | 21,601 - 52,000 | 32.5 percent | 37,001 - 80,000 |
| 42 percent | 52,001 - 62,500 | 37 percent | 80,001 - 180,000 |
| 47 percent | 62,501 or more | 47 percent | 180,001 or more |

Table 2: Local measures of progressivity

| | Definition | Formula | Progressive | Regressive |
|---|---|---|---|---|
| Average rate progression | The change in average tax rate with change in pre-tax income. | $\frac{\partial t}{\partial y}$ | $> 0$ | $< 0$ |
| Liability progression | Elasticity of tax with respect to pre-tax income. | $\frac{\partial T}{\partial y} \cdot \frac{y}{T}$ | $> 1$ | $< 1$ |
| Residual income progression | Elasticity of residual income with respect to pre-tax income. | $\frac{\partial (y-T)}{\partial y} \cdot \frac{y}{(y-T)}$ | $< 1$ | $> 1$ |

Note that, $T$ denotes the total tax liability and $y$ is pre-tax income.

Table 3: Summary statistics 2004 (ATO)

| | Pre-tax income | | | Tax | | | Relative share | Tax rate | |
|---|---|---|---|---|---|---|---|---|---|
| Quantile | Mean | Share | Cumulative | Mean | Share | Cumulative | Tax share/Income share | Marginal | Average |
| Decile 1 | 3,545.13 | 0.90 | 0.90 | 0.25 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |
| Decile 2 | 10,911.72 | 2.78 | 3.69 | 268.32 | 0.31 | 0.31 | 0.11 | 0.17 | 0.02 |
| Decile 3 | 17,050.47 | 4.35 | 8.03 | 996.04 | 1.15 | 1.47 | 0.27 | 0.17 | 0.06 |
| Decile 4 | 23,092.70 | 5.89 | 13.92 | 2,310.47 | 2.68 | 4.14 | 0.46 | 0.27 | 0.10 |
| Decile 5 | 29,092.61 | 7.42 | 21.33 | 4,405.34 | 5.11 | 9.25 | 0.69 | 0.30 | 0.15 |
| Decile 6 | 35,105.63 | 8.95 | 30.28 | 6,299.00 | 7.30 | 16.55 | 0.82 | 0.30 | 0.18 |
| Decile 7 | 41,826.10 | 10.66 | 40.94 | 8,287.11 | 9.61 | 26.16 | 0.90 | 0.30 | 0.20 |
| Decile 8 | 50,104.27 | 12.77 | 53.72 | 10,720.72 | 12.43 | 38.59 | 0.97 | 0.34 | 0.21 |
| Decile 9 | 62,044.11 | 15.82 | 69.53 | 14,908.27 | 17.28 | 55.88 | 1.09 | 0.44 | 0.24 |
| Decile 10 | 119,534.32 | 30.47 | 100.00 | 38,060.41 | 44.12 | 100.00 | 1.45 | 0.47 | 0.30 |
| Top 1% | 307,330.78 | 7.83 | 100.00 | 108,528.06 | 12.58 | 100.00 | 1.61 | 0.47 | 0.36 |

Table 4: Summary statistics 2016 (ATO)

| | Pre-tax income | | | Tax | | | Relative share | Tax rate | |
|---|---|---|---|---|---|---|---|---|---|
| Quantile | Mean | Share | Cumulative | Mean | Share | Cumulative | Tax share/Income share | Marginal | Average |
| Decile 1 | 5,721.35 | 0.91 | 0.91 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Decile 2 | 17,839.45 | 2.83 | 3.73 | 13.68 | 0.01 | 0.01 | 0.00 | 0.09 | 0.00 |
| Decile 3 | 26,869.51 | 4.26 | 7.99 | 800.70 | 0.60 | 0.61 | 0.14 | 0.19 | 0.03 |
| Decile 4 | 35,888.03 | 5.68 | 13.67 | 2,454.06 | 1.84 | 2.45 | 0.32 | 0.24 | 0.07 |
| Decile 5 | 44,429.74 | 7.04 | 20.71 | 5,299.62 | 3.97 | 6.41 | 0.56 | 0.32 | 0.12 |
| Decile 6 | 53,760.50 | 8.51 | 29.22 | 8,587.03 | 6.43 | 12.84 | 0.75 | 0.32 | 0.16 |
| Decile 7 | 65,067.75 | 10.31 | 39.53 | 12,394.41 | 9.28 | 22.11 | 0.90 | 0.32 | 0.19 |
| Decile 8 | 79,557.49 | 12.60 | 52.13 | 17,164.47 | 12.85 | 34.96 | 1.02 | 0.35 | 0.22 |
| Decile 9 | 102,141.99 | 16.18 | 68.31 | 25,072.23 | 18.76 | 53.72 | 1.16 | 0.37 | 0.24 |
| Decile 10 | 200,087.66 | 31.69 | 100.00 | 61,832.74 | 46.28 | 100.00 | 1.46 | 0.41 | 0.29 |
| Top 1% | 493,875.63 | 7.82 | 100.00 | 181,755.81 | 13.60 | 100.00 | 1.74 | 0.47 | 0.36 |

Table 5: OLS estimates of the parametric tax function

| | ATO | | | HILDA | | |
|---|---|---|---|---|---|---|
| Year | $\tau$ | Constant | Adj $R^2$ | $\tau$ | Constant | Adj $R^2$ |
| 2004 | 0.105 | 2.467 | 0.994 | 0.090 | 2.154 | 0.994 |
| | (0.001) | (0.007) | | (0.001) | (0.014) | |
| 2005 | 0.103 | 2.436 | 0.994 | 0.091 | 2.182 | 0.994 |
| | (0.001) | (0.007) | | (0.001) | (0.013) | |
| 2006 | 0.096 | 2.295 | 0.994 | 0.089 | 2.169 | 0.994 |
| | (0.001) | (0.007) | | (0.001) | (0.015) | |
| 2007 | 0.090 | 2.182 | 0.995 | 0.083 | 2.075 | 0.995 |
| | (0.001) | (0.007) | | (0.001) | (0.014) | |
| 2008 | 0.086 | 2.129 | 0.995 | 0.081 | 2.032 | 0.995 |
| | (0.001) | (0.006) | | (0.001) | (0.013) | |
| 2009 | 0.086 | 2.145 | 0.995 | 0.072 | 1.877 | 0.995 |
| | (0.001) | (0.007) | | (0.001) | (0.013) | |
| 2010 | 0.084 | 2.123 | 0.995 | 0.075 | 1.941 | 0.995 |
| | (0.001) | (0.007) | | (0.001) | (0.014) | |
| 2011 | 0.085 | 2.142 | 0.995 | 0.075 | 1.952 | 0.995 |
| | (0.001) | (0.008) | | (0.001) | (0.011) | |
| 2012 | 0.082 | 2.073 | 0.995 | 0.077 | 1.985 | 0.995 |
| | (0.001) | (0.005) | | (0.001) | (0.011) | |
| 2013 | 0.083 | 2.101 | 0.994 | 0.075 | 1.962 | 0.995 |
| | (0.001) | (0.006) | | (0.001) | (0.012) | |
| 2014 | 0.083 | 2.102 | 0.994 | 0.076 | 1.986 | 0.994 |
| | (0.001) | (0.006) | | (0.001) | (0.013) | |
| 2015 | 0.083 | 2.087 | 0.994 | 0.078 | 2.021 | 0.994 |
| | (0.001) | (0.006) | | (0.001) | (0.012) | |
| 2016 | 0.081 | 2.048 | 0.994 | 0.078 | 2.008 | 0.994 |
| | (0.001) | (0.006) | | (0.001) | (0.013) | |

Robust standard errors given in parantheses.

