

Can Redistribution Keep Up with Inequality? Evidence from South Africa, 1993-2019

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September 2021

Preliminary Draft

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Abstract

Can government redistributive policies successfully curb rising inequality and foster inclusive growth in emerging economies? This paper sheds new light on this question by combining survey, tax, and historical administrative data to measure the incidence of taxes and transfers on the distribution of growth in South Africa since the end of the apartheid regime. Our new database is fully consistent with macroeconomic totals reported in the national accounts and allocates the entirety of government revenue and expenditure to individuals, including indirect taxes and in-kind transfers, with unprecedented level of detail. We document a dramatic divergence in the growth of top and bottom income groups: between 1993 and 2019, the pretax income of the top 1% rose by 50%, while that of the poorest 50% fell by a third. However, the widening of pretax income gaps has been almost fully compensated by the growing size and progressivity of the tax-and-transfer system, effectively mirroring a “chase between rising inequality and enhanced redistribution”. The decline of racial inequalities since the end of apartheid has been entirely driven by the boom of top Black income groups, which is only marginally reduced by taxes and transfers. Our results have important implications for fiscal policy, the measurement of poverty, and the analysis of the link between inequality and growth.

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I. Introduction

Numerous studies have provided new insights into the determinants of economic deprivation in recent years, yet considerable challenges remain when it comes to accurately understanding the link between poverty, inequality, and growth. How inclusive has economic growth been in the developing world in the past decades? To what extent have cash transfers and government investments in health, education, and infrastructure development accrued to low-income groups, and what fraction of these benefits has been mitigated by an increased tax burden? Because of a critical lack of data on the joint distributions of income, consumption, taxes, and transfers, answering these questions has until today proved to be a remarkably challenging task. At the heart of this difficulty lies major differences in data sources, methods, and research communities. At the micro level, studies investigating poverty and inequality have almost exclusively relied on household surveys, often the only source at our disposal to observe the distributions of income, consumption, and wealth. At the macro level, researchers studying the determinants of growth have mostly worked with national accounts, which provide crucial information on key macroeconomic aggregates and the size of government intervention in the economy. The sometimes inconsistent and conflicting stories arising from these two sources have made it particularly difficult to understand how economic growth is shared over time and to what extent government redistribution in its various forms (including not only cash transfers, but also in-kind transfers in education or health for instance) effectively benefits the poor.

This paper attempts to make progress in this direction by constructing a new micro dataset on the distribution of macroeconomic growth in South Africa from 1993 to 2019. Combining virtually all data sources at our disposal—surveys of various kinds, income tax data, national accounts, and historical administrative data on government taxes and expenditures from budget reports—we systematically allocate all components of the net national income, all government taxes, and all government expenditures to individuals. The resulting dataset is fully consistent with each of the macro aggregates reported in the national accounts in terms of income, household expenditures, and wealth. It is also fully consistent with what we know from administrative reports on various key parameters of government intervention, including

the number of recipients of each social grant, the total spending on each of these grants, the distribution of top taxable incomes reported in personal income tax data, the effective income tax rates faced by taxable income group, the share of the government budget allocated to various programs and policies, and other key statistics on the size and targeting of taxes and transfers. Crucially, it incorporates all these key parameters while keeping the richness of the information reported in household surveys, allowing us to decompose the evolution of inequality, redistribution, and growth according to various economic variables such as consumption, labor income, capital income, and wealth, or sociodemographic variables such as age, gender, race, and geography.

The case of South Africa is particularly revealing of the limitations we face in our understanding of the links between inequality, redistribution, and growth. On the one hand, the country is widely acknowledged as standing as the upper frontier of contemporary inequality today (Alvaredo et al. 2018). The richest 10% own a striking 85% of total household wealth, with an average net worth exceeding \$440,000 at purchasing power parity (Chatterjee, Czajka, and Gethin 2021), while 57% of the population lives with less than \$5.5 per day (World Bank 2020). These extreme disparities, despite the end of the apartheid regime of racial segregation and exclusion at the beginning of the 1990s, have been found to have increased significantly in the past decades, driven by the boom of top incomes, chronic unemployment, and persisting household indebtedness (Alvaredo and Atkinson 2010; Bassier and Woolard 2018; Leibbrandt et al. 2010; Statistics South Africa 2017).

On the other hand, South Africa is often regarded as displaying one of the most ambitious and efficient welfare states of the developing world. It has developed a highly progressive personal income tax, which collects substantial revenue in comparison to the majority of other emerging and developing economies. It has invested growing resources in education, health, and social protection, and its relatively well-targeted social grants system has provided critical social relief to the poor and the elderly (Bassier et al. 2020, Duflo 2000, Maboshe and Woolard 2018, Tondini 2020). The reductions in inequality and poverty operated by South Africa's tax-and-transfer system have even been found to be the largest achieved among all emerging economies with comparable data (Inchauste et al. 2015).

This contrasting trajectory, mixing rising pretax income inequality, low growth, and large and increasing government redistribution leaves us with a puzzling and unclear track record of South Africa's success in improving the living conditions of the poor since the end of apartheid. We do not know, for instance, whether the decline in absolute poverty observed in the 2000s, as measured by consumption expenditures reported in household surveys, was driven by higher market incomes, improved access to credit, or social transfers (such as the Child Support Grant introduced in 1998). Commonly used consumption or income aggregates do not account for in-kind transfers in education and health, hence completely leaving aside crucial elements of government redistributive policy. We know even less of the distributional incidence of taxes, in particular indirect taxes (such as VAT or excise duties) and the corporate income tax, which are generally excluded from studies tracking the evolution of inequality and poverty over time. The objective of this paper is to make significant advances in filling these gaps by making the best of all the available data sources at our disposal (surveys, tax data, national accounts, and historical data on the structure of taxes and transfers) to get a more complete picture of the distribution of growth and redistribution over time. While we still face considerable challenges in measuring these various components and our analysis is not devoid of limitations and uncertainties, we hope that it can contribute to improving our knowledge of how inequality, poverty, and redistribution interact in the long run.

Our analysis reveals a number of striking findings. The national income per adult grew by a modest 13% between 1993 and 2019, yet this figure masks extreme heterogeneities across income groups. The average pretax income of the top 1% increased by 50%, while that of the poorest half the population declined by over 30%. All income groups located below the 85th percentile saw their earnings fall: cumulative income growth was only positive among the top 15% of pretax income earners. The share of pretax income accruing to the top 10% of the population thus shifted from 57% to 66%, putting South African inequality levels higher than anywhere else in the world, including countries such as Brazil (57%), India (57%), or the United States (45%). This dramatic rise of top incomes was driven by both capital and labor income, although labor income played a more decisive role after the 2007-2008 crisis.

Turning to the impact of taxes and transfers, we document that major increases in government redistribution almost fully compensated the decline in pretax incomes at the bottom of the distribution. This transformation was mostly driven by in-kind transfers in education and health, and to a lower extent cash grants and other social protection expenditures, which both increased in size and became more progressive over time. The rise of redistribution was in part financed by higher taxes on the top 1%, which saw its effective tax rate shift from 25% to 38%, mainly through the personal income tax and the corporate income tax. A significant part of this redistribution, however, was annulled by a sizable increase in the taxes paid by the poorest 50% in the form of VAT and excise duties. In 2019, the profile of taxes paid by pretax income group was thus distinctly U-shaped, with higher tax rates paid by the bottom and the top of the distribution than by middle income groups, who saw their tax burden remain nearly unchanged in the past twenty-five years.

All in all, we find that in this contest between rising inequality, redistribution, and growth, inequality may have won by a significant margin. While redistribution did cancel some of the income losses of the poor, it did not do so sufficiently to turn them into income gains, and it did not reverse the boom of incomes at the top. In 2019, the top 1% posttax income share still stood at almost 20%, nearly twice the share of posttax income received by the bottom 50%.

Finally, we decompose inequality and redistribution into two key historical determinants of South Africa's extreme economic disparities: race and geography. We document a significant decline in the income gap between White and Black South Africans since the mid-2000s, as the ratio of average White income to average Black income fell from 7 in 2005-2009 to 4 in 2015-2019. However, much of this decrease can be accounted for by the progression of a narrow group of Black earners within the top 10% of the distribution; when we exclude this group from the analysis, the racial income gap appears to have deepened since 1993, concomitantly with the rise of overall income inequality. Racial inequalities are substantially larger in terms of wealth than in terms of income or consumption and are only moderately reduced by the tax-and-transfer system. Turning to geography, we find that the South African state operates significant transfers from the two richest provinces, Gauteng and Western Cape,

to the rest of the country, although posttax spatial inequalities remain large. The one dimension of inequality for which redistribution seems to have succeeded in fully absorbing the rise of pretax inequalities is the rural-urban gap, which grew from 160% to 260% in terms of pretax income but remained stable at about 100% after accounting for all taxes and transfers. This striking transformation is mostly attributable to higher education and health transfers, which strongly benefitted rural areas over the period considered.

This paper contributes to the growing literature attempting to bridge the micro-macro gap in poverty and inequality studies. Piketty, Saez, and Zucman (2018) combine surveys, tax, and national accounts data to create Distributional National Accounts (DINA) allocating the entirety of national income growth to individuals in the United States since 1913. A number of studies following the DINA framework (see Alvaredo et al. 2020) have been conducted since then on other countries or regions of the world, with the objective of constructing comparable, yearly statistics on the long-run distribution of income and wealth.¹ The major innovation of DINA studies is their consistency with macroeconomic figures reported in the national accounts and their allocation of all taxes and transfers (including indirect taxes, in-kind transfers, and collective government expenditures) to individuals. One of their limitations, however, has been the degree of precision with which taxes and transfers are distributed. Piketty, Saez, and Zucman (2018), for instance, distribute education spending as a lump sum per child, leaving aside variations in educational expenditures across space and/or type of education. Blanchet et al. (2020) distribute health expenditures on a lump sum basis in the context of Europe, assuming that all adults benefit from the same amount of health investment regardless of age, location, or socioeconomic status. Similarly, Bozio et al. (2020) allocate all consumption taxes on value added, energy, or tobacco proportionally to overall consumption expenditures, regardless on the type of goods on which these taxes fall.

¹ See for instance Blanchet et al. (2020) on Europe, Garbinti et al. (2018) and Bozio et al. (2020) on France, or Piketty, Yang, and Zucman (2019) on China. The results of these studies have been compiled in the World Inequality Database (see <http://wid.world>).

Several studies have made significant efforts to refine our understanding of the distribution of indirect taxes and in-kind transfers, but they have typically not done so in a way that is consistent with the national accounts. In the context of South Africa, Inchauste et al. (2015) exploit data from the Living Conditions Survey to allocate government taxes and social spending to individuals in a particularly granular way, combining for instance microdata on educational attendance by program with figures on total expenditures on each of these programs by province to allocate total education spending. This allows the authors to derive a much more precise estimate of the distributional incidence of some of the elements of the tax-and-transfer system. However, this estimate covers only one year, is not consistent with national accounts, relies exclusively on surveys (which tend to underestimate income at the top end), and excludes key components of government revenue and spending (e.g., the corporate income tax).

In this paper, we attempt to take the best from all of these contributions to derive a comprehensive picture of the distribution of growth, taxes, and transfers in South Africa given the data at our disposal. We directly follow the Distributional National Accounts framework and distribute, component by component, the national income between 1993 and 2019. Our estimates account for incomes that are never directly received by individuals, such as imputed rents or corporate undistributed profits, yet are key components of macro growth figures. We allocate all taxes to individuals, accounting for key features of the tax system such as VAT-exempt goods, the types of expenditures facing excise taxes, the heterogeneous effects of trade duties through variations in import densities by type of good, expenditures in the informal sector, and personal income tax exemptions. We distribute all government expenditures as precisely as possible, incorporating information on the value and the number of recipients of each social grant from historical budget reports, excluding individuals relying on private health insurance or going to private schools from public spending, and decomposing education and health transfers by province and function. Although our estimates are far from being perfect and could be improved as better data becomes available, we hope that these methodological insights can contribute to make new steps towards the much needed reconciliation between macro and micro sources in economic research.

