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DISTRIBUTION OF
Pre-Tax Top Personal Incomes

The purpose of this article is to present some data on top pre-tax personal incomes in New Zealand. It updates an earlier article by a year to 2011/12 and extends the estimates in it back to 1936/37.

The background to this article is the international database of incomes assembled by Facundo Alvaredo, Tony Atkinson, Thomas Piketty and Emmanuel Saez (Alvaredo et al., 2013), which reports their estimates for New Zealand of the pre-tax personal income shares of top income groups based on published Inland Revenue (IRD) sources. However, there are a number of deficiencies in their series: the definitions of who are taxpayers change (particularly, before 1936/37

the data coverage includes companies); the definition of income varies (the imputation of dividend income from 1990 makes no essential difference to the actual income taxpayers received, but it affects after-tax income); not all adults are recorded in the tax statistics (those who are varies in different periods); and not all personal income is recorded (again, that which is recorded varies). As a consequence, the Alvaredo et al. estimates show changes in the New Zealand income

distribution that are statistical artefacts or the result of discontinuity in the data.

This article uses the same IRD primary data to construct more consistent estimates. This is not to minimise the overall statistical achievement of Alvaredo et al. (although it reminds us that all their data series need to be used with caution), nor to criticise Piketty's theoretical analysis.

Figure 1 presents new calculations for the same three groups from 1936/37 to 2011/12.

Figure 2 shows the estimates of the Pareto coefficient for the top of the New Zealand distribution.

Definitions
Who?
The calculations are for people who are adults (aged over 15). As far as possible the data to be presented excludes trusts and companies and other such legal artefacts. Covering all adults deals with the problem that the IRD database does not include all income recipients. While taxpayers were 98.2% of the adult population in 2012, in 1936/37 only 12.0% of adults were

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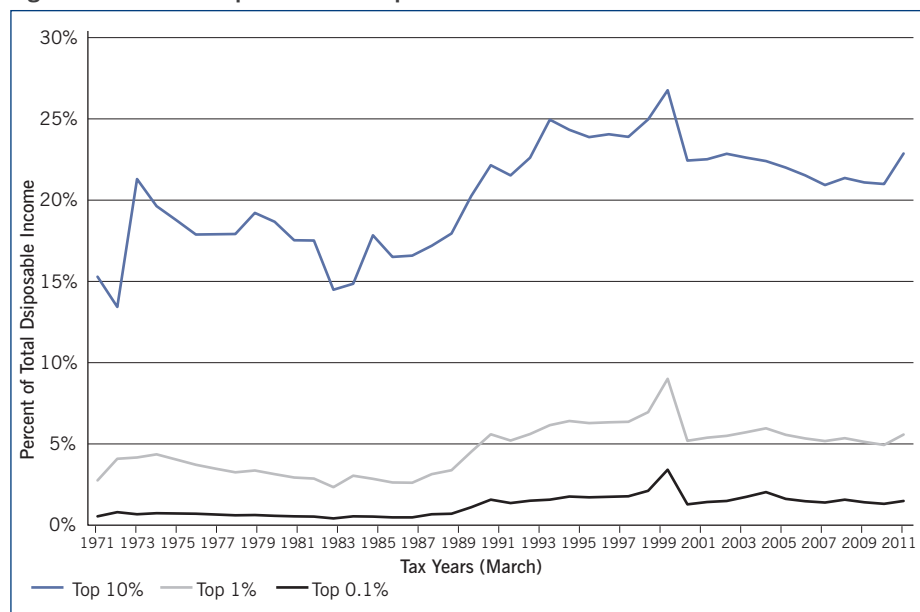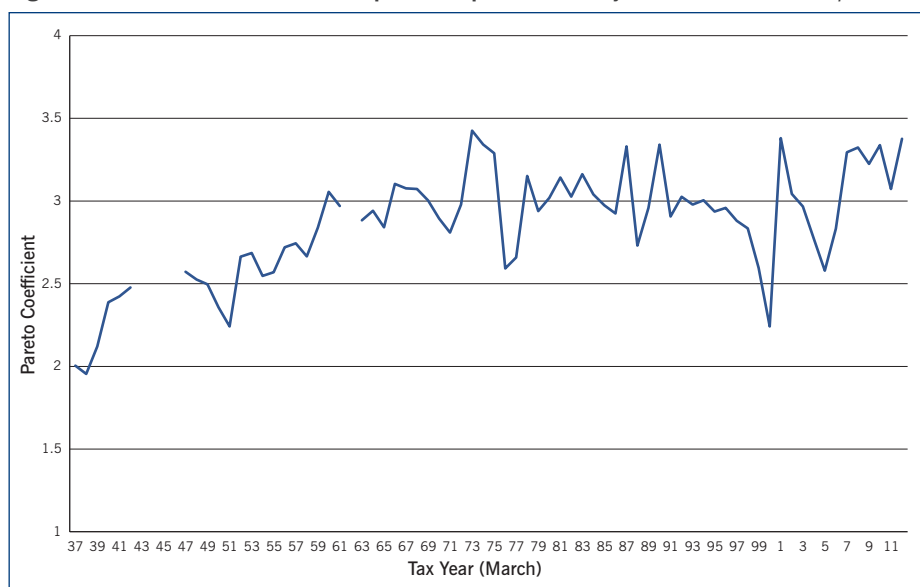**Figure 1: Shares of top income in disposable income**