Table 6: Suits index and relative tax liabilities for tax components 2004, 2010 and 2016

(a) Decomposition of major tax components (ATO 2004)

| | | [1] Standard tax | | [2] LITO | | [3] Senior Offsets | | [4] Medicare levy | | [5] Total tax | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Decile | Income share | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST |
| 1 | 0.90 | 0.03 | 0.03 | -0.24 | -0.27 | -0.28 | -0.31 | 0.03 | 0.03 | 0.00 | 0.00 |
| 2 | 2.78 | 0.86 | 0.31 | 0.60 | 0.22 | -0.14 | -0.05 | 0.82 | 0.29 | 0.31 | 0.11 |
| 3 | 4.35 | 1.93 | 0.44 | 1.68 | 0.39 | 1.18 | 0.27 | 1.87 | 0.43 | 1.15 | 0.27 |
| 4 | 5.89 | 3.14 | 0.53 | 2.95 | 0.50 | 2.80 | 0.48 | 3.13 | 0.53 | 2.68 | 0.46 |
| 5 | 7.42 | 4.97 | 0.67 | 4.98 | 0.67 | 4.95 | 0.67 | 5.06 | 0.68 | 5.11 | 0.69 |
| 6 | 8.95 | 6.91 | 0.77 | 6.98 | 0.78 | 7.04 | 0.79 | 7.06 | 0.79 | 7.30 | 0.82 |
| 7 | 10.66 | 9.09 | 0.85 | 9.18 | 0.86 | 9.31 | 0.87 | 9.25 | 0.87 | 9.61 | 0.90 |
| 8 | 12.77 | 11.83 | 0.93 | 11.96 | 0.94 | 12.15 | 0.95 | 11.98 | 0.94 | 12.43 | 0.97 |
| 9 | 15.82 | 16.58 | 1.05 | 16.76 | 1.06 | 17.04 | 1.08 | 16.66 | 1.05 | 17.28 | 1.09 |
| 10 | 30.47 | 44.66 | 1.47 | 45.16 | 1.48 | 45.95 | 1.51 | 44.15 | 1.45 | 44.12 | 1.45 |
| Suits index | | | 0.21 | | 0.23 | | 0.25 | | 0.21 | | 0.22 |

(b) Decomposition of major tax components (ATO 2010)

| | | [1] Standard tax | | [2] LITO | | [3] Senior Offsets | | [4] Medicare levy | | [5] Total tax | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Decile | Income share | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST |
| 1 | 0.85 | 0.09 | 0.10 | -1.32 | -1.54 | -0.27 | -0.32 | 0.08 | 0.10 | 0.00 | 0.00 |
| 2 | 2.70 | 1.07 | 0.40 | -0.25 | -0.09 | 0.08 | 0.03 | 1.01 | 0.37 | 0.02 | 0.01 |
| 3 | 4.21 | 2.09 | 0.50 | 0.86 | 0.20 | 1.36 | 0.32 | 2.04 | 0.48 | 0.59 | 0.14 |
| 4 | 5.72 | 3.14 | 0.55 | 2.01 | 0.35 | 2.80 | 0.49 | 3.12 | 0.55 | 1.69 | 0.30 |
| 5 | 7.16 | 4.32 | 0.60 | 3.49 | 0.49 | 4.24 | 0.59 | 4.45 | 0.62 | 3.50 | 0.49 |
| 6 | 8.65 | 6.28 | 0.73 | 5.91 | 0.68 | 6.36 | 0.74 | 6.46 | 0.75 | 6.08 | 0.70 |
| 7 | 10.41 | 8.73 | 0.84 | 8.92 | 0.86 | 8.92 | 0.86 | 8.90 | 0.86 | 9.15 | 0.88 |
| 8 | 12.72 | 11.92 | 0.94 | 12.79 | 1.01 | 12.26 | 0.96 | 12.06 | 0.95 | 13.06 | 1.03 |
| 9 | 16.04 | 16.76 | 1.04 | 18.15 | 1.13 | 17.26 | 1.08 | 16.84 | 1.05 | 18.29 | 1.14 |
| 10 | 31.54 | 45.60 | 1.45 | 49.44 | 1.57 | 46.99 | 1.49 | 45.03 | 1.43 | 47.60 | 1.51 |
| Suits index | | | 0.21 | | 0.30 | | 0.24 | | 0.21 | | 0.27 |

(c) Decomposition of major tax components (ATO 2016)

| | | [1] Standard tax | | [2] LITO | | [3] Senior Offsets | | [4] Medicare levy | | [5] Total tax | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Decile | Income share | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST | Tax share | RST |
| 1 | 0.91 | 0.00 | 0.00 | -0.35 | -0.38 | -0.29 | -0.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 2.83 | 0.12 | 0.04 | -0.23 | -0.08 | -0.42 | -0.15 | 0.11 | 0.04 | 0.01 | 0.00 |
| 3 | 4.26 | 1.08 | 0.25 | 0.75 | 0.18 | 0.64 | 0.15 | 1.09 | 0.26 | 0.60 | 0.14 |
| 4 | 5.68 | 2.31 | 0.41 | 2.01 | 0.35 | 2.04 | 0.36 | 2.35 | 0.41 | 1.84 | 0.32 |
| 5 | 7.04 | 3.99 | 0.57 | 3.78 | 0.54 | 3.92 | 0.56 | 4.18 | 0.59 | 3.97 | 0.56 |
| 6 | 8.51 | 6.14 | 0.72 | 6.08 | 0.71 | 6.19 | 0.73 | 6.38 | 0.75 | 6.43 | 0.75 |
| 7 | 10.31 | 8.77 | 0.85 | 8.87 | 0.86 | 8.89 | 0.86 | 8.97 | 0.87 | 9.28 | 0.90 |
| 8 | 12.60 | 12.22 | 0.97 | 12.45 | 0.99 | 12.43 | 0.99 | 12.37 | 0.98 | 12.85 | 1.02 |
| 9 | 16.18 | 18.02 | 1.11 | 18.36 | 1.14 | 18.35 | 1.13 | 18.04 | 1.12 | 18.76 | 1.16 |
| 10 | 31.69 | 47.35 | 1.49 | 48.26 | 1.52 | 48.23 | 1.52 | 46.51 | 1.47 | 46.28 | 1.46 |
| Suits index | | | 0.25 | | 0.27 | | 0.27 | | 0.24 | | 0.25 |