Section II discusses our data and methodology. Section III presents results on the distribution of income before accounting for taxes and transfers. Section IV studies the impact of taxes and transfers on inequality and growth since 1993. Section V decomposes inequality and redistribution by race and geography.

II. Data and Methodology

This section presents the data sources and methodology used to estimate the distributions of pretax income, posttax income, consumption, and wealth in South Africa between 1993 and 2019. Section II.A outlines our conceptual framework. Section II.B explains how we distribute factor national income combining surveys, tax, and national accounts data. Section II.C details how we move from factor income to pretax income. Sections II.D and II.E respectively cover the allocation of taxes and transfers. Section II.F describes how we estimate the distribution of household final consumption expenditure and household wealth.

II.A. Conceptual Framework: Distributional National Accounts

Unlike previous studies on poverty and inequality in South Africa, we are interested in distributing the consumption, income, and wealth aggregates codified in the United Nations' System of National Accounts (UN SNA), which are routinely estimated by statistical institutes and used to estimate and decompose macroeconomic growth. These include the net national income, household final consumption expenditure, and households' net worth.

Net National Income. Our benchmark income concept is net national income. National income equals GDP minus capital depreciation plus net foreign income. It is the sum of the primary incomes of the different sectors of the economy: households, corporations, and the government (see Table 1). The primary income of households can itself be decomposed into four main components: compensation of employees, mixed income, net property income, and the imputed rents of owner-occupiers. The primary income of corporations corresponds to the net benefit that companies retain after having paid suppliers, employees, shareholders, and taxes, and that we refer to interchangeably as “retained earnings” or “undistributed profits”.

The primary income of the general government is the sum of taxes less subsidies on production and imports (i.e., indirect taxes collected during the production process) and of its net property income.

Distributional Income Concepts. Following the DINA framework (Alvaredo et al. 2020), we consider three main income concepts to distribute national income at the individual level. Factor national income is the sum of all income flows accruing to individuals before any tax or transfer. Pretax national income equals factor income after the operation of unemployment and pension systems, that is, after payment of social contributions and distribution of pension and unemployment benefits. Posttax national income equals pretax income after deduction of all taxes (including indirect taxes and the corporate income tax), payment of all kinds of transfers (including collective government expenditures in health, education, defense etc.), and allocation of the general government deficit or surplus. By definition, individual factor incomes, pretax incomes, and posttax incomes all add up to the net national income.

Distributional Consumption and Wealth Concepts. In addition to income, we also distribute consumption and wealth concepts consistent with national accounts definitions. Household final consumption expenditure (HFCE) is the sum of all purchases made by resident households. The net saving of households is the difference between net disposable income (posttax income excluding collective government expenditures) and HFCE. Personal wealth is the net wealth of the households sector, that is, the sum of all financial and non-financial assets held by households, minus their financial liabilities.

II.B. From Reported Household Income to Factor National Income

We now outline our methodology to distribute factor national income. We first combine survey and tax data to measure the distribution of reported household income (wages, property income, and mixed income). We then allocate unreported income components (imputed rents, property income attributed to policy insurance holders, undistributed profits, and government primary income) to individuals. Table 1 outlines the methodology used to

distribute each of these subcomponents of factor national income. We discuss in greater detail each of these methodological steps in appendix A (forthcoming).

Harmonization of Survey Data. Household surveys represent our main data source to distribute income at the individual level. Seven surveys collecting detailed information on all components of household income and expenditure have been conducted in South Africa since 1993.² We combine these “income surveys” with labor force surveys, which provide more detailed data on wages and self-employment income on an annual basis, to build a microfile covering the distribution of “reported household income” every year since 1993.

Combination of Survey and Tax Data. Surveys can be well-suited to measure income and expenditure at the bottom of the distribution, yet they are well-known to underestimate inequality at the top end (e.g., Blanchet et al. 2020). To better capture the levels and dynamics of top incomes, we combine our survey microfile with tabulated income tax returns available from the South African Revenue Service. The available tabulations report the number of taxpayers and total taxable income by income tax bracket every year since 2002. We correct the survey data with the tax data in four steps. First, we approximate full distributions from the tax tabulations using Generalized Pareto Interpolation (Blanchet, Fournier & Piketty 2017). Secondly, we define a “taxable income” concept in the survey data that is comparable to that observed in the tax data (excluding in particular dividends, which are not subject to personal income tax in South Africa). Thirdly, we calibrate the survey microdata on the tax tabulations using the algorithm developed by Blanchet, Flores, and Morgan (2018), which reweights survey observations so as to match the distribution of top taxable incomes reported in the tax data. This method has the major advantage of preserving the survey microdata and the dependency between its different variables (such as income components and sociodemographics), while enforcing that the survey becomes fully representative of top taxable incomes, in the same way that statistical institutes routinely adjust survey weights to make them more representative in terms of age or gender. Finally, we extrapolate the

² The Project for Statistics on Living Standards and Development (1993), the Income and Expenditure Surveys (1995, 2000, 2005, 2010), and the Living Conditions Surveys (2008, 2015).

correction to the 1993-2001 period, for which no tax data is available, assuming that top incomes were underrepresented during this period to the same extent as in 2002.

Rescaling of Household Income Components to National Accounts Totals. Having combined survey and tax data, we now have a microfile covering reported household income for the full South African population since 1993. However, for various reasons linked to sampling, mismeasurement of income flows, and non-response, income aggregates reported in this microfile do not necessarily match those recorded in the national accounts. Following other DINA studies, we rescale proportionally each of the five income flows reported in survey and tax data—compensation of employees, mixed income, rental income, interest, and dividends—to their corresponding national accounts totals. This step only has minor distributional implications at the bottom of the distribution, but it leads to significantly increasing the income share of the top 1%. This is because capital incomes, in particular interest and dividends, are both massively underreported in household surveys and by construction mostly absent from South African income tax data (Chatterjee, Czajka, and Gethin 2021).

Imputed Rents. The imputed rents of owner-occupiers represent about 3% of national income. Imputed rents are not recorded consistently in South African surveys as such, but income surveys have asked households to give an approximate value of the value of their home since 1993. We use this information to distribute imputed rents proportionally to the market value of owner-occupied housing wealth.

Other property income. Other property income, also referred to as property income attributed to insurance holders and pension entitlements, corresponds to investment income indirectly received by individuals through their ownership of unmatured insurance and pension assets. Accordingly, we assume that it is distributed proportionally to pension and life insurance assets, estimated by combining data on wages, social contributions, and self-reported wealth data from the National Income Dynamics Study (see Chatterjee, Czajka, and Gethin 2021). This component represents a significant share of national income in South Africa (6% in 2018), where private pensions, life insurance policies, and investment funds are widespread and have been growing in the past decades.

Interest Paid by Households. Household debts in the form of mortgages and other loans are significant in South Africa (53% of national income in 2018), and particularly widespread at the bottom of the wealth distribution (Chatterjee, Czajka & Gethin 2021). Accordingly, interest paid by households represents a sizable component of national income, reaching 5% of NNI in 2018. Data on debt balances have been recorded in income surveys since 1993, but debt repayments are only partially and inconsistently measured. To avoid artificially creating too many households with negative income, we therefore choose to distribute interest paid proportionally to factor income among individuals who declare having unpaid debts.³

Corporate Undistributed Profits. Undistributed profits correspond to profits that are kept within the company rather than distributed to shareholders as dividends. These income flows ultimately increase the wealth of shareholders and therefore represent a source of income to them. Accordingly, we allocate retained earnings proportionally to stock ownership, including both directly held shares and shares held indirectly through pension funds. We only distribute the share of retained earnings attributable to the private domestic sector, hence excluding that held by the government.

Taxes less Subsidies on Production and Imports. We allocate the primary income of the government proportionally to factor income, assuming this component of national income is distributionally neutral. This assumption is meaningful to the extent that one could replicate our entire analysis by relying on a definition of net national income at factor cost (instead of market prices), excluding indirect taxes and subsidies from the final measure of output. Our inequality series is thus insensitive to adopting one or the other of these approaches to national accounting.

³ This can be seen as a middle way between distributing interest paid proportionally to debt balances (which would severely aggravate income inequality given that debts are concentrated at the bottom of the distribution) and distributing it proportionally to factor income (which would leave the distribution unchanged).

Remaining components of factor national income. The remaining components of national income (3 % of NNI) mainly include government and foreign shares of corporate retained earnings, as well as other small income flows such as miscellaneous government transfers. In the absence of better information on the incidence in these items, we assume for simplicity that they are distributionally neutral and allocate them proportionally to factor income.

II.C. From Factor National Income to Pretax National Income

To recover pretax income from factor income, we remove all pension and unemployment contributions from individual income and we add all corresponding pension and unemployment benefits. This has only minor distributional incidence in South Africa, given that private pension benefits are received by a small share of the population and that the unemployment insurance system only redistributes a tiny fraction of national income (see Table 1).

Pension Contributions. Contributions to private pension plans (6% of national income) are recorded in income surveys, so we directly deduct them from individual factor incomes.

Pension Benefits. Private pension benefits (3% of national income) are also recorded in income surveys. However, these surveys tend to significantly underestimate the share of adults receiving private pension income (2-3% in income surveys vs. 5-6% according to administrative data). We use predictive mean matching to impute incomes to individuals declaring no pension income but with characteristics similar to those who do, in such a way that the total number of pension income recipients becomes exactly equal to that observed in administrative data sources (see appendix). This ensures that our microfile is representative of what we know about the actual number of recipients of pension benefits in South Africa, while preserving the observed relationships between pension income and the other covariates recorded in the surveys.

Unemployment Insurance Contributions. Unemployment insurance contributions are set at a fixed rate of 2% of gross wage in South Africa and capped at a maximum amount in Rand.

About 25% of adults contribute to the Unemployment Insurance Fund (UIF), collecting some 0.4% of national income in 2018. UIF contributors are well identified in labor force surveys, so we directly impute contributions based on statutory rules.

Unemployment Insurance Benefits. Unemployment insurance benefits are only available to adults having previously made monthly contributions to the UIF. This explains why they only cover a small fraction of the population (1.9% in 2018) and represent only 0.4% of national income. Unemployment benefits and beneficiaries are recorded in income surveys but are typically underrepresented. As in the case of private pension income, we therefore impute UIF benefits to additional recipients and we proportionally rescale the value of these benefits, so as to perfectly match both the official number of recipients and total UIF expenditures recorded in administrative data sources.

Pension and Unemployment Deficits or Surpluses. To ensure that pretax national income equals factor national income, we have to distribute the surpluses or deficits of the pension and unemployment systems. Following other DINA studies, we distribute 50% of the gap between contributions and benefits to contributors proportionally to contributions paid, and 50% to recipients proportionally to benefits received. This corresponds to assuming that the burden of the deficit (or the benefits of the surplus) will eventually be shared 50/50 by contributors and recipients.

II.D. From Pretax National Income to Posttax National Income: Taxes

To move from pretax income to posttax income, we start by deducting all taxes paid (see Table 2). These include all direct taxes (including the personal income tax and the corporate income tax) and all indirect taxes (including the Value Added Tax and excise duties).

