2023 DINA UPDATE FOR NEW ZEALAND

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DINA estimates for New Zealand

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The purpose of this technical note is to highlight the distributional national accounts series for New Zealand, including estimates through the year 2021. Where extensive previous work has been based solely on fiscal income data from the tax authorities, we have improved these estimates and cover all sources of national income, including income that is not reported on tax returns. In brief, we build a 'simplified DINA' estimation for New Zealand (see Fisher-Post 2021).

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1 Introduction

Distributional national accounts (DINA) estimates have now been extended worldwide, thanks to a dedicated team of researchers at the World Inequality Lab, whose efforts arrive at a comprehensive, continual global update to the World Inequality Database (Alvaredo et al 2020).

The purpose of this methodological note is to provide background on a the estimation of distributional national accounts series for New Zealand, including estimates through the year 2021. These results are founded on the extensive earlier work to produce long-run series of top (fiscal) income shares in New Zealand (Atkinson-Leigh 2007c and 2008; Alvaredo-Atkinson 2013 and 2014; Alvaredo 2017; and Alvaredo-Kergozou 2019a and 2019b).

Where those estimates were based on fiscal income data from the tax authorities in each country, we now update them and extend the estimates of the fiscal (taxable) income distribution to the national accounts—now covering all sources of national income, including non-fiscal (non-taxable) income that is not reported on tax returns. In short, we apply the techniques described in Alvaredo et al (2020),[1] in which non-taxable income concepts are harmonized with the taxable in a modified UN SNA (2008) framework, to produce consistent estimates of income distribution that account for 100 percent of annual income flows in the national accounts (including net domestic product and all foreign earned income).

This short note will proceed as follows: We describe the data sources and income concepts at play, then walk through the methodological steps to move from fiscal income to national income concepts, and finally observe several caveats on these preliminary estimates. The last section concludes with a roadmap to augment and further develop these series and estimates.

2 Data

We follow income concepts and data sources previously established by resident scholars and country experts in their earlier pioneering studies of top income shares for the World Inequality Database (WID) project of the World Inequality Lab (WIL).

For New Zealand data, we rely in the first instance on recent updates from Alvaredo and Kergozou (2019, op. cit.) that extended the earlier Atkinson-Leigh and Alvaredo series. These studies source comprehensive tabulations of fiscal income from New Zealand's Inland Revenue Department, matching national accounting concepts of personal household income. We update national accounts totals through 2022 according to the latest aggregates from Statistics New Zealand (2020a and 2020b), and we also refer to complementary macroeconomic statistics from the Reserve Bank of New Zealand [2020].

[1] Compare companion studies at wid.world for additional methodological notes on and worldwide estimates of distributional national accounts.

New Zealand has released tax return tabulated data through the 2021 tax year (see Statistics New Zealand 2023), but these tabulations contain a structural break in data coverage on both people (tax filers) and (taxable) income, such that the 2018 distributional data is not comparable to previous years' distributions. Fellows of the World Inequality Lab are working with national statistical authorities to analyze microdata in a format such that 2018-21 estimates can become perfectly compatible with previous years' estimates.

3 Method

Fiscal income

We compute fiscal income shares as a proportion of the fiscal income control totals established in previous studies. While the income concepts differ slightly across countries and over time based on tax legislation, in broad strokes they are similar, especially after our adjustments to harmonize fiscal income as a consistent concept. In each country we exclude capital gains but include pension benefits, while excluding other forms of social assistance in cash or in kind.[2]

In New Zealand, the studies from Atkinson-Leigh through Alvaredo-Kergozou (op. cit.) have used the 'mean-split histogram' method to estimate top income shares. We are able to fill in the remaining gaps as an extension of this method, using the generalized Pareto interpolation technique developed by Blanchet-Fournier-Piketty (2017) and further discussed in Blanchet et al (2018).

With this fiscal income concept, the aim is to account for most income flows in the household sector in both the 'primary' generation and allocation and 'secondary' distribution of incomes (in the SNA2008 sense), without confounding concepts that would later make it difficult or deceptive to scale up from fiscal to pre-tax national income.