Table 7: Distribution of tax liabilities in 2004 and 2016 under the 2004 tax schedule

| | Pre-tax income (mean) | | Tax liability (mean) | | Share of income (%) | | Share of tax (%) | | Relative share | |
|---|---|---|---|---|---|---|---|---|---|---|
| Decile | 2004 | 2016 | 2004 | 2016 | 2004 | 2016 | 2004 | 2016 | 2004 | 2016 |
| Decile 1 | 3,545.13 | 5,856.41 | 0.25 | 116.50 | 0.90 | 0.95 | 0.00 | 0.07 | 0.00 | 0.07 |
| Decile 2 | 10,911.72 | 17,682.05 | 268.32 | 1,161.26 | 2.78 | 2.87 | 0.31 | 0.68 | 0.11 | 0.24 |
| Decile 3 | 17,050.47 | 26,242.04 | 996.04 | 3,240.40 | 4.35 | 4.26 | 1.15 | 1.89 | 0.27 | 0.44 |
| Decile 4 | 23,092.70 | 35,047.68 | 2,310.47 | 6,179.92 | 5.89 | 5.69 | 2.68 | 3.60 | 0.46 | 0.63 |
| Decile 5 | 29,092.61 | 43,567.04 | 4,405.34 | 8,730.71 | 7.42 | 7.07 | 5.11 | 5.09 | 0.69 | 0.72 |
| Decile 6 | 35,105.63 | 52,853.89 | 6,299.00 | 11,583.49 | 8.95 | 8.58 | 7.30 | 6.75 | 0.82 | 0.79 |
| Decile 7 | 41,826.10 | 64,107.11 | 8,287.11 | 15,911.90 | 10.66 | 10.41 | 9.61 | 9.28 | 0.90 | 0.89 |
| Decile 8 | 50,104.27 | 78,541.51 | 10,720.72 | 22,266.66 | 12.77 | 12.75 | 12.43 | 12.98 | 0.97 | 1.02 |
| Decile 9 | 62,044.11 | 100,845.86 | 14,908.27 | 32,190.83 | 15.82 | 16.38 | 17.28 | 18.77 | 1.09 | 1.15 |
| Decile 10 | 119,534.32 | 191,092.03 | 38,060.41 | 70,161.54 | 30.47 | 31.03 | 44.12 | 40.90 | 1.45 | 1.32 |

Table 8: Relative tax liabilities and Suits index for counterfactual tax schedules on the 2016 income distribution

| | Tax schedule applied to data | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decile | Actual | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.06 | 0.07 | 0.07 |
| 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | 0.06 | 0.08 | 0.14 | 0.16 | 0.21 | 0.23 | 0.24 |
| 3 | 0.14 | 0.14 | 0.13 | 0.13 | 0.18 | 0.19 | 0.20 | 0.22 | 0.27 | 0.32 | 0.42 | 0.44 | 0.44 |
| 4 | 0.32 | 0.32 | 0.31 | 0.31 | 0.34 | 0.36 | 0.38 | 0.41 | 0.49 | 0.60 | 0.63 | 0.64 | 0.63 |
| 5 | 0.56 | 0.57 | 0.53 | 0.53 | 0.56 | 0.57 | 0.60 | 0.62 | 0.68 | 0.74 | 0.74 | 0.73 | 0.72 |
| 6 | 0.75 | 0.75 | 0.73 | 0.73 | 0.74 | 0.75 | 0.76 | 0.77 | 0.80 | 0.82 | 0.81 | 0.80 | 0.79 |
| 7 | 0.90 | 0.90 | 0.88 | 0.88 | 0.89 | 0.89 | 0.89 | 0.89 | 0.88 | 0.89 | 0.87 | 0.87 | 0.89 |
| 8 | 1.02 | 1.02 | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | 0.97 | 0.96 | 0.96 | 0.98 | 1.00 | 1.02 |
| 9 | 1.16 | 1.16 | 1.15 | 1.15 | 1.13 | 1.12 | 1.12 | 1.11 | 1.10 | 1.08 | 1.11 | 1.14 | 1.15 |
| 10 | 1.46 | 1.46 | 1.47 | 1.47 | 1.46 | 1.45 | 1.43 | 1.43 | 1.39 | 1.36 | 1.35 | 1.33 | 1.32 |
| Suits index | 0.25 | 0.25 | 0.26 | 0.26 | 0.25 | 0.24 | 0.23 | 0.23 | 0.21 | 0.19 | 0.18 | 0.17 | 0.17 |

Table 9: Share of wealth by share of income tax liability by percentiles of wealth

| | 2006 | | | 2010 | | | 2014 | | |
|---|---|---|---|---|---|---|---|---|---|
| Percentile | Wealth (%) | Tax (%) | Relative | Wealth (%) | Tax (%) | Relative | Wealth (%) | Tax (%) | Relative |
| Bottom 20 | 0.52 | 6.78 | 13.09 | 0.53 | 6.09 | 11.55 | 0.58 | 5.50 | 9.50 |
| 20 - 40 | 4.12 | 15.66 | 3.80 | 3.96 | 15.93 | 4.02 | 3.91 | 16.37 | 4.19 |
| 40 - 60 | 10.57 | 16.53 | 1.56 | 10.90 | 18.40 | 1.69 | 10.85 | 19.07 | 1.76 |
| 60 - 80 | 19.32 | 21.94 | 1.14 | 20.63 | 21.96 | 1.06 | 21.00 | 21.06 | 1.00 |
| Top 20 | 65.47 | 39.09 | 0.60 | 63.98 | 37.62 | 0.59 | 63.66 | 38.00 | 0.60 |
| Suits index | | | -0.38 | | | -0.38 | | | -0.36 |