Figure 2: Pareto Coefficient (Tax Reported Top Incomes) *adjusted for dividend imputation*

taxpayers. This standardisation also allows for the impact of women joining the paid labour force – a very important post-war phenomenon.

The figures are for people legally resident in New Zealand for tax purposes. There is more below about adults with anomalous residential status.

What?
The figures are for income, not wealth. We do not have detailed information on top wealth.

Disposable or market incomes?
Ideally we would report market incomes. In practice, the data being used is income reported for income tax purposes. It corresponds to market income (aside from the definitional issues discussed below), but at the top there may be a little contamination from New Zealand Superannuation. Further down the income distribution, beginning from the late 1970s there would be some contamination from taxable social security benefits, but, as explained in the next paragraph, this does not matter because of the choice of denominator.

To be compared with?
Not all market income is reported for tax purposes. This was particularly so in the past when not all individuals filed tax returns, and Inland Revenue had no other means of identifying their income. Instead, these estimates use as a denominator total private market incomes as measured in the national accounts. Thus, social security benefits are not included in the denominator. Conveniently they almost solely accrue to those below the top 10% (New Zealand Superannuation aside). Unfortunately, there is a detailed series of total private market incomes only back to 1980/81. For the period before then the denominator is projected back using national accounting estimates of private income.

The effect of adjusting for a consistent series of all adults (and not just taxpayers) and all market incomes (and not just incomes reported for tax purposes) is to lower the estimates of the top income shares relative to those of Alvaredo et al. Moreover, because the ratio of taxpayers to adults and the ratio of taxable income to total market incomes vary over time, the trends between the series may differ.

How far back?
To 1936/37. Earlier tax data does not separate out those who are not natural persons, such as companies, from the information on natural persons.

Consistent through time?
Perfect consistency is not possible given the nature of the data; in particular, it is not possible to allow fully for all the changes in tax law.

One tax change which complicates the data is the treatment of corporate dividends. Until 1989 they were 'double taxed'. Corporations paid tax on their profits, and their dividends paid from the tax-paid profits were treated as taxable income of the shareholder. From 1989 there has been a dividend imputation system, in which a shareholder receiving a dividend from a company is entitled to an 'imputation credit' which represents tax paid by the company and is offset against the shareholder's income tax liability. In effect, corporation tax becomes a withholding tax for shareholders' dividends. This altered the way dividends are recorded by the IRD. For example, $100 of corporate profits which was taxed at, say, 33% and fully paid out was recorded as $67 of pre-tax income before imputation, but as $100

after the new regime was introduced. Thus, the taxpayer's recorded income went up even though there was no actual change in their market income. In order to get consistency over time the estimates treat the grossing-up of these dividends as the substantial tax break that it was, rather than an increase in market income; that is, the imputation income is omitted. Alvaredo et al. do not make this adjustment, which results in their series showing an artificial increase in income share in the late 1990s from a change in measurement, rather than from any fundamental change.

