

## 2021 DINA Regional Update for Georgia

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# Distributional National Accounts for Georgia

## Technical Note

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### Overview

We construct Distributional National Accounts (DINA) for Georgia for the period 2010-2019, using the methodology described in Blanchet et al. (2021), hereafter DINA Guidelines. Combining National Accounts with tax tabulations and survey data, we distribute 100% of net national income to individuals and compute inequality estimates for pretax national income.

Current inequality estimates by the National Statistics office of Georgia (2021), World Bank (2021), and Kakulia et al. (2017) are solely based on the survey data that underrepresents top incomes. Therefore, these estimates are likely to underestimate the level of income inequality. Further, these sources base their estimates on either consumption or disposable income. We compute pretax national income before the operation of the tax-and-transfer system. Further, we top-correct the survey-based income distribution using tax tabulations.

The purpose of this note is to explain how the DINA Georgia estimates for the period 2010 to 2019 were constructed using survey and tax data and National Accounts. To complete the series before the year 2010, a level-adjusted series based on PovcalNet survey data is added. The methodology to construct this earlier series is described in Bajard, Moshrif, & Neef (2021).

### Data sources

DINA Georgia is based on the combination of three income data sources: survey, tax and National Accounts data.

First, we use the Household Incomes and Expenditures Survey (published as “Integrated Household Survey” until 2016) for Georgia. The survey on household incomes and expenditures in Georgia has been conducted since 1996 by the National Statistics Office of Georgia (GeoStat). The Survey is conducted on a quarterly basis and includes information for

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about 2800 households (about 7200 adults) in each quarter. The survey includes a range of income variables such as wages, income from self-employment, farm income, transfers, and remittances from abroad. The survey provides all income variables at the individual and household level. Since the tax unit is the individual in Georgia, the dataset with individual incomes makes it easy to identify tax filers and reconcile the survey data with tax tabulations.

Also, the survey data covers a rich set of covariates such as gender, age, employment status and economic activity of each household member, information on household size and the region where a household is located. However, the dataset has several drawbacks. First, the survey provides average monthly incomes, based on the past three months before the interview. We use data only on the third quarter of each year and annualize all income types by multiplying with a factor of 12. For farm income and income from own production, which are more volatile throughout the year, we impute values of quarters 1, 2 and 4. We estimate a simple regression model for the mean deviation of these incomes in quarters 1, 2, and 4 from the 3<sup>rd</sup> quarter value and base annual income on predicted values. Second, the survey heavily underrepresents capital incomes. Most datasets include under 20 observations in each quarter with positive capital income (interest or dividends). This creates a mismatch between capital incomes in microdata and National Accounts.

Further, we use tax data in the form of tabulations provided by the Revenue Service of the Ministry of Finance of Georgia. Tax data cover individuals whose income was taxed at the source during the tax period. Tax data cover a limited share of population and national income (see table 1) due to 1) tax-exempt incomes, e.g. farm income and interest from bank deposits, or incomes from micro businesses, and 2) a large informal sector in the country (World Bank, 2021). Persons with a small business status pay taxes on their gross revenue and are thus, also not visible in the personal income tax. Further, incomes not taxed at the source might be underestimated since individual taxpayers might underreport incomes, they have to declare themselves. Tax tabulations show the distribution of total taxable income, but not the decomposition into income types (labour vs. capital) across the distribution.

Finally, we use National Accounts aggregates published by the Statistical Office of Georgia ([GeoStat](#)). GeoStat calculates the aggregates using SNA 2008, therefore, the national accounts data are fully compatible with DINA income concepts. One shortcoming is that the sectoral accounts are not available with a breakdown by institutional sectors.