## A.2 Figures

Figure 1: Changes to the tax schedule 2004 - 2016

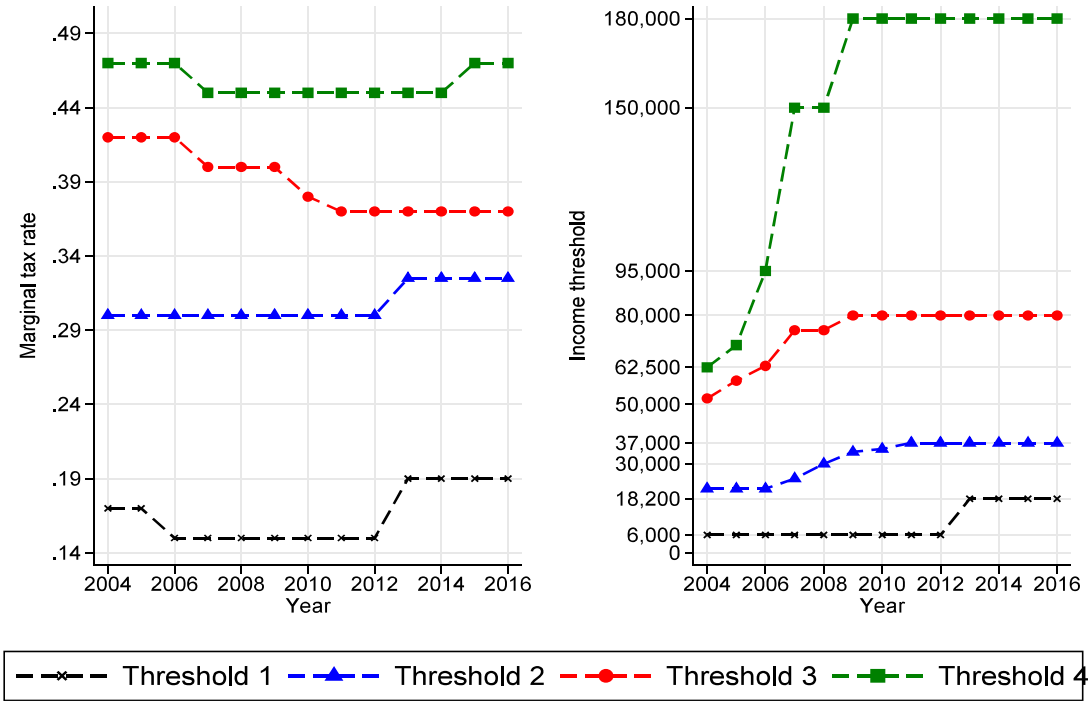
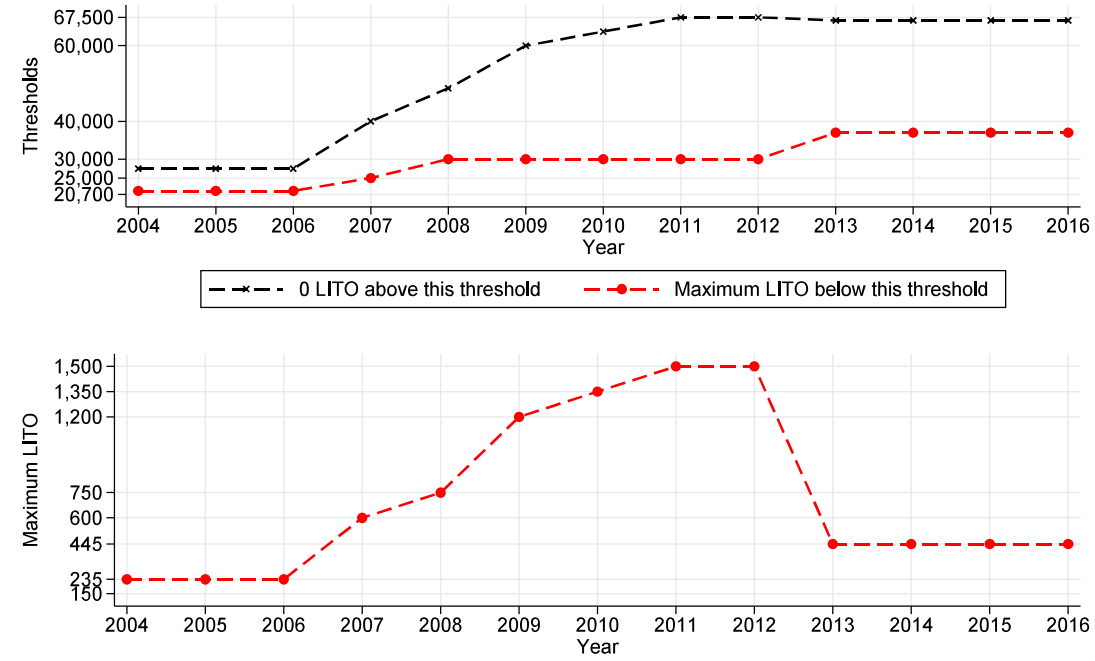


Figure 2: Changes to the low income tax offset 2004 - 2016




A taper rate applied to LITO above the first threshold (4% pre-2012, 1.5% since)

Figure 3: Kakwani index and Suits index

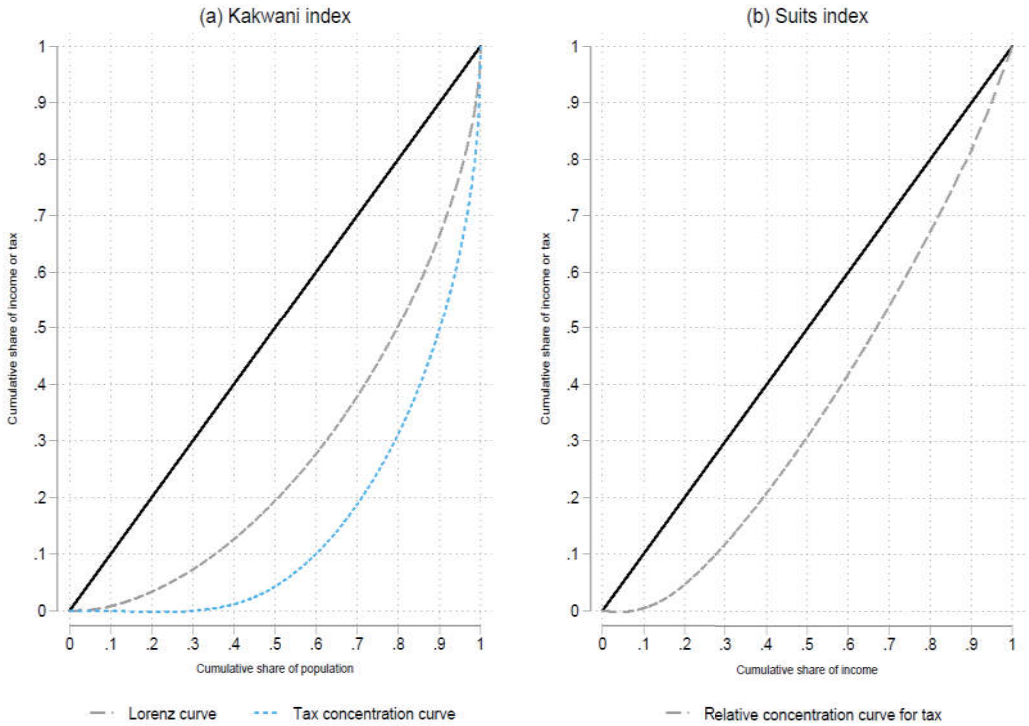
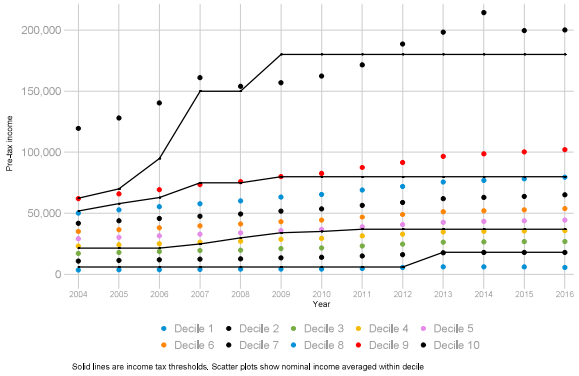