There are other changes which it has not proved possible to adjust for, including:

- Prior to 1988 taxable income was declared net of deductions for private superannuation contributions; after 1988 these contributions were no longer deductible.
- When there was no tax on fringe benefits, many of the highest-income earners received income via subsidised loans, company cars, etc. Fringe benefit tax will have increased the amount of personal taxable income declared once income-in-kind no longer received a tax advantage.
- In the early 1980s there were big tax write-offs for investments in tax shelters, and special partnerships encouraging people to invest in these tax shelters. Investment in kiwifruit farms, emu farms and forestry are examples. These holes in the tax base, in combination with high marginal tax rates, provided big incentives for people to invest in ways which led to low reported incomes.

The effect of these will have been to reduce apparent inequality in the early 1980s (and perhaps earlier). Once they had been eliminated (by the late 1980s), they do not change the level of inequality over time. These effects will not be nearly as great as the change in the treatment of corporate dividends.

What part of the income distribution?

Reported here are the income shares of the top 10%, 1% and 0.1% of adults; also the Pareto coefficient (explained shortly).

Given these limitations, why bother?

Because it is there, one supposes. Given the use of such data series in Piketty's book, it is important to consider what has been happening in New Zealand. This is reporting the best data available. Robert Solow famously justified some statistical work he was doing by citing the addicted gambler who knew 'the casino wheel is crooked but it is the only one in town'. At least he knew what he was doing.

Benchmarks

The following 2012 tax year benchmarks may be useful:

- There were about 3.5 million adults over the age of 15. So, the top 10% of income recipients numbered 350,000, the top 1% 35,000 and the top 0.1% 3,500.

> From the 1980s on the early post-war drivers towards less inequality were no longer there. Full employment, as we understood it in the early post-war era, no longer existed.

- 10% of adults had an income above about $72,500, and a 37.4% share of all income; 1% of adults had an income above about $165,000 and a 9.7% share of all income; 0.1% of adults had an income above about $500,000 and a 2.7% share of all income.
- The annualised average wage was around $45,000, while the average adult income was $36,000.

The Pareto coefficient

Vilfredo Pareto famously proposed that upper incomes followed a power probability law characterised by a single parameter, the 'Pareto coefficient'. This indicates how compressed the top tail of a distribution is. The lower the coefficient, the more unequal is the distribution; that is, the top tail is more stretched out.

Pareto coefficients are always in excess of 1. If the coefficient is 2 and there are 1,000 people above income $X, then

there will be 250 people above $2X. But if the coefficient is 3 there will be only 125 people above that income, the smaller number indicating that the distribution is more equal. The strength of the Pareto coefficient is that it usually represents well the top of a distribution, while the rest of the distribution need not be known. Its weakness is the converse.

Figure 2 above shows the Pareto coefficient for top incomes between 1936/37 and 2011/12. Initially it starts low at around 2.0. The average of 17 OECD countries in 2005 came to 2.1; on this measure New Zealand was about as unequal at the top before the Second World War as is typical for an OECD country today. The coefficient then steadily rises to about 3 by 1960. Over the entire period it averages about 2.9: high compared to many other countries, which implies lower top inequality. It then runs at this 3-ish level from the early 1960s to the end of the 1980s, after which it perhaps begins to rise, indicating a trend to reduced inequality.

An explanation for the reasons for this pattern comes after the following section on income shares.

Top income shares

The pattern for the top 10% of adults in Figure 2 is the converse of the story of the Pareto distribution. They have a high share of around 35% of all market income from just before the Second World War. A 35% share means that the decile had an average income 3.5 times the national adult average. A 25% share would mean 2.5 times the national average. The 35% level continues until about 1959/60, and then falls to 25% in about 1980. The top decile's share then stagnates through the 1990s, since when it has been increasing slightly.