## **Methodology**

We construct the distribution of pretax national income for Georgia, following the DINA guidelines (Alvaredo et al., 2020). Pretax national income consists of the primary gross market incomes from labour and capital after the operation of the social insurance system. To be more precise, pretax national income is the sum of wages and salaries, self-employment income and business incomes, dividends and interest as well as incomes from renting and leasing, and income from owner-occupied housing rents, from which we deduct paid social security contributions and add insurance-based incomes such as old-age pensions and unemployment benefits. We use broad-split equal-split for our benchmark series, i.e. income is distributed to all adults equally within households. We differ from the recommended narrow equal split unit, i.e. splitting income equally within couples, because in Georgia multigenerational households are prevalent (UN, 2017) and hence, we expect broad within-household income pooling.

The procedure for DINA Georgia consists of several steps.

First, we build a “taxable” income from survey data to prepare the survey for the merge with tax data. Taxable income sources are income from wages, income from self-employment in non-agricultural sector, dividends, interest income from non-financial institutions, and rental income. Then we annualize monthly incomes. Survey incomes are reported as net of personal income tax, whereas the tax tabulations include gross taxable income. Thus, we apply the Georgian tax code to move from net to gross income: Georgia has a flat income tax system with specified tax rates for different income sources. For example, wage income is taxed with 20%, while dividends and interests from non-financial organizations are taxed with 5%. Moreover, there are number of tax exemptions and special rules that are applied to our data. For instance, we identify the micro businesses, which according to the tax code do not pay income taxes. Hence, their net and gross income are same.) Finally, we align the measurement units in tax and survey data match. Since the “tax unit” is the individual in Georgia, we take income data at the individual level from the survey. For components that are only available at the household level, such as dividends interest and rental income, we split those equally among the adult household members.

Second, we apply generalized pareto interpolation technique (Blanchet et al., 2017) to the tax tabulations using the online tool *gpinter* to recover the distribution of taxable income.

Third, we adjust for the underrepresentation of top incomes in the survey by merging survey data with tax tabulations following the method by Blanchet, Flores and Morgan (2019).<sup>3</sup> Tax tabulations do not include information on particular income types along the distribution of total taxable income. Thus, we can only top-correct the distribution of total taxable income but the income composition given in the raw survey is maintained. In the raw survey, very few observations report positive capital income (dividends & interests). Due to this underrepresentation of dividends and interest income earners in the raw survey, also the calibrated survey overestimates the share of labour incomes and underestimates the share of capital incomes. We correct for missing capital incomes, first, by correcting the income composition of individuals with an income above 100,000 based on tax tabulations. Second, by redefining income from self-employment as capital income/firm income for the individuals who own a firm with hired employees.

Fourth, after top-correcting the survey income, we build pretax national income. We add social-insurance benefits, namely unemployment and old-age pensions, and remove the social insurance contributions from taxable factor income. However, in Georgia social contributions were non-existent until 2019. The old-age pensions were financed from the central budget of the country. A contribution-based system was introduced in 2019 and all employees under the age of 40 were obliged to join the system. However, the contributions made since 2019 do not cover current old-age pensions but are deposited into a pension fund. The current pension benefits are still financed by the central budget. To align with the DINA pretax income concept, we assume that 1) all taxable income earners pay pension contributions via a share of their income tax liability and 2) that there is an actuarial balance between pension contributions and pension benefits. Thus, we deduct the aggregate of pension contributions (equaling aggregate pension benefits) proportionally from individual taxable factor incomes. This approach is similar to the treatment of Denmark in Blanchet et al. (2020). In addition, for 2019, we add the contributions of 2% of gross wages made by employees under 40 and their employers respectively to their wages. Insurance-based unemployment benefits do not exist in Georgia.