Figure 4: Trends in pre-tax nominal income (ATO)

(a) By decile




(b) Top 1%

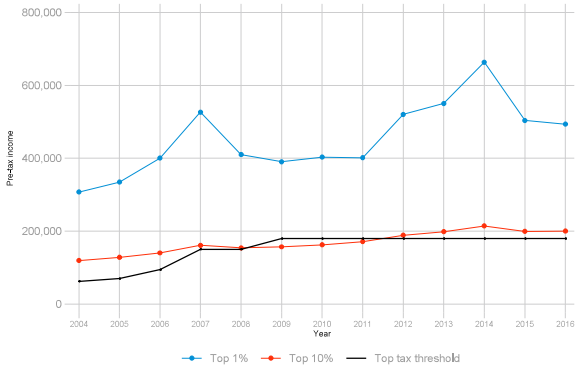
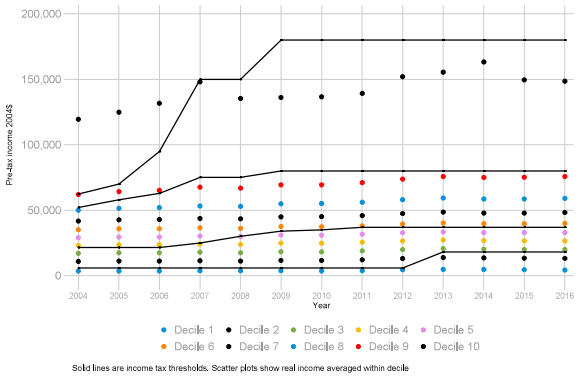



Figure 5: Trends in pre-tax real income in 2004 AUD$ (ATO)

(a) By decile




(b) Top 1%

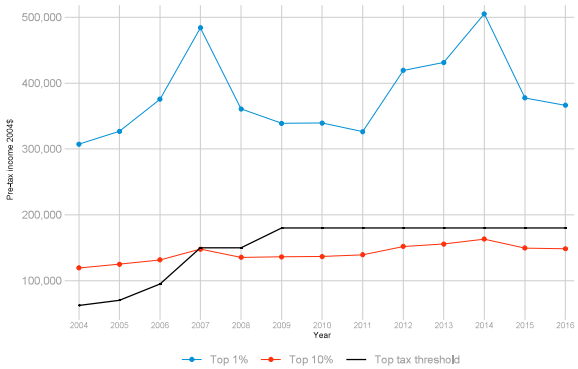


Figure 6: Marginal and average tax rates (ATO)

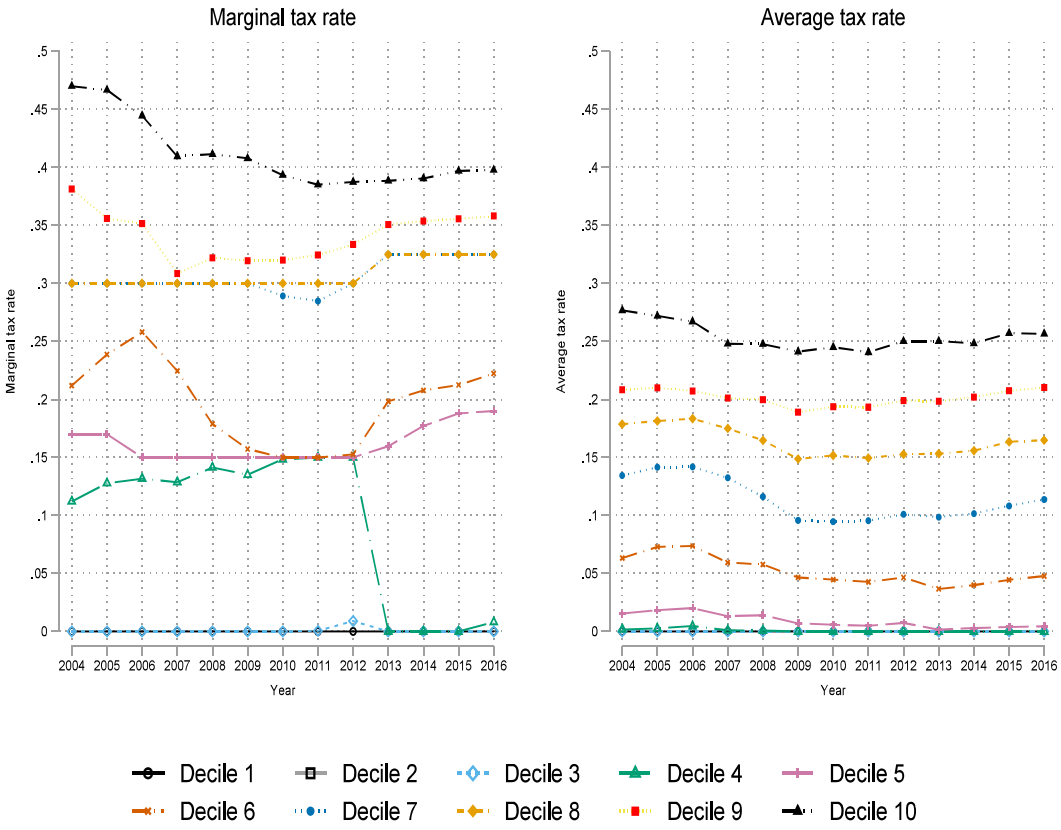



Figure 7: Trends in tax liabilities by decile (ATO)