Personal Income Tax. The personal income tax (PIT) is the tax collecting the highest share of government revenue in South Africa, amounting to 11% of national income in 2018. We microsimulate the income tax at the individual level, for each year since 1993, exploiting information on statutory rules, thresholds and marginal tax rates collected from historical

administrative sources. As our microfile is calibrated on tabulated income tax returns (see section II.B) it is perfectly representative of taxable incomes at the top. It is therefore fully consistent with administrative data, both in terms of the number of taxpayers and total income tax receipts.

Corporate Income Tax. The corporate income tax (CIT) is the second biggest direct tax on income in South Africa (6% of national income in 2018). The CIT is paid on corporations' profits, so we distribute it similarly to retained earnings (see section II.B.), that is proportionally to directly and indirectly held shares.

Other Direct Taxes on Income and Wealth. Other direct taxes on individual income and wealth only represent a small fraction of national income (1.7% in 2018). We distribute the dividends tax (0.8% of NNI), a flat tax of 20% paid by individuals on dividends received from South African companies, proportionally to dividends received. The Skills Development Levy (0.4% of NNI) is a flat tax of 1% paid on the wages of employees registered with the UIF, so we impute it directly based on rules. We allocate the remaining direct taxes to their corresponding tax bases: transfer duties to housing wealth (0.2% of national income), the securities transfer tax to equity ownership (0.1%), the estate duty and the donations tax to net wealth (0.1%), and the remaining taxes on income to pretax income (0.1%).

Value Added Tax. The value added tax (VAT) is the largest indirect tax in South Africa, enforced at a standard rate of 15% and collecting 8% of national income in 2018. In line with DINA studies and with standard tax incidence analyses, we assume that the VAT is paid by consumers. However, we refine our VAT tax incidence model in two ways. First, we exclude 19 "basic food goods"⁴, which are zero-rated and therefore not subject to VAT, as well as all other VAT-exempt goods and services (including housing rents, transport services, petrol products, educational expenditures, and financial services: see South African Reserve Bank

⁴ Brown bread, rice, maize meal, vegetables, samp, fruit, mealie rice, vegetable oil, dried mealies, milk, dried beans, cultured milk, lentils, brown wheaten meal, pilchards/sardinella in tins, eggs, milk powder, edible legumes and pulses of leguminous plants, dairy powder blend, white bread flour, cake flour, and sanitary pads.

2019). Household expenditures on each of these items have been recorded in all income surveys, so we can directly remove them from our consumption aggregate. Secondly, following Bachas, Gadenne & Jensen (2020), we exclude goods and services bought on the informal market, approximated by the type of store in which purchases occur. These two steps significantly mitigate the regressive impact of VAT, although not sufficiently to make it progressive, given the particularly high gap between consumption and income at the bottom of the distribution (see section IV.B) and the small size of the informal sector in South Africa.

General Fuel Levy and Excise Duties. Other indirect taxes on domestic products include the general fuel levy (1.8% of NNI), other excise duties (1.1%), and other taxes on goods and services (0.3%). The general fuel levy is a tax on fuel consumption, so we distribute it proportionally to fuel and transport expenditures. Other excise duties correspond to taxes on tobacco and alcohol, paid at production, so we distribute them proportionally to spending on these two goods. Other taxes on goods and services include a number of other minor indirect taxes, which we distribute proportionally to overall household expenditure.

Taxes on International Trade. Import duties and other taxes on international trade together represent about 1.4% of national income. A simplified way to distribute these taxes would be to assume that they are borne by consumers as VAT. However, the nature of imported goods might differ significantly from that bought by a typical consumer, leading to biased estimates. To correct for heterogeneity in consumption of domestic vs. imported goods, we use input-output tables published by Statistics South Africa to derive an estimate of import density by COICOP category of household expenditure. We then distribute taxes on international trade proportionally to import-density-corrected consumption (see appendix).

Other Tax and Non-Tax Revenue. To reach total consolidated government revenue, we distribute the remaining tax and non-tax revenue proportionally to pretax income (*i.e.*, in a distributionally neutral way). These include all other taxes not previously mentioned (less than 0.1% of national income), payments to the Southern African Customs Union (-1.2%), non-tax revenue (0.8%), and revenue collected by provinces and other public entities (2.4%).

II.E. From Pretax National Income to Posttax National Income: Transfers

Having removed all taxes from pretax income, we now allocate all government expenditures—including both direct and in-kind transfers, as well as the government deficit—to individual incomes to reach posttax national income (see Table 3).

Direct Social Transfers. Social protection spending represents about 5% of the national income in South Africa, the majority of which is split between three social grants: the old age grant (1.8%), the child support grant (1.5%), and the disability grant (0.6%). The old age grant is a means-tested monthly benefit available to South Africans older than 60. The child support grant is granted to a child's primary caregiver whose income falls below a specific threshold. The disability grant is provided to workers suffering from a permanent disability. As in the case of pension and unemployment benefits, data on social grants is available in income surveys, but the number of self-reported recipients tends to be lower than in administrative data (although only slightly). For consistency, we again use predictive mean matching to attribute social grants to additional eligible beneficiaries, and we impute the value of grants received based on statutory rules, each year since 1993 (see appendix). This ensures that our microfile is fully consistent with both the number of grant beneficiaries and total government expenditure on grants.

Education. Government spending on education represents about 9% of national income in South Africa, the bulk of which is dedicated to basic (primary and secondary) public education. Extending the work of Inchauste et al. (2015), who combine administrative data with survey data to allocate the education budget to households in 2010, we manually collect historical data on the decomposition of the education budget by province and function (early childhood development, primary education, secondary education, universities and technical colleges, adult education, and other expenditures) from provincial budget reports. We then distribute these expenditures to individuals on a lump sum basis, that is, we allocate to each household a fixed sum per child that depends on the type of education followed by the child and the province of residence of the household. We assume that children going to private

schools (about 10% of enrolled children below 18 in 2015) do not benefit from public educational expenditures.

Health. Health spending amounted to some 5% of the South African national income in 2019. We assume that health expenditures accrue to households effectively using the public healthcare system. To do that, we first assemble aggregate data on government health spending, decomposed by province and by function (clinics versus hospitals), from provincial budget reports. We then collect data on healthcare utilization from the October Household Surveys (1995-1996) and the General Household Surveys (2004-2019), which are the only sources providing comparable yearly information on (1) whether a member of the household sought for care in the past month (2) the type of institution visited (clinic vs. hospital) and (3) whether the healthcare institution generally visited by household members belongs to the private or public sector.⁵ Finally, we allocate health expenditures on a lump sum basis, decomposed by province and type of institution accessed, to households having made contact with the public healthcare system.

Other Government Expenditures. Other collective government expenditures include spending on general public services, defense, and housing amenities (about 21% of national income in 2019). We allocate these components of the general government budget proportionally to posttax disposable income, which amounts to assuming that they are distributionally neutral. We make an exception for housing and community amenities (water, electricity, etc., 4% of NNI in 2019), which we distribute on a lump sum basis.

Government Deficit. As in the case of the deficits of pension or unemployment systems, we assume that 50% of the general government deficit (6% of NNI in 2019) is borne by taxpayers proportionally to total taxes paid, and 50% proportionally to total transfers received.

⁵ This approach suffers from two main limitations. First, it underestimates the number of households benefitting from the healthcare system every year, given that reported figures only cover the month preceding the survey. Secondly, it does not account for intensity in public healthcare utilization, which should ideally be measured by combining data on the number of visits made per year with information on the type of doctor or specialist visited. In the absence of better data, we leave this for future research.

II.F. Household Expenditure and Household Wealth

In addition to factor income, pretax income, and posttax income, we also distribute consumption and wealth concepts consistent with national accounts definitions.

Household Expenditure. Following our approach for income, we distribute household final consumption expenditure by proportionally rescaling subcomponents of consumption reported in income surveys to their corresponding totals recorded in the national accounts, for each of the 12 COICOP categories available in both micro and macro data.⁶ This allows us to document the joint dynamics of consumption and income at the individual level, as well as to derive estimates of net saving (net household disposable income minus HFCE) by income group that are consistent with macroeconomic figures.

Household Wealth. Finally, we combine survey data on income and wealth with households balance sheets statistics published by the South African Reserve Bank to add an estimate of household net worth and its composition to our microfile since 1993. We do so by applying a “mixed method” combining rescaling and income capitalization (following Saez & Zucman 2016), whereby specific household wealth components from the balance sheets are distributed proportionally either to the corresponding income flows they generate, or to the market values of assets or liabilities reported by survey respondents. For more information on this methodology, we refer to our companion paper dedicated to the estimation of wealth inequality in South Africa (Chatterjee, Czajka & Gethin 2021).

III. The Distribution of Factor Income

⁶ Food and non-alcoholic beverages; Alcoholic beverages, tobacco and narcotics; Clothing and footwear, Housing, water, electricity, gas and other fuels; Furnishings, household equipment and routine household maintenance; Health; Transport; Communication; Recreation and culture; Education; Restaurants and hotels; Miscellaneous goods and services.

In this section, we present results on the distribution of factor national income, that is, income arising from the use of production factors (capital and labor) before any form of government redistribution. This analysis serves as a basis for understanding the evolution and structure of income inequality in South Africa, which play a key role in determining the allocation of taxes and transfers. Section III.A provides background information on macroeconomic growth in South Africa. Section III.B describes on the dynamics of factor income inequality. Section III.C decomposes the distribution of factor income into its labor and capital components.

III.A. National Income Growth in South Africa since 1993

Figure 1 plots the evolution and composition of the real national income per adult in South Africa since 1993. The average national income was equal to \$18,300 (115,000 Rand) at purchasing power parity in 2019, up by 13% from its 1993 level. Macroeconomic growth can be decomposed into three main phases (see appendix): a phase of economic stagnation between 1993 and 2000, during which real national income per adult remained relatively stable; a phase of fast growth between 2000 and 2011, associated with a cumulative income growth rate of over 20%; and a phase of decline since 2012, characterized by a negative average annual growth rate of about 1%.

Following the income approach to national accounting, the national income can be decomposed into its different income components. These components can be grouped into four main aggregates: compensation of employees (57% of NNI in 2019), mixed income and imputed rents (14%), household property income and corporate undistributed profits (17%), and government primary income (12%). Gross wages have followed a U-shaped curve over the period, dropping from about 60% of the national income to 50% in 2006, before bouncing back since then. The share of mixed income and imputed rents in national income has fluctuated with no clear trend. Conversely to wages, property income received by household and corporate undistributed profits have followed an inverted U-shaped curve, growing from a

combined share of 20% of NNI to about 25% from 1993 to the mid-2000s, before falling back to 17% in 2019.⁷

III.B. The Distribution of Factor National Income

Having described the evolution of the national income in South Africa, we now turn to documenting changes in its distribution across individuals, before the operation of the pension, unemployment insurance, and tax-and-transfer systems. Table 4 reports data on the distribution of factor national income in 2019 across selected income groups, revealing extreme income disparities. About one third of total income accrued to the poorest 90% of the population in 2019, compared to two-thirds for the richest 10% and over 25% for the top 1% alone. The top 0.01% of the population (3,670 individuals) received about 3.7% of factor national income, more than the poorest 50% as a whole (18 million individuals). The bottom 50% have an average income of \$1,300 per year at purchasing power parity, which is 14 times lower than the national income per adult. Meanwhile, the top 10% received \$120,000 (6.5 times the national average) and the top 0.1% more than 2 million PPP dollars (27 times the national average).

In Figure 2, we represent the evolution of income inequality in South Africa over time and compare it to that observed in other countries for which comparable distributional national accounts studies have been conducted.⁸ As shown in panel A, South Africa stands at the upper frontier of global income inequality today: the share of income accruing to the top 10% exceeded 65% in 2019, compared to 55-60% in Brazil and India, 40-45% in China and the

⁷ Household property income and corporate undistributed profits have co-moved in opposite directions throughout the period (see appendix), especially in the 2000s, pointing to the tradeoffs faced by firms between distributing dividends or accumulating retained earnings (see for instance Alstadsæter et al. 2017). This highlights the importance of allocating undistributed profits to individuals, and not only directly received property income, for the measurement of inequality.