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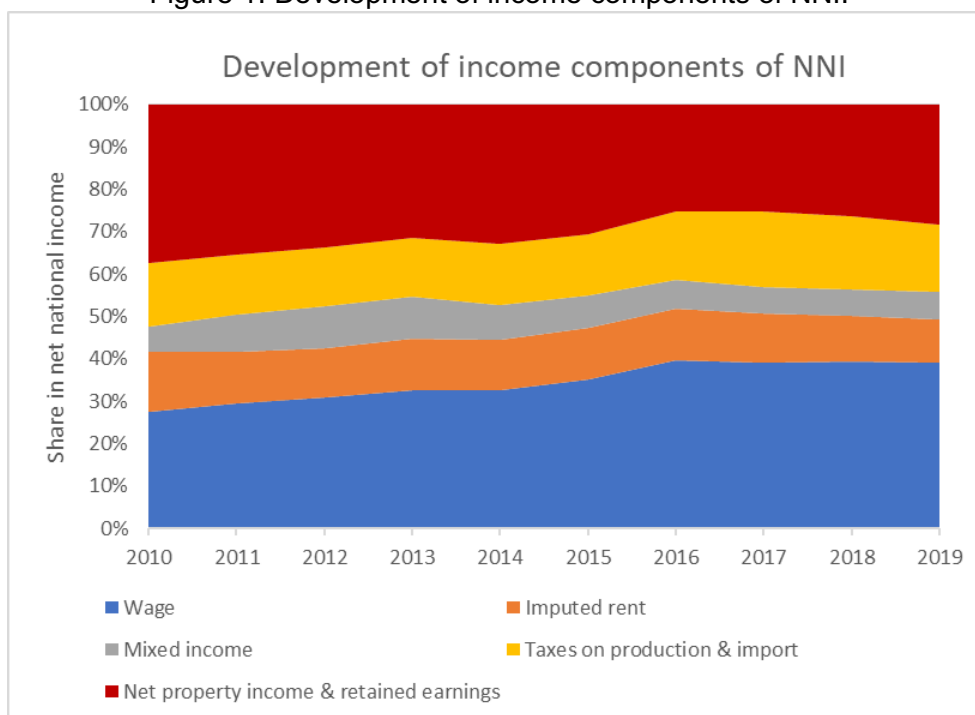
<sup>3</sup> The top-correction following Blanchet, Flores, and Morgan (2019) can be applied using the `bfm corr` command in Stata.

In a fifth step, we impute imputed rents of homeowners and taxes on production from National Accounts aggregates to the calibrated survey. Imputed rents are distributed proportional to disposable income, taxes on production proportional to pretax national income.

Finally, we uprate the income components from the top-corrected micro data to National Accounts aggregates to arrive at the distribution of 100% of net national income. We uprate the sum of national income components from micro data directly to the net national income. The following survey income components are uprated jointly to net national income: Taxable income that consists of wages, income from self-employment, rental income, dividends and interest income (accounted for hypothetical social contributions), as well as old-age pensions, income from selling agricultural production, production of goods for self-consumption.

This approach assumes that the well represented labor income earners are also those who earn capital income. This assumption may be considered unrealistic due to the more unequal distribution of wealth and capital income than labor income. However, a more detailed approach is currently not feasible due to first, the fact that National Accounts do not record all income components of net national accounts. Second, the underrepresentation of capital incomes in the micro data would lead to unrealistically high calibration factors for capital incomes which could result in an overestimation of inequality. The simplified approach ensures conservative estimates in the sense that retained earnings and underrepresented capital incomes are distributed to all income earners and not only capital income earners. Last, the labor and capital shares of national income develop drastically during the covered 10-year period. For example, wage (D1) shares in net national income has increased from 27% in 2010 to 39% in 2019, whereas the share of capital income components (net property income (D4n, S1) and retained earnings (B5n, S11-S12) has decreased from 37% to 28% of net national income. Such a drastic change over just a decade is unusual. Neither the observed increase in employment rate nor higher average wages can fully explain such a drastic rise of the wage share in National Accounts. Therefore, we use the data with caution and rely on the total national income aggregate and not its sub-components.

Figure 1: Development of income components of NNI.



Source: Own visualisation based on national accounts of Georgia.

Table 1: income and adult population covered in tax tabulations.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Share of adult population covered in tax data	30%	35%	40%	39%	42%	40%	43%	44%	46%	47%
Share of NNI covered in tax data	32%	34%	36%	40%	41%	42%	47%	44%	44%	43%

Source: Own calculations based on tax tabulations.

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