(a) By decile

(b) Top 1%

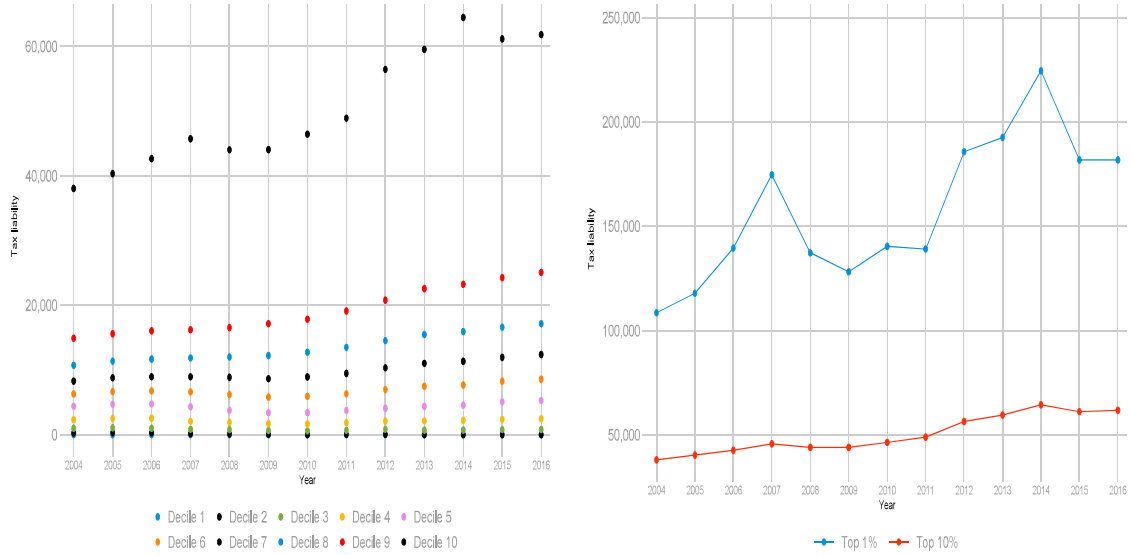
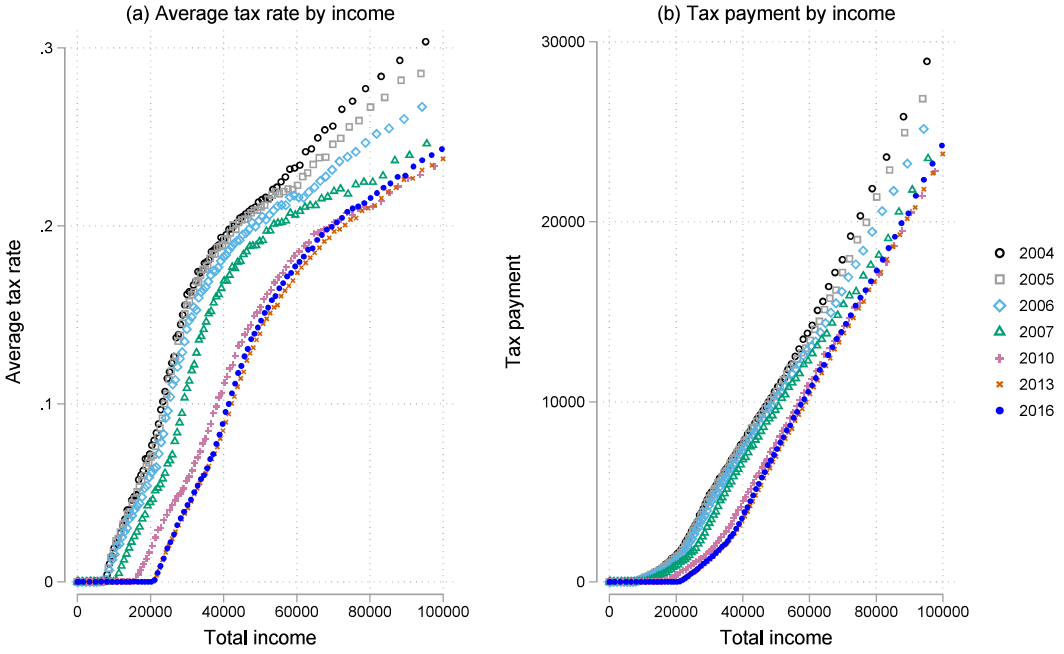


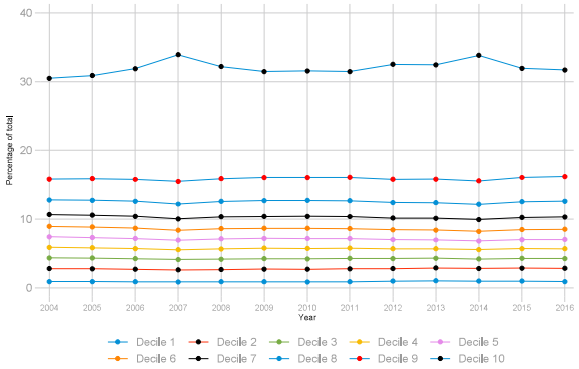
Figure 8: Average tax rates and tax liability by income (ATO)



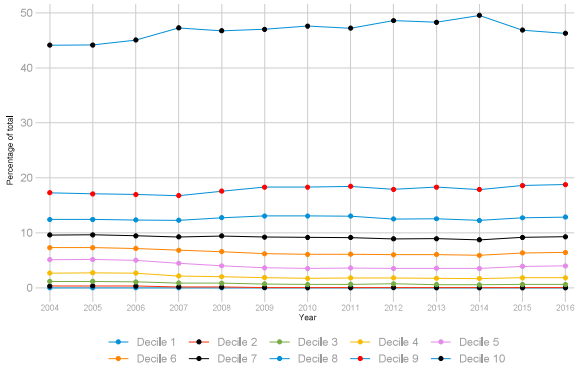

Values are averages by 100 quantiles

Figure 9: Share of tax relative to share of income by decile

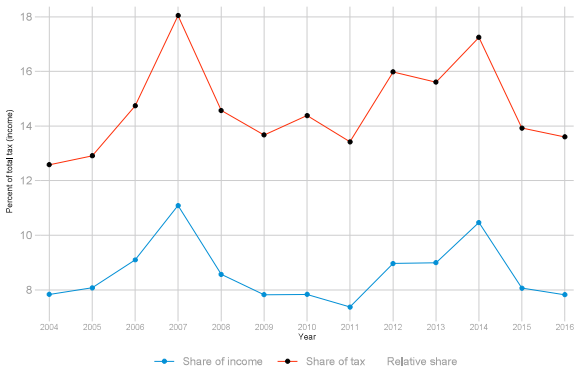
(a) Share of pre-tax income by decile




(b) Share of total tax liabilities by decile




(c) Share of income and tax for the top 1%




(d) Relative shares by quantile

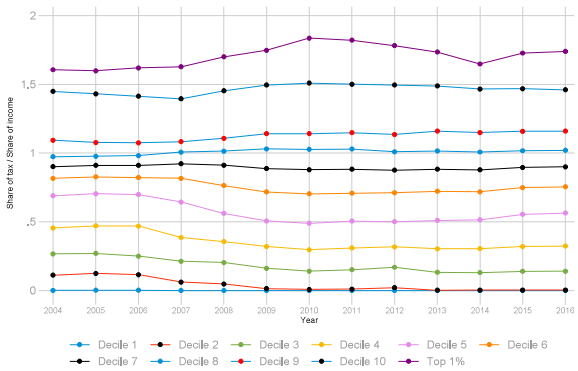


Figure 10: Trends in progressivity parameter $\tau$ (ATO)