The patterns for the top 1% and top 0.1% are broadly the same as for the top decile, except that there is no evidence of their share increasing in the last two decades.

There is probably not a lot to be gained from a year-to-year analysis, because of sampling variability. Observe that there is little evidence in the data of a business cycle – perhaps surprisingly.

- There seems to have been compression in remuneration margins within the labour force.

What happened after 1990?
From the 1980s on the early post-war drivers towards less inequality were no longer there. Full employment, as we understood it in the early post-war era, no longer existed. Probably our 'normal' level

… there has been increasing public concern about the extent to which those on top incomes are influencing the political process.

The 2000 blip
There is a definite blip in the income shares in the 1999/2000 year, indicating an increase in inequality. The top income tax rate was increased from 33% to 39% for the 2000/01 year. Many taxpayers arranged their income flows from private companies to move income from the high tax year back to the lower tax year, temporarily raising income in 1999/2000 and lowering it in the following year.

Why did inequality measured at the top decline in the first part of the post-war era?
There was a secular decline of the share of top incomes in the first 40 years after the Second World War. Its causes were probably more related to the remaining 90% of adults and cannot be tracked from this data basis. However, other work I have done suggests that the most important driver was the impact of full employment in the period. It operated through the following four channels:

- Male labour force participation rose, essentially out of unemployment.
- Female (paid) labour force participation rose dramatically as changing household circumstances and domestic technologies made it easier to (also) work outside the home.
- Māori migration from the countryside into the urban centres increased their market incomes.

of unemployment will be similar now to that of other rich market economies. The post-war migration of women into the paid labour force and Māori into cities is largely over. The institutional mechanisms which enabled wage compression have been largely abandoned. So, the increasing inequality which characterised the first four decades of the post-war era came to an end. The market (tax assessed) income inequality largely stabilised. However, the share of the top 10% seems to have marginally increased (although it is volatile), suggesting some increases in overall inequality. Yet the Pareto coefficient also increased, which is in the opposite direction, suggesting a *reduction* in inequality among top incomes.

These apparently contradictory results can be reconciled if the strong increase in shares has been accruing to those in the second to the tenth percentiles. That would compress the top of the income distribution as indicated by the mildly-rising Pareto coefficient. Since the very top is far more influenced by rewards to capital, while below them there is a greater impact from the remuneration to top managers and professionals, it would seem that in the last few decades the rewards at the top of the labour market have risen relative to the rewards to ordinary labour. Piketty observes this effect too.

One local factor may have been the 1988 State Sector Act, which abandoned

the rigid relativities that existed in the public service, enabling higher relative remuneration to the top civil servants, while most civil servants were experiencing restricted real increases (or declines). The same thing was happening in the private sector, a consequence of the globalisation of the market for management and higher professionals.

Unfortunately, we cannot estimate the magnitude of the margin increases in order to assess to what degree that explains the rest of the upshift.

If this hypothesis is correct, then the driver of the recent increasing inequality is widening labour earnings rather than increases in the return and quantity of wealth.

What about the Piketty thesis?
First, note that New Zealand's high-income recipients have low incomes compared to those overseas. Our top 0.1% are about 3,500 individuals who reported annual taxable incomes of $500,000 or more in 2011/12. Around 700 would report incomes in excess of $1,000,000.

New Zealand does not seem to follow the Piketty thesis of rising inequality in top incomes. But this would be to adopt the Piketty thesis crudely. New Zealand has no sophisticated financial sector. That means no mega-remunerations. (There is no general agreement within the economics profession as to why this is happening.) But the Piketty effect is even more explained by patterns of wealth accumulation and returns. We do not have the New Zealand data to explore this directly.

There are, of course, measurement problems. The data series since 1981/82 are of higher quality. However, there are omissions. The data series does not cover trusts. Apparently, trusts have become more common since the ending of inheritance tax in 1992. Nor does it cover private companies, which the 2000 blip indicates may be important. Income reported for tax purposes does not cover most capital gains. There is often confusion about the effect of omitting capital gains. Unquestionably, including them would increase the level of income inequality. On the basis of the handful of countries for which there are estimates,

the inclusion of capital gains might add about one percentage point to the share of the top 1%'s income – say, increasing their share from 5% to 6% of private income. However, while the omission of capital gains reduces the measured inequality, it does not automatically follow that it disguises increasing inequality. It is not impossible that capital gains were smaller after the global financial crisis than before it, in which case inequality of top incomes may hardly have been changing at all. We just don't know.