⁸ Similar comparisons for other income groups can be found in the appendix. We represent here the evolution of pretax income inequality for comparability with other countries, but factor and pretax income inequality are almost perfectly identical in South Africa (see section IV.A).

United States, and below 35% in France. Furthermore, the top 10% share has increased dramatically since 1993, moving up by ten percentage points between 1993 and the early 2000s, before stabilizing thereafter. The 2007-2008 crisis has been associated with a drop in top income inequality (as observed for instance in a number of European countries, see Blanchet al. 2020), followed by a gradual return to its pre-crisis level.

Panel B plots the cumulative income growth of the top 1%, the top 10%, the middle 40%, and the bottom 50%. A striking divergence in real factor incomes has taken place between the bottom and the top of the distribution since the end of apartheid. Between 1993 and 2019, the average national income grew by 13%, yet it rose by 30% for the top decile and as much as 50% for the richest percentile. Meanwhile, the average factor income of the middle 40% has remained close to its 1993 level and that of the bottom 50% has dropped by over 30%. Coming back to the three phases of national income growth outlined above, we see that the stagnant decade of the 1990s was associated with dramatically different trajectories across income groups, as the boom of top incomes was almost perfectly compensated by income losses among the bottom 90%. Economic growth in the early 2000s benefitted to both the top and the bottom of the distribution, albeit significantly more to the former than to the latter. Finally, the decline in real incomes after 2011 was entirely driven by the bottom 90%, who saw their earnings fall back to their level of the mid-1990s, while the top 10% preserved most of the income gains they had made during the 1990s and 2000s.

III.C. Decomposing Factor Income Inequality: Labor versus Capital

To shed light on some of the factors behind the rise of income inequality, one can start by decomposing income into its labor and capital component. This decomposition also directly informs the tax incidence analysis conducted section IV, given that the distribution of taxes is highly dependent on the distribution of the various income components on which taxes fall.

Figure 3, panel A represents the evolution of the top 1% capital income, labor income, and total factor income shares since 1993.⁹ Three results stand out. First, in line with what we observe in the majority of countries with available data (e.g., Piketty, Saez & Zucman 2016; Garbinti, Goupille-Lebret & Piketty 2018), capital income inequality has remained substantially higher than labor income inequality throughout the entire period. Secondly, the boom of top 1% incomes of the 1990s and 2000s was driven by both labor and capital income: the top 1% capital income share grew from 45% to 60% from 1993 to 2007 and the top 1% labor income share from 15% to 20%. Thirdly, the stabilization of top incomes after 2007 masks a divergence between a continued increase in labor income concentration and a decline in top capital income inequality. This decline partly mirrors dynamics at the macro level, in particular the fall of household property income and the growing share of wages in the national income since the 2007-2008 crisis that we documented in section III.A.

As shown in Figure 3, panel B, a direct consequence of these differential dynamics has been a significant increase in the labor share of income at the top. In 1993, investment income (interest, dividends, and rental income) and undistributed profits represented 60% of the factor incomes of the top 1%, while labor income amounted to less than 20%. The share of wages in top 1% incomes has grown to nearly 50% in 2019, due in large part to the shrinking size of investment income since the early 2010s.

IV. The Distribution of Taxes and Transfers

To what extent have taxes and transfers curbed the rise of inequality in South Africa? To answer this question, we now analyze the distribution of taxes and transfers and its impact on inequality and the real incomes of income groups throughout the distribution since 1993. Section IV.A discusses the impact of the pension and unemployment system. Sections IV.B and IV.C respectively analyze the distributional incidences of taxes and transfers. Section IV.D documents how the tax-and-transfer system as a whole has shaped the distribution of macroeconomic growth since the end of apartheid.

⁹ See appendix for similar results on other income groups.

IV.A. From Factor to Pretax Income

In most advanced economies, the pension and unemployment insurance systems redistribute a substantial share of the national income the elderly and the unemployed every year, leading to very large reductions in inequality when moving from factor income to pretax income (Blanchet et al. 2020). This is not the case in South Africa, where the private pension system and unemployment insurance through the Unemployment Insurance Fund (UIF) only benefit to a small fraction of the population.

In 2019, about 20% of the population contributed a total of about 6% of the net national income to private pension and provident funds. Meanwhile, on the income side, about 6% of adults received private pension income (about 3% of NNI). The size of the unemployment insurance system was even smaller: in 2019, about 25% of adults contributed a total of 0.5% of NNI to the fund, enabling some 2% of the population to benefit from unemployment benefits. This share stood in sharp contrast with the 29% unemployment rate, a gap that can be explained in large part by the relative stringent conditions required to benefit from unemployment insurance in South Africa (Bhorat, Goga, and Tseng 2013).

Figure 4 represents the net transfers operated by the pension and UIF systems between income deciles, expressed as a share of NNI, in 2019. The private pension system appears to mostly redistribute small fractions of the national income from the top decile to the middle class. The top 1% are the main contributors to the system, losing 0.8% of NNI more in contributions than they receive in benefits, while the ninth decile (p80p90) receive a net transfer of about 0.4% of NNI. Redistribution operated through the UIF system is even smaller, with no group receiving more than 0.1% of NNI in unemployment benefits. Furthermore, while it is overall progressive, it is notably regressive at the top end of the distribution, with the top 1% contributing less than 0.02% of NNI in unemployment contributions. This can be explained both by the relatively lower share of labor income among top incomes and by the maximum cap set on UIF contributions (R178,464, or about \$28,500

at PPP, in 2019), which effectively turn the contribution into a regressive tax at high wage levels.

In summary, moving from factor national income to pretax national income has almost no impact on inequality at all in South Africa (see also Figure 10, panel A below), given that the sum transferred are very small and mostly redistribute income from top to middle income groups.

IV.B. The Distribution of Taxes

We now consider the distributional incidence of all taxes collected in South Africa throughout our period of interest. Figure 5 plots the evolution and composition of general government revenue, expressed as a share of national income, between 1993 and 2019. Tax receipts have grown significantly in the past quarter of century, from 29% of national income in 1993 to 37% in 2019. This represents a 28% increase in the share of national income extracted from economic output every year by the State. Of the three most important taxes in South Africa—the Personal Income Tax (PIT), the Corporate Income Tax (CIT), and the Value-Added Tax (VAT)—the CIT is the one whose revenue has grown most rapidly in relative terms, from 3.6% of NNI in 1993 to 5.8% in 2019, followed by VAT (6.3% to 7.8%) and finally by the PIT (9.7% to 11.6%). If one groups taxes in South Africa into three broad categories, direct taxes (including the PIT, the CIT, and other taxes on income and wealth), indirect taxes (including VAT, other taxes on goods and services, and taxes on international trade), and other government revenue (including other taxes and non-tax revenue), direct taxes appear to represent the largest and most rapidly growing component of government revenue. Direct taxes rose from 14% to 19% of NNI between 1993 and 2019, while indirect taxes expanded from 11% to 13% and other revenue from 3% to 4%.

How have these changes in the magnitude and structure of taxation affected the distribution of taxes paid by income group? Figure 6 provides a first answer to this question by decomposing

the total taxes paid by pretax national income group in 1993 (panel A) and 2018 (panel B).¹⁰ In 1993, the profile of taxation was relatively flat, except for the bottom and the top of the distribution, at which it was slightly regressive. Nearly all deciles transferred between 20% and 30% of their pretax incomes in taxes to the government. Bottom income groups paid virtually all their taxes in VAT, excise duties, and taxes on international trade, indirectly through their consumption of goods and services. Meanwhile, the personal income tax and the corporate income tax represented the bulk of the tax burden of the top decile. It is also interesting to note that the personal income tax was regressive at the very top, which is directly due to the fact that top income groups relied heavily on non-taxable capital incomes, in particular corporate undistributed profits held through stock ownership. The corporate income tax did not compensate sufficiently for this regressive aspect of the tax system, leading the top 0.1% to pay lower taxes than the rest of top 10% earners.

Moving to 2019, we see that the increase in taxation has been almost entirely concentrated at two parts of the distribution: the very bottom and the very top. At the top, taxation is no longer regressive, mostly due to the rise in the share of corporate income tax paid by the top 0.1% (from about 9% of its pretax income in 1993 to 19% in 2019). At the bottom, the share of income paid by low-income groups in indirect taxes has grown dramatically, with the tax burden of the third decile more than doubling. This can be explained both by the increase in total revenue collected from indirect taxes and by the rising gap between income and consumption among the poor in the past decades, to which we come back below. Meanwhile, the effective tax rate faced by middle income groups has barely changed, with individuals located between the median and the 90th percentile still paying less than 30% of their pretax income in taxes.

¹⁰ We exclude the first two deciles from this figure because their pretax incomes are very close to zero. However, we represent in the appendix total taxes paid as a share of “pretax post-transfer income” (that is, pretax income after cash transfers). Both approaches have advantages and limitations. On the one hand, pretax post-transfer income may be considered as a better measure of individuals’ disposable incomes before payment of any tax. On the other hand, this income concept is not equal to the national income (and this gap may vary depending on the year considered), which can lead to biased estimates of changes in effective tax rates by income group over time.

Figure 7 provides another perspective on this transformation by representing the yearly evolution of total taxes paid by top 1% (panel A) and bottom 50% (panel B) pretax income earners since 1993. In 1993, both groups faced very similar tax burdens, transferring about 25% of their pretax income to the government, either directly through payment of income and wealth taxes or indirectly through consumption of goods and services. By 2019, the tax burden of the top 1% had increased to 38%, while that of the bottom 50% had surged to nearly 50% of their total pretax income. The increase in top income taxation has been driven by the corporate income tax (from 9% to 13% of pretax income), but also by the personal income tax (from 9% to 16%). This latter evolution reflects both the fact that top taxable incomes have grown faster than the threshold required to enter top marginal income tax rates and the declining share of non-taxable capital income (dividends and undistributed profits) in top 1% pretax incomes. On the contrary, we see that the bottom 50% pay almost no personal income tax or corporate income tax at all, while VAT and excise duties have driven nearly all of the increase in their tax burden.

At this stage, let us discuss a bit further our results on the very high tax rates faced by bottom pretax income groups. It might look surprising and even unrealistic at first sight to observe such extremely high effective tax rates, given in particular that some of these rates are higher than the statutory rates of the taxes considered (for instance, the bottom 50% pay over 25% of their pretax income in VAT while the statutory VAT rate is 15%). This is a mechanical result of our imputation strategy, which allocates indirect taxes proportionally to consumption (excluding exempted goods and the informal sector): given that low-income groups have consumption levels that can greatly exceed their pretax incomes, the tax base on which these taxes are applied (consumption) may be substantially higher than the denominator considered for tax incidence analysis (pretax income). The presence of such a large discrepancy between the consumption and income distribution profiles, leading to extreme negative (respectively positive) savings at the bottom (respectively top) is not new (see Deaton A. (1997), Czajka (2017) and Chancel et al (2019)), yet it is not fully understood.