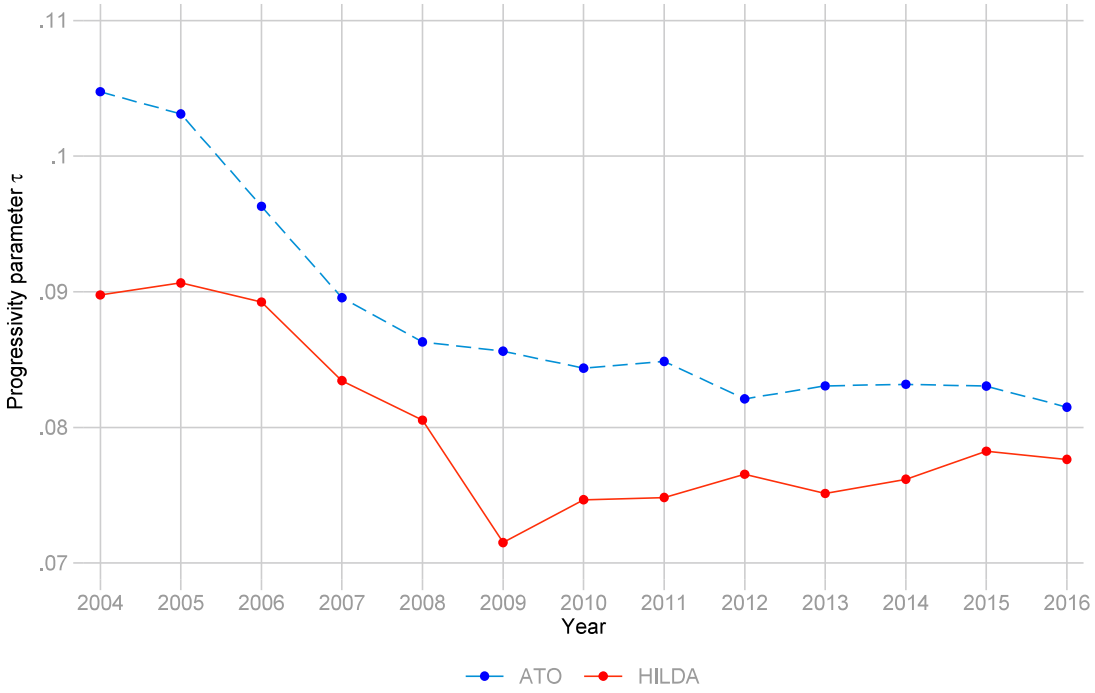



Figure 11: Trends in progressivity $\tau$: mean vs quantiles (ATO)

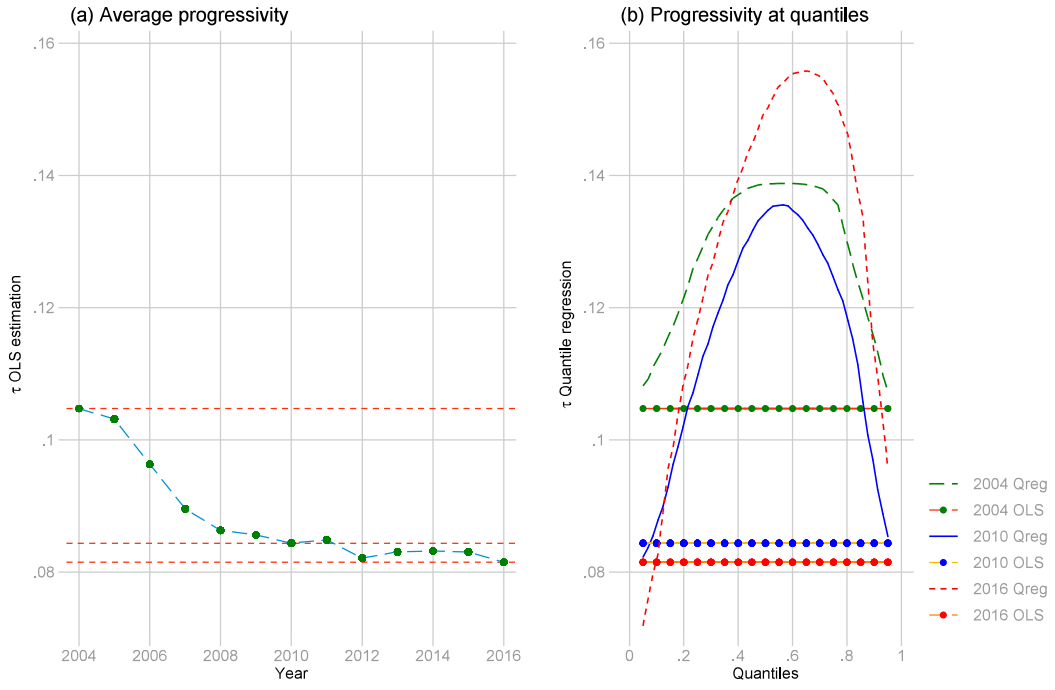


Figure 12: Kakwani and Suits index 2004 - 2016 (ATO & HILDA)