The big issue which may make the data difficult to interpret is what may be called 'partial New Zealand residents'.

Non-residents

Under New Zealand tax laws, those with high incomes can avoid declaring offshore income for taxable purposes by avoiding being New Zealand tax residents. The criteria for being a New Zealand tax resident are:

- living in New Zealand for more than 183 days in any 12-month period, or
- having an 'enduring relationship' with New Zealand, or
- being away from New Zealand in the service of the New Zealand government.

People who are not New Zealand tax residents are liable for New Zealand tax only on their New Zealand-sourced income. Such non-residents report their taxable income in an IR3NR return. They are not included in this data. There is no long-term series for them, but tax payable from this source is currently around $30m-$40m per year, suggesting an annual income of around $100m; this would be only a portion – often a small proportion – of the non-residents' total income.

New Zealand is such a small economy that those with very large fortunes are likely to hold wealth portfolios diversified by jurisdiction. It is not implausible that for many less than a third of their income comes from New Zealand sources; only

that part is reported in the tax statistics. Given increasing international mobility, it seems likely that an increasing proportion of those at the very top of the income distribution are not tax residents. If so, any Piketty effect of a growing elite of the rich is likely to be missed in the New Zealand tax data.

Politics and market incomes

Disraeli summarised privilege as 'pay, patronage and power'. Recently there has been increasing public concern about the extent to which those on top incomes are influencing the political process. Underlying this concern is the ideal of democracy being about 'one person one vote', whereas market activity is about 'one dollar one vote'. In practice, the two areas of public life cannot be so easily separated, so one can infringe excessively upon the other. For instance, it is now generally accepted that before the mid-1980s, politics was too involved in market decisions. But can the opposite happen? This is an evident political concern in the United States; does it apply in New Zealand? This is a wider issue than this article can cover in detail, but here are a few pointers.

It is an interesting feature of New Zealand's electoral system that at the 2014 election we had three minor parties openly backed by millionaires. Each was dependent upon the threshold effect which our MMP electoral system allows. Many think the threshold is an anomaly; perhaps it becomes even more anomalous if it enables millionaires to buy seats in Parliament.

Perhaps political donations are more in the spirit of democracy if they are transparent. It is not obvious they are sufficiently transparent in New Zealand.

The rich also have the ability to buy acolytes to promote their political views. Again, transparency of funding sources may be vital, but perhaps it would be better to develop institutions with an alternative view rather than have the

lopsided funding of lobbying which currently dominates New Zealand.

It also appears that some of those who are not tax residents play a significant role in New Zealand political life as donors, as political advocates and as lobbyists (and as voters). Given that taxation is the price of citizenship, is this appropriate? Perhaps such political activities amount to having an 'enduring relationship' with New Zealand.

Conclusions

The series presented here using pre-tax income data show that the share of those with top incomes fell up to the end of the 1980s, while top incomes became increasingly compressed. Shortly after, there were increases in inequality arising from increases in remuneration margins for management and professionals, and from the introduction of a dividend imputation system. There have been small or no increases in inequality since.

Calibration difficulties make international comparisons difficult, so we must be cautious about ranking New Zealand's top income inequality with economies elsewhere. However, there is no evidence of a major surge in inequality of pre-tax market incomes in the New Zealand data in the first decade of the 21st century, such as has occurred in the United Kingdom and the United States, probably because New Zealand does not have as sophisticated financial sectors as they have, and because New Zealand's wealthy may function – for some purposes – outside the country.

Reference

Alvaredo, F., A.B. Atkinson, T. Piketty and E. Saez (2013) *The World Top Incomes Database*, http://topincomes.g-mond.parisschoolofeconomics.eu/#Database