If a large fraction of the poor are effectively consuming from their savings or from consumer debt, such tax rates may then not seem extraordinary. On the one hand, one cannot exclude

that some measurement issues in household surveys (underreporting of income at the bottom of the distribution, overreporting of consumption at the bottom, or alternatively underreporting of consumption at the top) may lead to biased estimates of savings across income groups, implying an overestimation of the regressivity of indirect taxes. On the other hand, there is suggestive evidence of strongly negative and deteriorating savings rates among the poor in South Africa. According to national accounts published by the South Africa Reserve Bank, the ratio of households' saving to their disposable income has remained systematically *negative* since the mid-2000s, fluctuating between 0 and -2% after a sharp decline in the 1990s, so that households have, in aggregate, consumed more goods and services than their disposable income allows alone (see appendix). In 2019, as much as 5.7% of the entire national income (or 8% of household disposable income) was absorbed in interest repayments by households on previously contracted loans (see appendix). Chatterjee, Czajka, and Gethin (2021), combining microdata on income, assets, and debts with macrodata on households' balance sheets, estimate that the total net worth of the poorest 50% is negative, that is, the total market value of the assets they own is lower than the debts they owe. This is consistent with data from the 2008 Living Conditions Survey, in which 72% of adults, and an overwhelming share of respondents at the bottom of the income distribution, declared having "no regular savings for emergencies" (see appendix).

IV.C. The Distribution of Transfers

We now analyze how government expenditures have been distributed across the South Africa population since 1993. As shown in Figure 8, the rise of public spending has mirrored that of revenue in the past decades: total consolidated government expenditure grew from 32% to 41% of NNI between 1993 and 2019. Even more so than in the case of taxes, this transformation has been accompanied by significant changes in the nature of government intervention. General public services and defense are the two only types of expenditures that have declined as a share of NNI, from 8.7% to 7.0% and from 2.6% to 1.2% respectively. Meanwhile, spending on social protection is the item that has grown the fastest, nearly doubling from 3.3% to 6.5%, followed by health (3.4% to 5%, or a 50% increase), public order and safety (3.0% to 3.6%), and education (7.2% to 8.7%).

In this preliminary draft, we focus on the impact of social protection, health, and education on poverty and inequality. We leave the question of distributing collective government expenditures (including housing policy, transport, or water infrastructure) for future improvement of this article.

To what extent have increased investments in social grants, health, and education accrued to low-income groups since 1993? Figure 9 provides a direct answer to this question by representing the share of total transfers in grants, education, and health received by various income groups as a share of national income (panel A) and the cumulative growth rate of the bottom 50% before and after transfers since 1993 (panel B).

Consistently with the fact that the South African government has invested a rising share of NNI in individualized transfers that primarily benefit the poor, the share of the national income transferred to the bottom 50% has remained much higher, and has grown faster, than that received by the middle 40% and the top 10%. The bottom 50% received over 12% of the national income in the form of cash and in-kind transfers in 2019, representing an almost 50% increase from its 1993 level (8.5% of NNI). The rise of transfers has also benefitted middle income groups, whose total transfers grew from 3.9% to 5.3% over the period. Meanwhile, the top 10% continue to receive less than 1% of the national income in individualized government expenditures.

As shown in panel B, the rise of transfers seems to have fully compensated, and even exceeded, the over 30% decline in the real pretax earnings of the bottom 50% from 1993 to 2019. This figure is barely affected by the inclusion of the old age grant and the disability grant, mainly because these grants already existed in 1993 and have not increased significantly in real terms since then (see appendix). The introduction of the child support grant in 2002 and its progressive deployment over the course of the 2000s, by contrast, has compensated about a third of the decline. The rest of the fall has been overturned by other social protection expenditures (including other grants such as the foster care grant, the care dependency grant, and expenditures on social relief or distress) and by rising investment in

health, which brings the income growth of the bottom 50% to a positive 10%. Interestingly, education transfers do not seem to have contributed to the growth of the bottom 50%: increasing education expenditure, while strongly progressive (see Figure 10 below), does not seem to have benefitted more to the bottom 50% today than in 1993.

IV.D. The Overall Impact of the Tax-and-Transfer System on the Income Distribution

Our analysis of taxes and transfers has shown mixed results. On one hand, in-kind transfers have grown substantially since 1993, and this rise has primarily benefitted bottom income groups. On the other hand, the bottom 50% have faced increasing effective tax rates, driven by the rise of indirect taxes and a higher disconnection between consumption and real pretax incomes in a country with one of the lowest savings rates in the world. Combining these two pictures, who has benefitted from the rise of South Africa's welfare state since the end of apartheid?

Figure 10, panel A compares the top 1% and bottom 50% shares in terms of factor, pretax, posttax disposable, and posttax national income since 1993. South Africa's tax-and-transfer system is progressive overall and has become significantly more progressive over time, although more at the very top than at the bottom of the distribution. Between 1993 and 2019, the top 1% factor income share grew from 20% to 26%, while the top 1% posttax national income share barely increased, from about 18% to 19%. This result directly mirrors the rising tax burden of the top 1%, which has not come with higher transfers received.

Turning to the bottom 50%, the picture is a bit more nuanced. Taxes and transfers strongly benefit the poor overall, in particular in-kind transfers. In 2019, moving from pretax to posttax disposable income (that is, removing all taxes but only adding back cash transfers) increased the bottom 50% share from 4% to 5%, and moving from posttax disposable to posttax national income (that is, adding education and health transfers and collective expenditures) pushed it upwards to nearly 10%. However, unlike what we observe for the top 1%, the rise of transfers does not appear to have been sufficient to fully curb the rise of inequality. Between 1993 and 2018, the bottom 50% pretax income share fell from 6% to 4%, its posttax

disposable income share from 8% to 5%, and its posttax national income share from 12% to 10%. Combining these various pictures, we find that the bottom 50% share has fallen by 66% in terms of pretax income and by 17% in terms of posttax national income share: the rise of the South African welfare state has thus counteracted the decline of the bottom 50% share by about 74%.

Figure 10, panel B provides a more granular picture of redistribution in South Africa by representing the share of national income transferred by the tax-and-transfer system between income deciles in 1993 and 2019. Two results stand out. First, in 2019, all deciles within the bottom 80% were net beneficiaries, while the top 10% saw its pretax income reduced by a net total of 14% of national income. Secondly, the tax-and-transfer system has become more redistributive both at the top and at the bottom of the distribution. At the top, the net transfer of the top 10% grew by over 50%, while the ninth decile (p80p90) moved from being a net loser to paying about as much in taxes as it receives in transfers. Meanwhile, the first four deciles received a significantly higher share of national income in net transfers. On aggregate, we find that the net transfer received by the bottom 50% has grown from 8% to 11% of NNI between 1993 and 2019, while that paid by the top 10% has increased from 9% to 14% (see appendix).

Having considered the impact of taxes and transfers on overall inequality, let us focus more specifically on the evolution of real incomes. Figure 11, panel A provides a granular picture of the distribution of growth throughout the South Africa population by representing the cumulative evolution of real income by percentile between 1993 and 2019. The dramatic rise of pretax income inequality, combined with the low macroeconomic growth rate, has implied that only income groups located above the 85th percentile have benefitted from positive income gains. The top 1% has grown at the fastest pace, experiencing a 50% increase in its average pretax income, while incomes at the bottom have collapsed dramatically. The rise of redistribution, however, has cancelled almost exactly all the income losses of low-income earners: for almost all percentiles within the bottom 80%, total cumulated posttax national income growth has been around 0%. Consistently with our previous analysis, two other facts are also worth noticing. First, posttax national income inequality did rise overall, as groups

within the top 10% saw their incomes grow by 20% to 30% over the period. Secondly, this rise has been more pronounced among upper-middle income groups than among the top 1%, in large part due to the rise of the corporate income tax, whose burden falls disproportionately on income groups at the very top.

Figure 11, panel B focuses more specifically on the impact of redistribution on the average real income of the bottom 50%. The pretax income of the bottom 50% dropped from \$2000 at purchasing power parity in 1993 to below \$1500 in 2019. Strikingly, we obtain the exact same figures when looking at the bottom 50% average posttax disposable income, that is, after removing all direct and indirect taxes but only adding cash transfers to individual incomes. In other words, the rise of grants received by the poor has been entirely compensated by the increased tax burden faced by the bottom 50% in the form of indirect taxes paid through consumption of goods and services. It is only thanks to the growth of in-kind transfers, as well as to their higher overall progressivity (see the discussion of Figure 9 above), that the posttax national income of the bottom 50% has not significantly declined. As shown in the figure, health transfers account for the largest increase in posttax income at the end of the period, followed by education spending and finally by other collective expenditures (which we distribute here proportionally to posttax disposable income).

In summary, our analysis of inequality and growth has revealed a striking surge in both pretax income inequality and government redistribution in South Africa since the end of the apartheid regime. This “chase between inequality and redistribution” has to some extent been won by the former, although by a narrow margin, as the top 10% effectively captured all of the meager income gains in the national income per adult that were accumulated between 1993 and 2019. The rise of cash grants and in-kind transfers in education and health have, however, succeeded in annulling a large share of the negative pretax income shocks faced by the poor, despite their rising tax burden driven by VAT, excise duties, and other taxes paid indirectly through consumption.

V. The Evolution of Racial and Spatial Inequality

Our new dataset does not only cover income, taxes and transfers, it also preserves all the richness of household surveys and thus allows us to decompose inequality and redistribution by a number of sociodemographic variables. In this section, we study the evolution of income concentration along two key dimensions of South African inequality: race and geography.

IV.A. Racial Inequality

Race has always been at the heart of economic and political conflicts since the making of the South African state. Throughout the twentieth century, inequalities between racial groups stood at unparalleled levels. These inequalities were institutionalized through the political domination of the White minority, which culminated in the apartheid regime of strict racial segregation established in 1948. Between the early twentieth century and the late 1980s, the per capita income of African South Africans thus remained stable at a level reaching less than 10% of that of the White population (Leibbrandt et al. 2010). This represents some of the most extreme inequalities between racial or sociocultural groups observed in contemporary history. By comparison, the White-Black income gap has fluctuated between 50% and 60% in the United States between the 1950s and today (Piketty 2019).

How have the end of apartheid and the transition to democracy in the mid-1990s, rising inequality, and enhanced redistribution reshaped South Africa's historical legacy of extreme racial disparities? To answer this question, we provide a very long-run view on racial inequality in Figure 12, panel A by representing the evolution of the share of White and Black South Africans in top income groups since 1955. The figure combines historical tabulated tax returns collected by Alvaredo and Atkinson (2010), census data (1970, 1980, 1990), and our distributional national accounts data after 1993. Under apartheid, Whites represented over 95% of top 1% earners and over 90% of the top 10%, while the share of Black South Africans in upper income groups was nearly zero. A remarkable transformation in the composition of top incomes has taken place since the early 1990s: the share of Africans in the top 10% jumped from 2% in 1980 to 15% in 1990-1994, and then increased monotonically until reaching 54% in 2019. A similar evolution has occurred within the top 1%, although racial inequalities continue to be higher in the top 1% than in the top 10%.

In Figure 12, panel B, we demonstrate that the decline in the Black-White income gap since the end of apartheid has been largely driven by these dynamics at the top end of the distribution. As shown by the bottom line of the figure, White South Africans' average factor income was about 7 times higher than Black South Africans' in the early 1990s. This ratio remained stable until the 2010s, before declining to 4 in 2015-2019. However, the picture looks very different if one excludes top Black earners from the analysis: excluding Black earners belonging to the top 1% leads to a decline in the gap from 7.5 to 6, while removing all those in the top 5% of the factor income distribution leads to a stability of the racial income ratio at about 8.5. If one excludes completely all Black South Africans belonging to the top 10% from the analysis, then the White-Black income ratio appears to have increased significantly, from 10.5 in the early 1990s to 11.5 at the end of the period. In other words, racial inequalities have decreased in South Africa, but this decrease is mostly attributable to the emergence of a new Black elite, who has taken a growing share of the top 10% of the income distribution (see Figure 12, panel C). Meanwhile, the fact that the racial income ratio has increased if one excludes this group from the analysis is a direct result of the overall increase in factor income inequality: given that the majority of White earners still belong to the top 10%, the rising gap between the top 10% and the bottom 90% has mechanically led to a rise in the White-Black income gap.