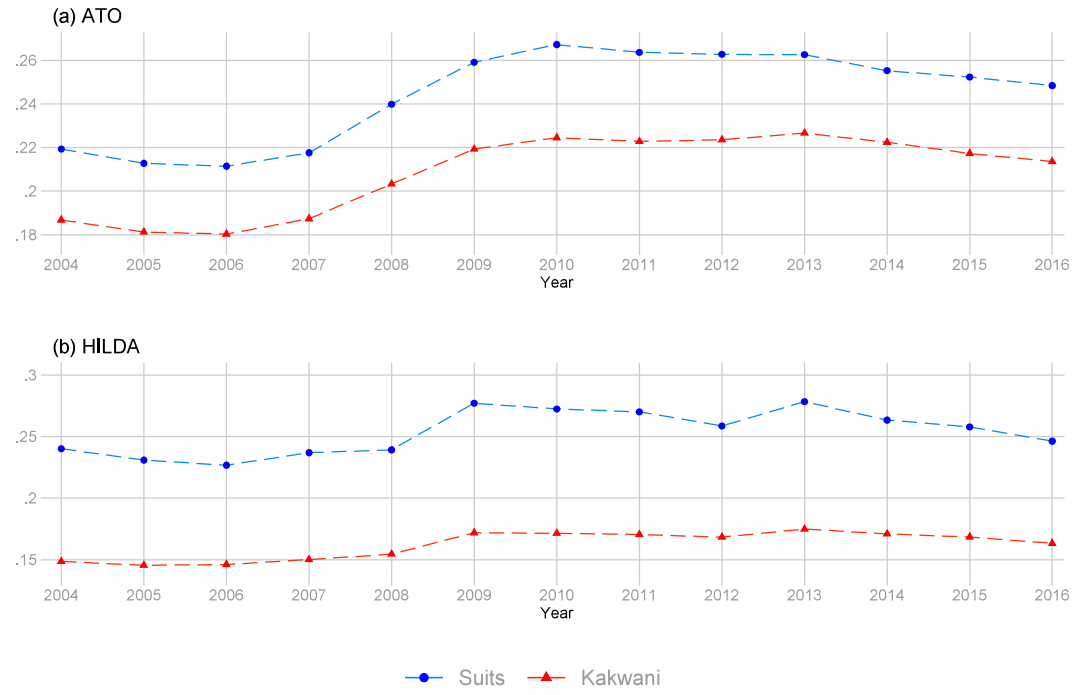



Figure 13: Progressiveness of the major components of total tax (ATO)

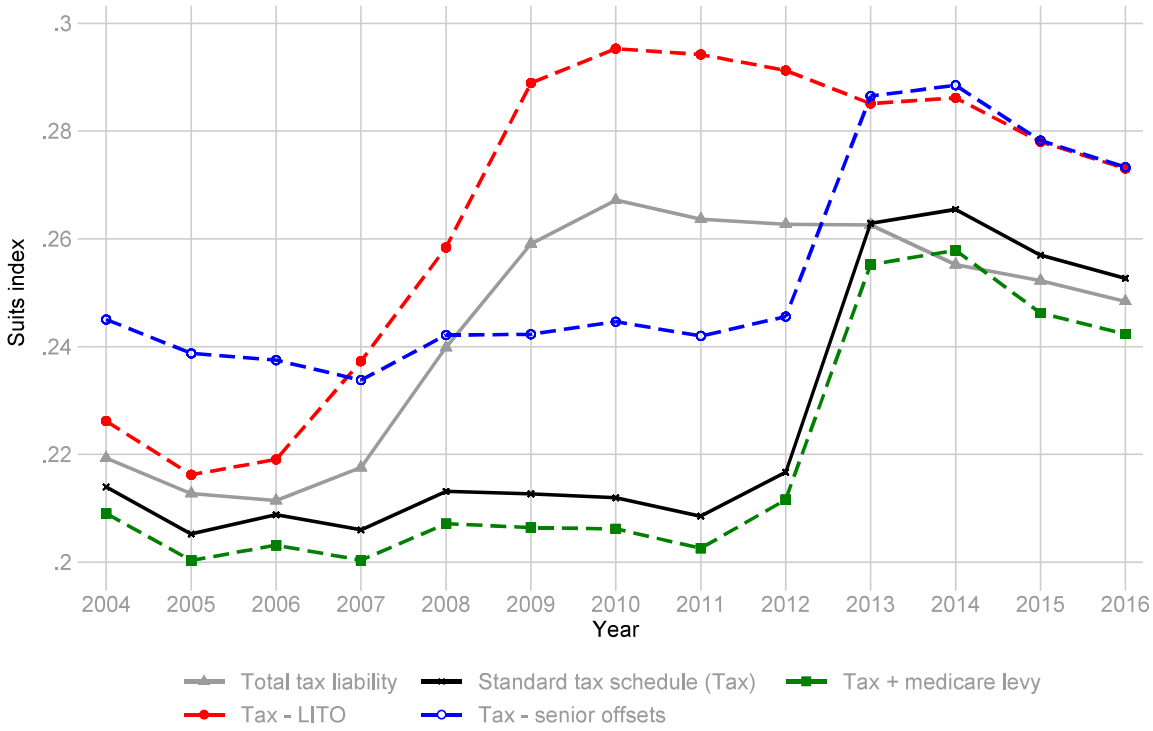
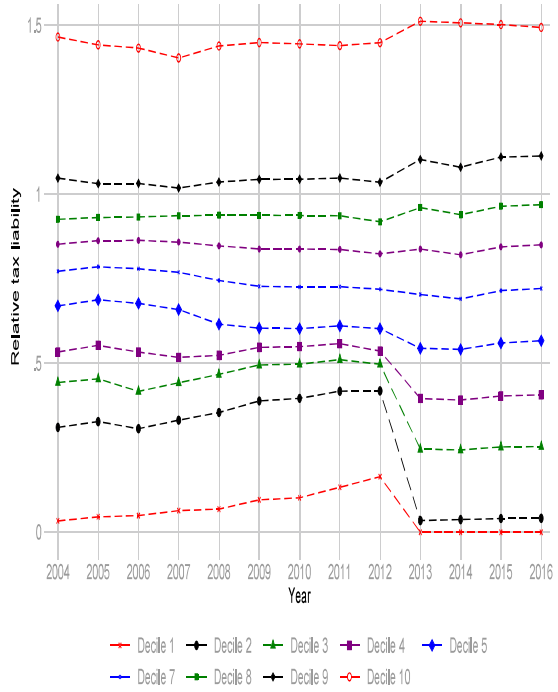


Figure 14: Relative tax liabilities

(a) Standard tax rates




(b) Standard tax net of LITO

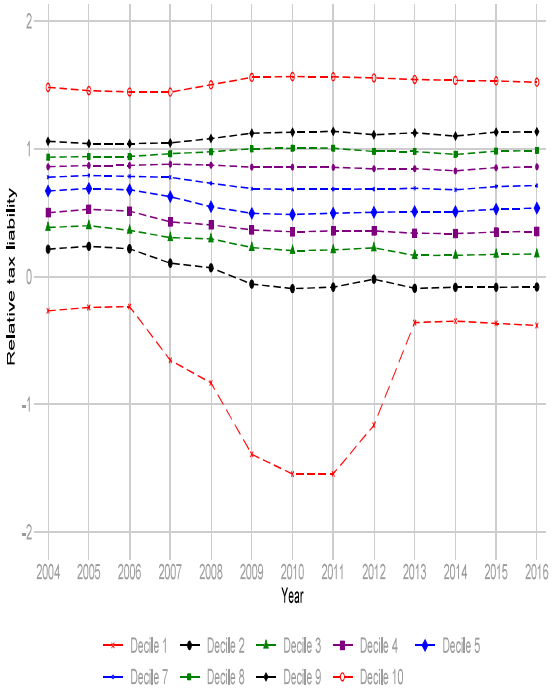



Figure 15: Income distribution 2004 and 2016

(a) Distribution of income


(b) Cumulative distributions