Fiscal labor and capital incomes

In New Zealand, we have not yet had access to microdata tabulations for the recent years, so we are forced to sketch the labor and capital income split within fiscal income from complementary sources.[3]

For now we use distribution information from the government-commissioned independent Tax Working Group (2018), whose analysis is based on custom data from Inland Revenue and sketches the labor and capital income distribution. For prior years, we scale this estimate to match the

[2] New Zealand is an exception here, where social benefits payments in cash could not be excluded from the fiscal income totals reported by the tax authorities. To do so will be one advantage of using microfiles.

[3] We know what the components of income are, but not how they are distributed within the fiscal income distribution, so we appeal to tertiary but related sources, survey results and analysis from microdata, to draw inferences on the taxable income distribution.

growth rates of labor and capital income compositions in the OECD EG-DNA (Statistics New Zealand 2018) dataset for the years 2006-2015.[4] For earlier years we correct the capital income share within fiscal income in proportion to the increase or decrease of dividends (which are both a part of corporate operating surplus, and also found in taxable fiscal income) as a share of national income, with 2018 as the reference year.

Non-fiscal factor incomes

Total labor and capital income in the national accounts are summarized in the calculation of factor shares.[5] The labor share is the share of domestic compensation of employees, net foreign labor income, and the labor component of mixed income (canonically 0.7, with 0.3 the capital share of mixed income), within (net, factor-price) national income. The capital share is the residual, or more specifically, the national income share of net operating surplus (of corporations, quasi-corporations, and of the household sector[6]), plus net foreign capital income, plus the capital share of mixed income.

We have matched the pre-existing fiscal income series; these fiscal income concepts, in turn, carefully matched their income control totals to national accounts aggregates. What remains excluded from the tax return (fiscal) income total but included in national income total, then, is untaxed labor and capital incomes, and largely the following: untaxed labor income (especially under-reported mixed income[7]; operating surplus of the household sector; and retained earnings of corporations (dividends and transfers to the household sector are already included in fiscal income). In this sense, in New Zealand (as in the United States), much of the national income that is not found on tax returns is actually capital income.

However, one point is worth noting here. If we disaggregate non-taxable capital income into capital income that accrues to pension accounts (or tax-advantaged retirement savings), vs. all other capital income, we find that the former is distributed more like (fiscal) labor income than is the rest of capital income (which is distributed like fiscal capital income). Following Piketty-Saez-Zucman (2019, op. cit.), we treat capital income accruing to pensions as a sort of labor income in the distributional sense, and allocate its distribution along the labor income distribution within the total fiscal income distribution. All other capital income we allocate to the capital income distribution within fiscal income.

Given that much of non-taxable income is capital income—even after adjusting for the labor-like distribution of capital income accruing to pensions—it is no surprise that total inequality as measured on pre-tax national income lines is higher than when measured along fiscal income

[4] While this dataset is based on households rather than tax units (individuals, in the case of New Zealand) as ours is, the trends of income composition should not vary widely across the distribution, and would of course be the same on aggregate. In pre-1953 New Zealand tax data, the observation unit is 'tax units' rather than 'individuals,' so we apply a simple scalar ratio in order to move between these units, for consistency in the long-run series.

[5] See, *inter alia*, Gollin (2002), Karabarbounis-Neiman (2014); Fisher-Post (2020); and Bengtsson-Rubolino-Waldenström (2020).

[6] i.e., imputed rent; net operating surplus of the government is zero

[7] See Cabral-Gemmell-Alinaghi (2020).

lines, since capital income is more heavily concentrated at the top of the income distribution than is labor income.

The data for capital income accruing to pension plans we retrieve from wealth aggregates and distribution data for New Zealand (Piketty-Zucman 2014; Bauluz 2020; Statistics New Zealand 2020c). For New Zealand, we have little firm data on the pre-KiwiSaver era of pension wealth, as much of retirement saving was not tax-advantaged via specific legislation and therefore has not been captured separately in the fiscal income data. Our preliminary estimate of capital income accruing to pension plans in New Zealand is based on the most recent KiwiSaver estimates, tied to an average of the growth rate of Australian and Canadian pension wealth for the prior periods. In practice, capital income accruing to retirement plans (and therefore distributed more like labor than capital income) represents roughly 20 percent of capital income in Canada, 30 percent in Australia, and we estimate it at 25 percent in New Zealand. It will be worth checking the sensitivity of these assumptions with finer grained examination of the wealth distribution in New Zealand, and of the return to pension assets versus the return to all other capital. For now, we are assuming that the return to pension wealth (capital income accruing to pension plans) has a similar rate of return to that of all other capital.