Figure 12, panel C shows how factor income growth has been distributed within each population group from 1993 to 2019. Two key results stand out. First, inequality has risen dramatically within each group: the top 10% of Asian, Black, Coloured, and White earners all saw their factor income grow positively, while the poorest 50% earners of each group saw their earnings decline. Second, the average factor income of Black South Africans grew substantially faster than that of the other groups: it doubled over the period considered, while the average income of Asians and Coloureds increased by 15-30% and that of Whites stagnated. However, much of this dynamic was driven by differential trajectories at the top of the distribution: the average factor income of top 10% Black earners tripled, while that of top 10% White earners grew at a much lower pace (although it did grow faster than the average national income too).

Figure 13 provides more detail on the contemporary structure of racial inequality in South Africa by decomposing the White-Black gap by economic concept (panel A) and by representing the racial composition of posttax national income groups in 2019 (panel B). Two results clearly stand out. First, racial inequality remains substantially larger in terms of wealth than in terms of income or consumption: the White-Black income ratio reaches 8 in terms of personal net wealth versus 4 to 4.5 in terms of consumption, factor income, and pretax income. Secondly, the tax-and-transfer system appears to only moderately reduce racial inequalities. The ratio remains at about 4 in terms of posttax disposable income, declines to 3.5 after distributing health transfers, and finally falls to just above 3 after allocating education expenditures to individuals. This weak impact of government redistribution on racial inequality is further confirmed by figure 13, panel B. As shown in the figure, White earners continue to be massively overrepresented at the top end of the distribution even after accounting for taxes and transfers, amounting to over 50% of the top 1% but less than 5% of all posttax income percentiles within the poorest half the population. Put differently, taxes and transfers do not appear to significantly alter the racial dimension of economic inequalities in South Africa: they primarily reduce income disparities between population groups by reducing inequality between income groups as a whole, without substantially affecting their racial composition.

IV.B. Spatial Inequality

To conclude this paper, we consider another dimension of inequality: geography. How large are spatial inequalities in South Africa and how are they affected by the tax-and-transfer system?

Figure 14, panel A compares the relative average incomes of South Africa's provinces before and after accounting for government taxes and transfers. Regional inequalities are significant in South Africa, and clearly separate the country into two groups: that of the richer provinces of Western Cape and Gauteng, whose average factor incomes exceed the average national income by 35% and 65% respectively, and the rest of the country, with incomes per adult

falling between 30% and 45% the national average. These regional disparities are larger, for instance, than inequalities between European countries, and substantially wider than differences in average incomes across US States (see Blanchet al. 2020). In line with our finding on the overall progressivity of the tax-and-transfer system, we find that the government also operates redistribution between provinces, although only to a moderate extent. Western Cape and Gauteng are net contributors, while all other provinces are net beneficiaries. The province that benefits most from the tax-and-transfer system is Eastern Cape, with an average income increasing by as much as 30% after accounting for health and education transfers. Meanwhile, Gauteng sees its relative average income decrease by 14% between factor and posttax income. Inequalities between provinces have remained stable overall, both before and after redistribution (see appendix).

In addition to regional inequality, the rural-urban income gap has been found to be significant in many countries throughout the world, often determining a substantial share of overall income inequality, migration patterns, and human capital accumulation (Young 2013). South Africa is no exception to this general pattern, yet we find that rural-urban disparities has risen dramatically since 1993: the average factor income of urban earners was 3.6 times higher than that of rural areas in 2015-2019, representing a nearly 40% increase from its 1993-1994 level (Figure 14, panel B). However, enhanced government redistribution appears to have completely reversed this dynamic: the rural-urban gap grew from 2.3 to 3 (or a 28% increase) in terms of posttax disposable income, from 2.2 to 2.6 (or a 17% increase) after accounting for health transfers, and from 1.9 to 2 (or a 4% increase) after accounting for education transfers. The rise of cash grants and in-kind transfers (in particular education spending) has thus disproportionately benefitted rural areas since the end of apartheid, fully compensating the rise of pretax income inequality between rural areas and the cities.

Conclusion

By most contemporary measures, South Africa continues to stand as the most unequal country in the world, yet this paper has documented dramatic changes in the structure of these inequalities since the end of the apartheid regime in the 1990s. Behind the quasi-stagnation of

the national income per adult, the surge of inequalities has implied radically different trajectories in real earnings across income groups, with the top 1% experiencing a 50% increase in their pretax income, while the poorest half of the population saw theirs collapse by a third. The rise of government redistribution in the form of progressive taxation, cash grants, and in-kind transfers in health and education has compensated most of the decline in real incomes at the bottom, yet it has been largely insufficient to substantially reduce the extreme disparities inherited from a century of racial discrimination and oppression. In this “competition between rising pretax inequality and enhanced redistribution”, the outcome in terms of poverty alleviation and inclusive growth is, at best, mixed. While racial inequalities have declined, this decrease has been entirely driven by the income gains of a few Black earners at the top end of the distribution, thereby excluding the majority of the poor. These inequalities continue to be substantially larger in wealth and have been only marginally affected by the growing progressivity of the tax-and-transfer system.

We see at least two avenues for future research. First, this paper has demonstrated the crucial importance of allocating indirect taxes and in-kind collective expenditures for estimating the impact of taxes and transfers on poverty, inequality, and the distribution of economic growth. Yet, while we believe we have made significant advances in facing this challenge, the data sources at our disposal to properly understand who pays government taxes, and who gains from spending in health, education, and other collective expenditures remain largely unsatisfactory. Who benefits from investments in infrastructure development, industrial policy, or housing programs at the macro level, and how has this changed over time? What kinds of government spending most effectively accrue to low-income groups and how? These are extremely important questions for which our knowledges remain all too limited.

Secondly, while our results have shed new light on the interactions between taxes, transfers, and the distribution of growth, much remains to be understood when it comes to the behavioral and general equilibrium mechanisms underlying the persistence of extreme economic inequalities and the ability of government redistribution to reduce these inequalities in the long run. To what extent can progressive taxation contribute to limiting income and wealth concentration beyond their immediate impact on top pretax incomes? Can cash and in-

kind transfers truly reduce poverty and inequality beyond the short-term relief they provide, especially in countries where the poor are highly leveraged and vulnerable to transitory income shocks as in South Africa? To what extent taxes and transfers shape future pretax incomes through incentives? Answering these questions requires going beyond the descriptive analysis conducted in this paper and modelling the joint relationships between income, wealth, savings, and household debt (for recent fruitful attempts, see for instance Blanchet 2021; Mian, Straub, and Sufi 2021). We hope that our new database and the stylized facts presented in this paper will contribute to research in these multiple directions.

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Table 1 – The distribution of factor national income and pretax national income

Item	Distribution method	% of NNI (2019)
Factor national income		100%
Compensation of employees	Proportional rescaling	57%
Mixed income	Proportional rescaling	9%
Property income, net		9%
Rents	Proportional rescaling	2%
Interest	Proportional rescaling	2%
Dividends	Proportional rescaling	4%
Other property income	Proportionally to pension and life insurance wealth	6%
Interest paid by households	Proportionally to factor income of debtors	-5%
Imputed rents of owner-occupiers	Proportionally to housing wealth of owner-occupiers	3%
Corporate undistributed profits	Proportionally to equity	8%
Taxes less subsidies on production and imports	Proportionally to factor income	11%
Remaining national income components	Proportionally to factor income	3%
Pretax national income		100%
Pension contributions	Observed	6%
Pension benefits	Observed	3%
Pension deficit or surplus	50% prop. to contributions, 50% prop. to benefits	3%
Unemployment insurance contributions	Rule-based imputation	0.5%
Unemployment insurance benefits	Observed	0.4%
Unemployment insurance fund deficit or surplus	50% prop. to contributions, 50% prop. to benefits	0.1%

Notes. The table reports the methodology used to distribute the various components of factor national income and pretax national income (for more details, see sections II.B and II.C), along with the size of each component expressed as a share of net national income (NNI) in 2019. Factor national income is the sum of all income flows accruing directly or indirectly to individuals, before accounting for the operation of the tax-and-transfer system, and before accounting for the operation of the pension and unemployment systems. Pretax national income is equal to factor income after the operation of the pension and unemployment systems. Both factor national income and pretax national income sum to the net national income.

Table 2 – The distribution of taxes

Item	Distribution method	% of NNI (2019)
Direct taxes		19.0%
Personal income tax	Rule-based imputation	11.2%
Corporate income tax	Proportionally to equity	6.1%
Dividends tax	Proportionally to dividends	0.8%
Skills development levy	Rule-based imputation	0.4%
Transfer duties	Proportionally to housing wealth	0.2%
Securities transfer tax	Proportionally to equity	0.1%
Estate duty	Proportionally to net wealth	0.1%
Donations tax	Proportionally to net wealth	0.0%
Other taxes on income	Proportionally to pretax income	0.1%
Indirect taxes		12.6%
Value added tax	Proportionally to expenditure (excl. zero-rated / informal market)	8.0%
General Fuel Levy	Proportionally to fuel and transport expenditure	1.8%
Other excise duties	Proportionally to tobacco and alcohol expenditure	1.1%
Other taxes on goods and services	Proportionally to total expenditure	0.3%
Taxes on international trade	Proportionally to import-density-corrected expenditure	1.4%
Other government revenue	Proportionally to pretax income	2.0%
Total consolidated revenue		33.6%

Notes. The table reports the methodology used to distribute all taxes in South Africa at the individual level (for more details, see section II.D), along with the size of each component, expressed as a share of net national income (NNI), in 2019.

Table 3 – The distribution of transfers

Item	Distribution method	% of NNI (2019)
Direct transfers		5.0%
Old age grant	Rule-based imputation	1.8%
Child support grant	Rule-based imputation	1.5%
Disability grant	Rule-based imputation	0.5%
Other social protection	Proportionally to other cash transfers	1.2%
In-kind transfers		13.8%
Education	Lump sum per kid (by province and type of education)	8.7%
Health	Lump sum per adult (by province and public healthcare use)	5.1%
Collective government expenditures		20.9%
Housing and community amenities	Proportionally to posttax disposable income	4.0%
General public services (incl. debt service)	Proportionally to posttax disposable income	7.0%
Economic affairs	Proportionally to posttax disposable income	4.6%
Public order and safety	Proportionally to posttax disposable income	3.6%
Defence	Proportionally to posttax disposable income	1.2%
Recreation and culture	Proportionally to posttax disposable income	0.3%
Environmental protection	Proportionally to posttax disposable income	0.3%
Total consolidated expenditure		39.6%

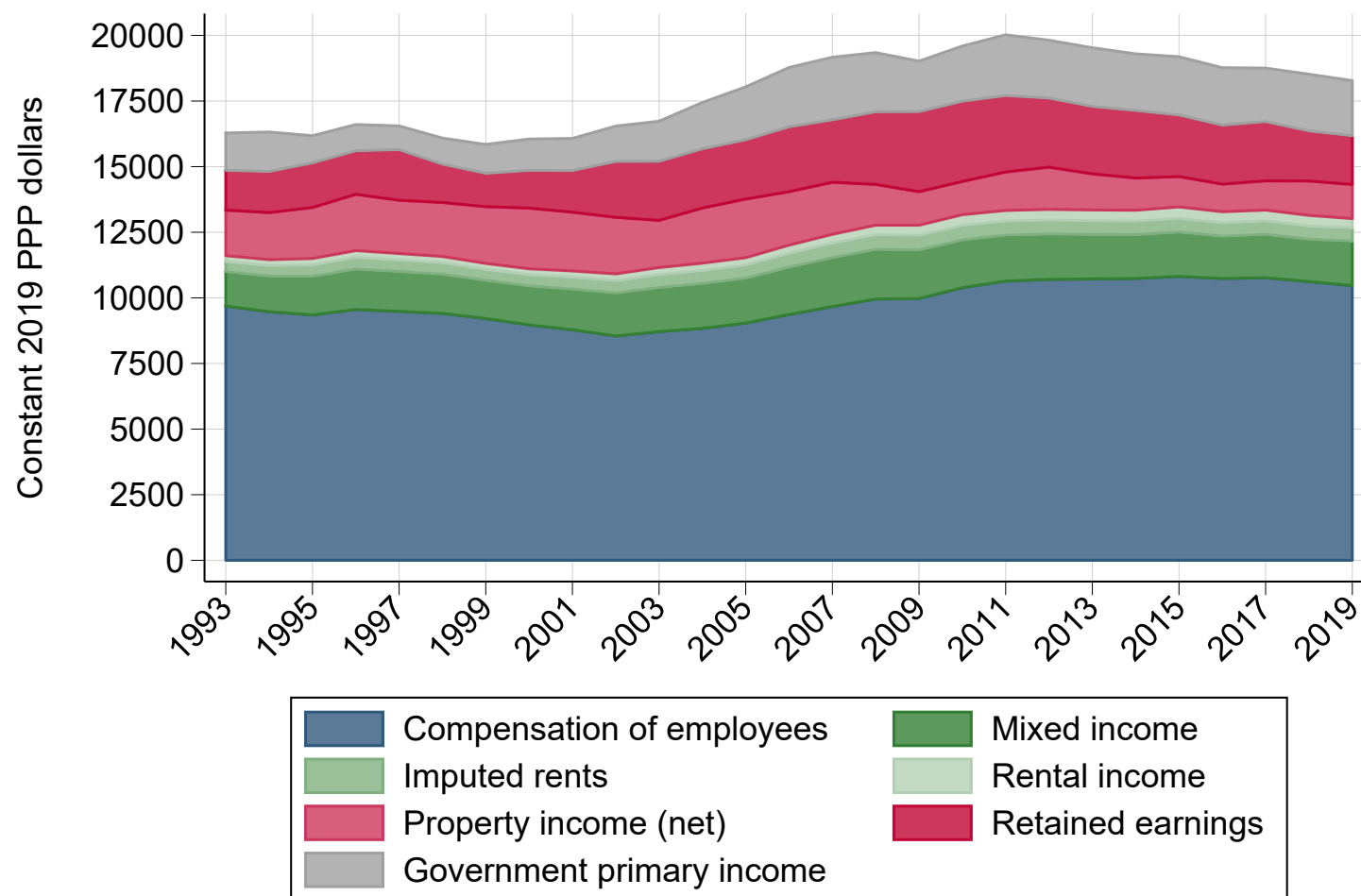
Notes. The table reports the methodology used to distribute all transfers in South Africa at the individual level (for more details, see section II.E), along with the size of each component, expressed as a share of net national income (NNI), in 2019.

Table 4 – The distribution of factor income in South Africa in 2019

	Number of adults	Income threshold	Average income	Income share
Full population	36,700,000	\$ 0	\$ 18,300	100%
Bottom 90% (p0p90)	33,030,000	\$ 0	\$ 6,800	33.6%
Bottom 50% (p0p50)	18,350,000	\$ 0	\$ 1,300	3.6%
Middle 40% (p50p90)	14,680,000	\$ 4,400	\$ 13,700	30.1%
Top 10% (p90p100)	3,670,000	\$ 41,600	\$ 121,000	66.4%
Top 1% (p99p100)	367,000	\$ 202,000	\$ 486,000	26.6%
Top 0.1% (p99.9p100)	36,700	\$ 641,000	\$ 2,020,000	11.1%
Top 0.01% (p99.99p100)	3,670	\$ 3,920,000	\$ 6,790,000	3.7%

Notes. The table reports the distribution of factor national income in 2019, providing information for each income group on the number of adults belonging to this group, the minimum income required to belong to this group, the average income of this group expressed in 2019 PPP US dollars (\$1 = R6.3), and the share of factor national income received. Factor national income is the sum of all income flows accruing directly or indirectly to individuals, before accounting for the operation of the tax-and-transfer system, and before accounting for the operation of the pension and unemployment systems. Income is split equally among all adults members of the household (aged 20 or above).

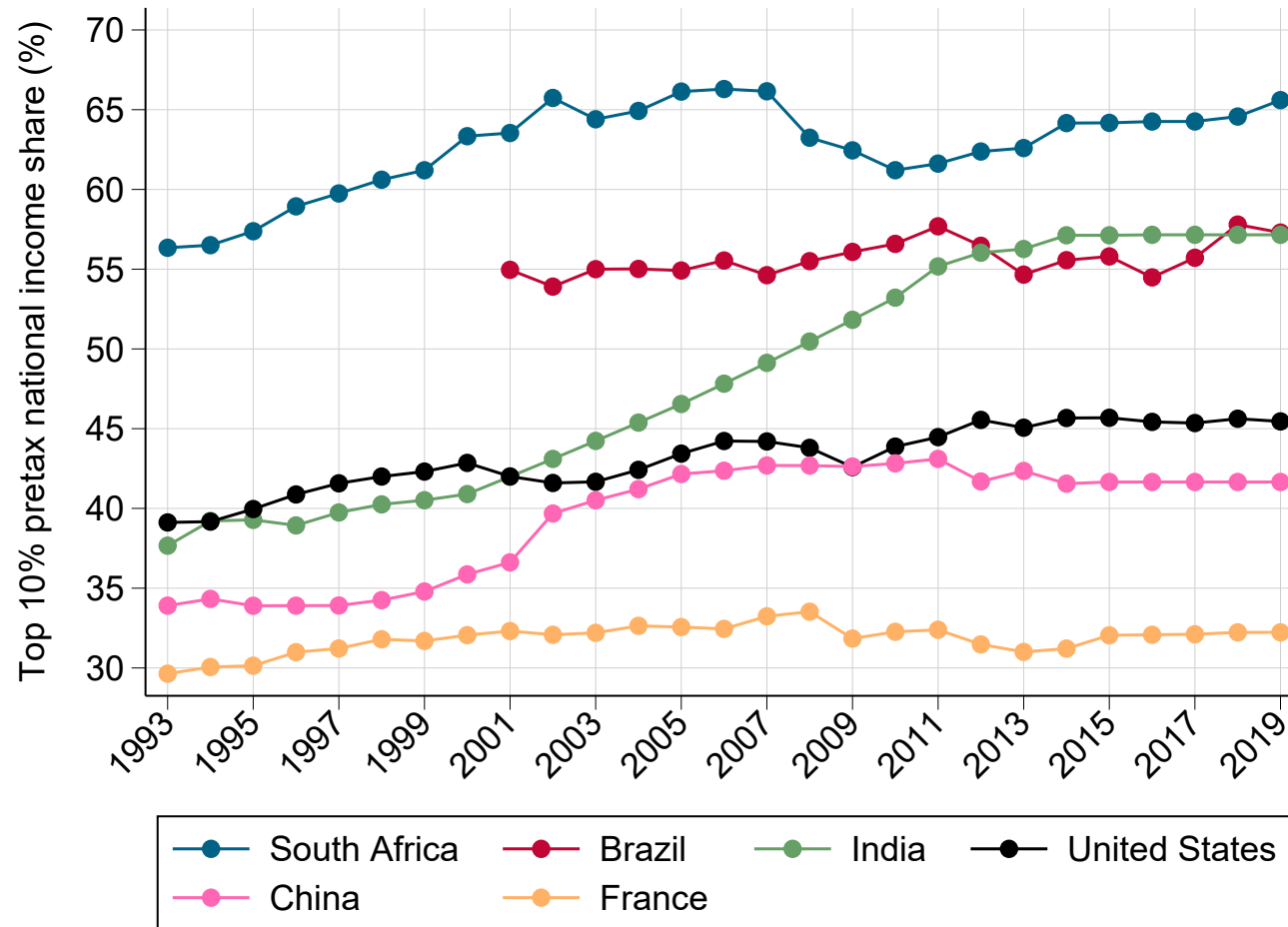
Figure 1 – Average national income per adult, 1993-2019



Notes. Authors' computations using national accounts series from the South African Reserve Bank Quarterly Bulletin.

Figure 2 – The distribution of factor national income, 1993-2019

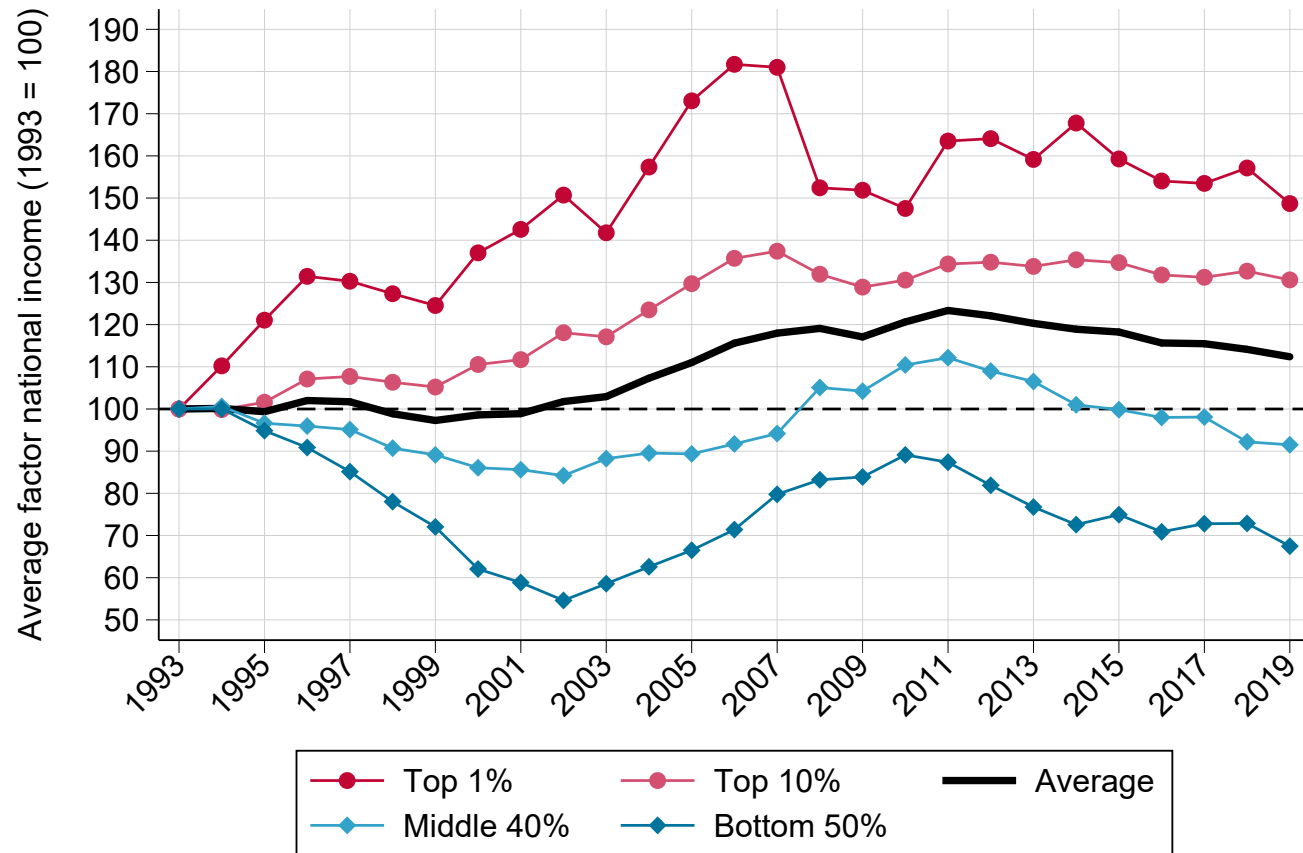
(A) South Africa in comparative perspective: top 10% pretax income share



Notes. Authors' computations combining survey, tax, and national accounts data (South Africa); World Inequality Database (other countries).