Sensitivity

This measurement issue on untaxed capital income accruing to retirement savings brings us to two caveats worth highlighting. Broadly, it is not necessarily always and everywhere a safe assumption that capital income as a whole (in the annual national accounts) should be distributed like capital income in tax return data. We will need to test this assumption using microdata when accessible. Another way to test the robustness of this assumption will be to compare the evolution of the fiscal capital income distribution to the evolution of the wealth distribution as a whole (also updated in conformity with Alvaredo et al 2020 [op. cit.], with data online at wid.world).

However, if anything, the preliminary distributional national accounts estimates presented here may represent a lower bound on inequality, as higher-return investment vehicles including equity stake in undistributed corporate profits (retained earnings in the corporate sector, in national accounts) are often available to those with more wealth to invest (see Piketty 2014). In other words, there are economies of scale for investors, and sophisticated investors may favor non-taxable capital income over that which is reported to the tax authorities. In particular, retained earnings may be generally preferred to dividends, especially to the extent that top marginal personal income tax rates (on dividends, interest income, and/or capital gains) exceed corporate income tax rates.[8] In any case, that we exclude capital gains from our estimates of fiscal income also places greater weight on the role of retained earnings in pre-tax *non-fiscal* income (the residual, hard-to-observe difference between fiscal income and national income). For now, we maintain the estimate that labor and capital distributions overall follow the labor and capital distributions within fiscal income—but future research may examine these lacunae in greater depth.

[8] This would not necessarily hold in the cases where dividends are largely exempted from taxation via imputation credits, as in New Zealand (where the preference between retained earnings dividends may also depend on non-tax factors).

A second caveat reflects the observation unit of this data. In the United States and many other countries, our benchmark inequality series splits income equally between adults within a household, while in the countries presented here the data does not currently allow such a split. In New Zealand the taxpayer is the adult individual, whereas in the United States, France, and some other countries the taxpayer unit is often, essentially, the household.[9] For now, for the purposes of the World Inequality Database, we compare 'individualistic adults' in New Zealand to the 'equal-split adults' of other countries worldwide—simply adjusted by a ratio drawn from France data.[10] We apply the French average ratio, by g-percentile, to the New Zealand data, in order to arrive at an estimated distribution 'equal-split' distribution from the 'individualistic' one.

Finally, we should note a few steps that were required with regard to historical data. In New Zealand, the fiscal income top shares estimates (from earlier studies, op. cit.) did not always cover the top 10 percent of adult individuals, particularly in the era pre-1950, and rather only the top 5 percent or top 1 percent. For eras where, e.g., the top 1 percent share was present in fiscal income distributional estimates but the top 5 percent share was missing, we extrapolated (as constant) the top 5-to-top 1 bracket share ratio from the earliest available year, to fill in the top 5 percent share in the missing years. (Missing years within a series would be interpolated, but this is only the case in 1961 New Zealand and a few interwar years.) The same is true for the top 10 share, and the 'middle 40' vs. 'bottom 50' shares—such that in years where information on the lower part of the distribution is missing, we rely heavily on the information regarding the top of the distribution (and information in surrounding years), in order to estimate the shape of the rest of the distribution. More importantly, perhaps, we assumed a constant ratio of non-fiscal income to fiscal income, along the entire distribution, in the years prior to SNA2008 data (i.e., before 1970 in New Zealand).

[9] Many high-earning married couples in America jointly file their tax return as a single household but do not actually earn equally high incomes across spouses. For example, a top 1 percent household does not necessarily have two top earners, but both spouses would remain *near* the top of the distribution after 'splitting': This 'equal split' would bias American (and other such countries') top income shares downward relative to the counterfactual observation strictly among individuals (not equal-split households), as in New Zealand. In these countries here, a top earner's spouse may be found much lower in the income distribution, while the top earner him/herself retains a greater share of the total. In sum, the comparison of Kiwi inequality to inequality in, e.g., the United States (and other countries in the World Inequality Database) is not strictly equivalent in this respect.

[10] WID data is able to measure both 'individualistic' and 'equal-split' adults series for the period 1970-2014.