Figure 2 – The distribution of factor national income, 1993-2019

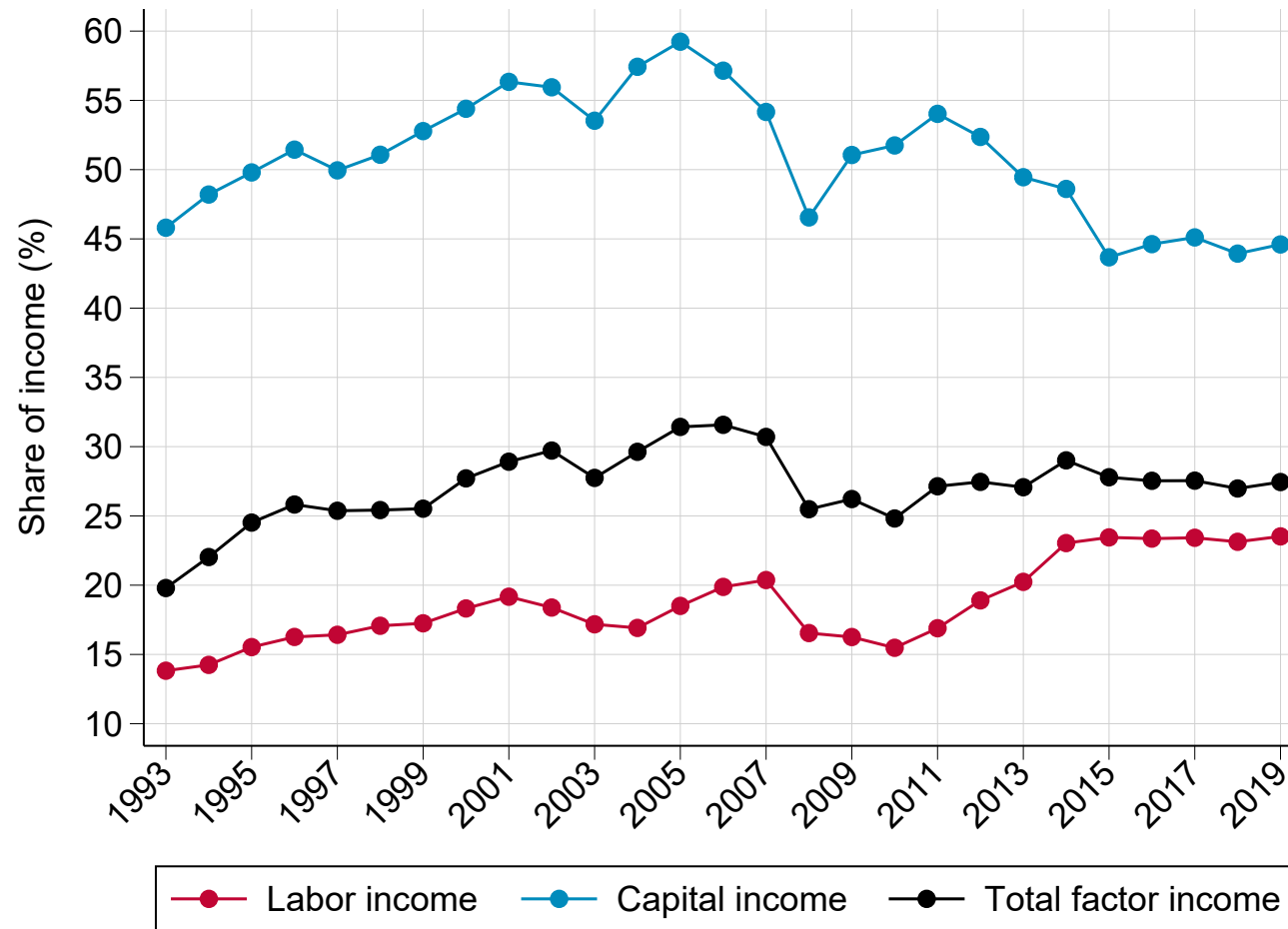
(B) Cumulated income growth by factor income group



Notes. Authors' computations combining survey, tax, and national accounts data.

Figure 3 – Decomposing top factor income inequality

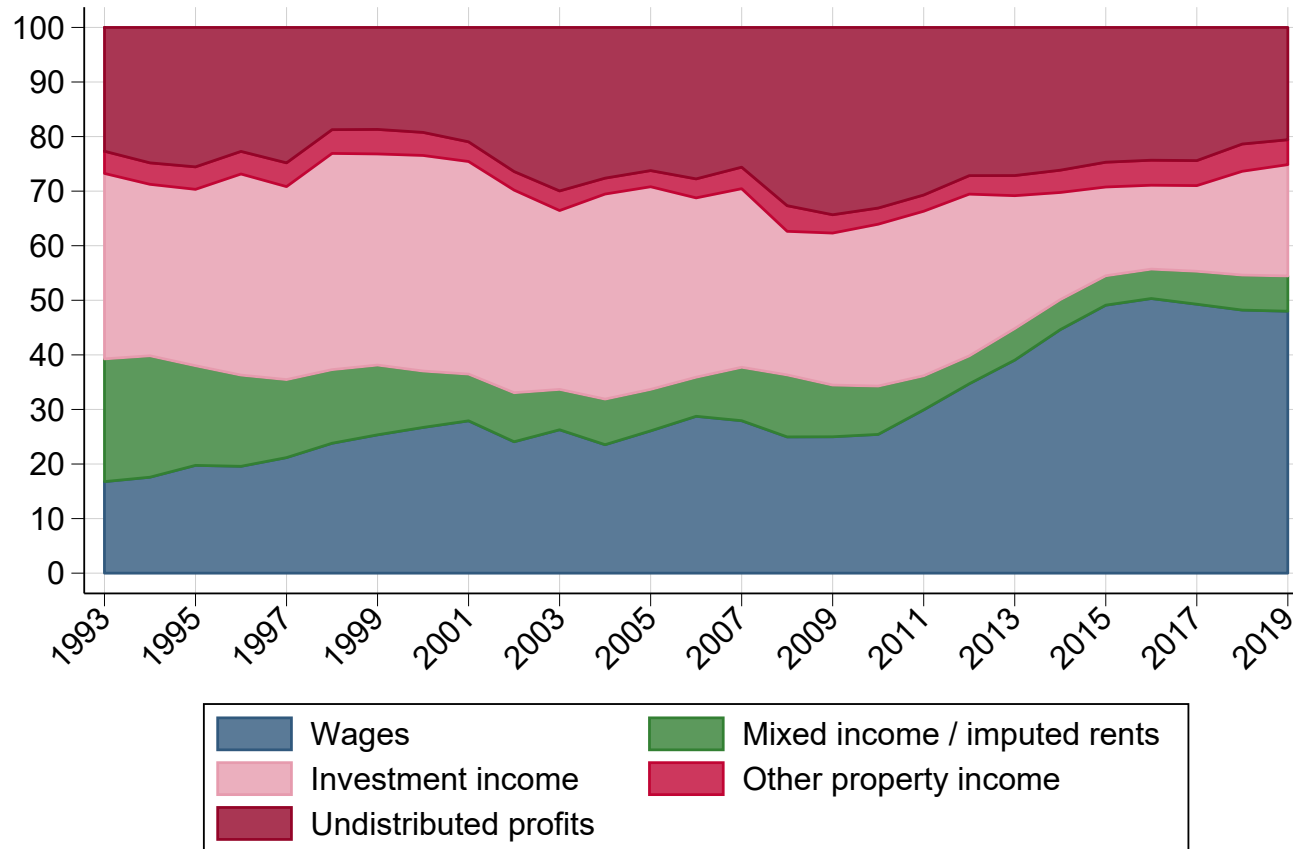
(A) Top 1% income share: labor versus capital



Notes. Authors' computations combining survey, tax, and national accounts data. Labor income is defined as the sum of compensation of employees and 70% of mixed income. Capital income is defined as the sum of 30% of mixed income, property income (rental income, interest, dividends, and other property income), and the private share of corporate undistributed profits.

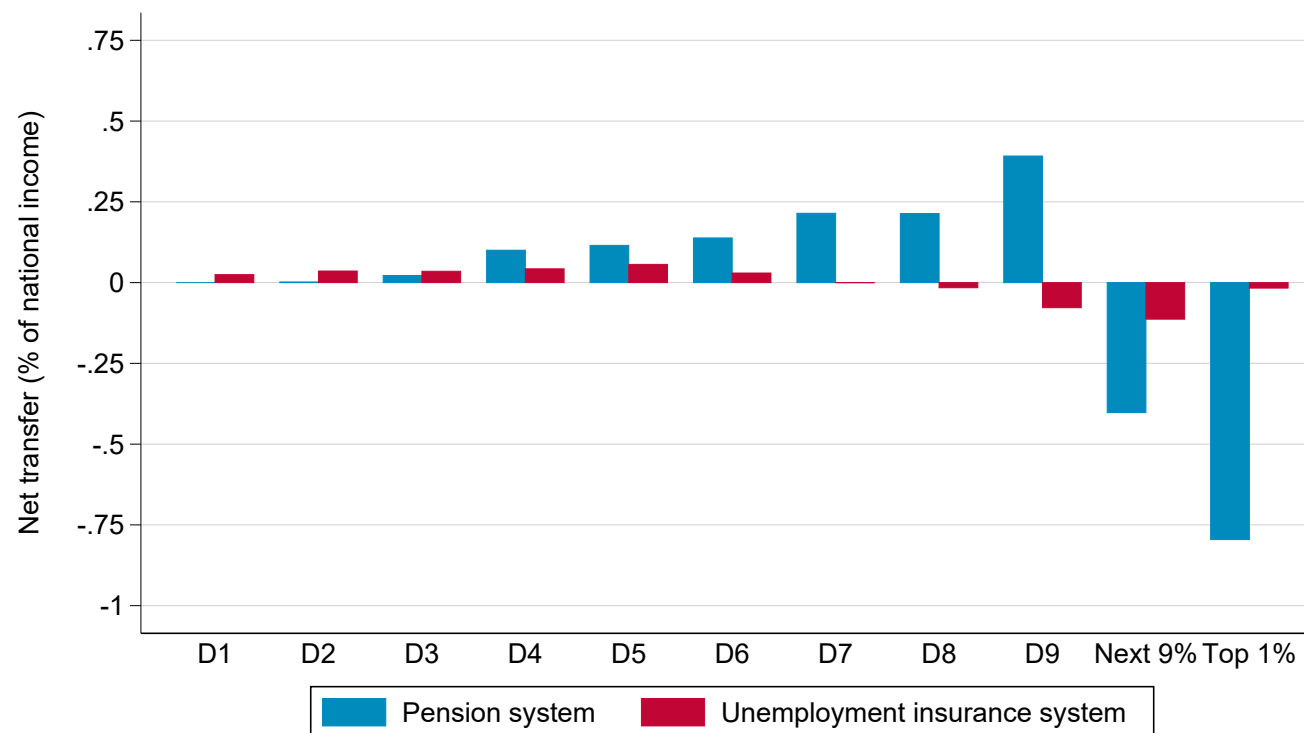
Figure 3 – Decomposing top factor income inequality

(B) Composition of top 1% factor income



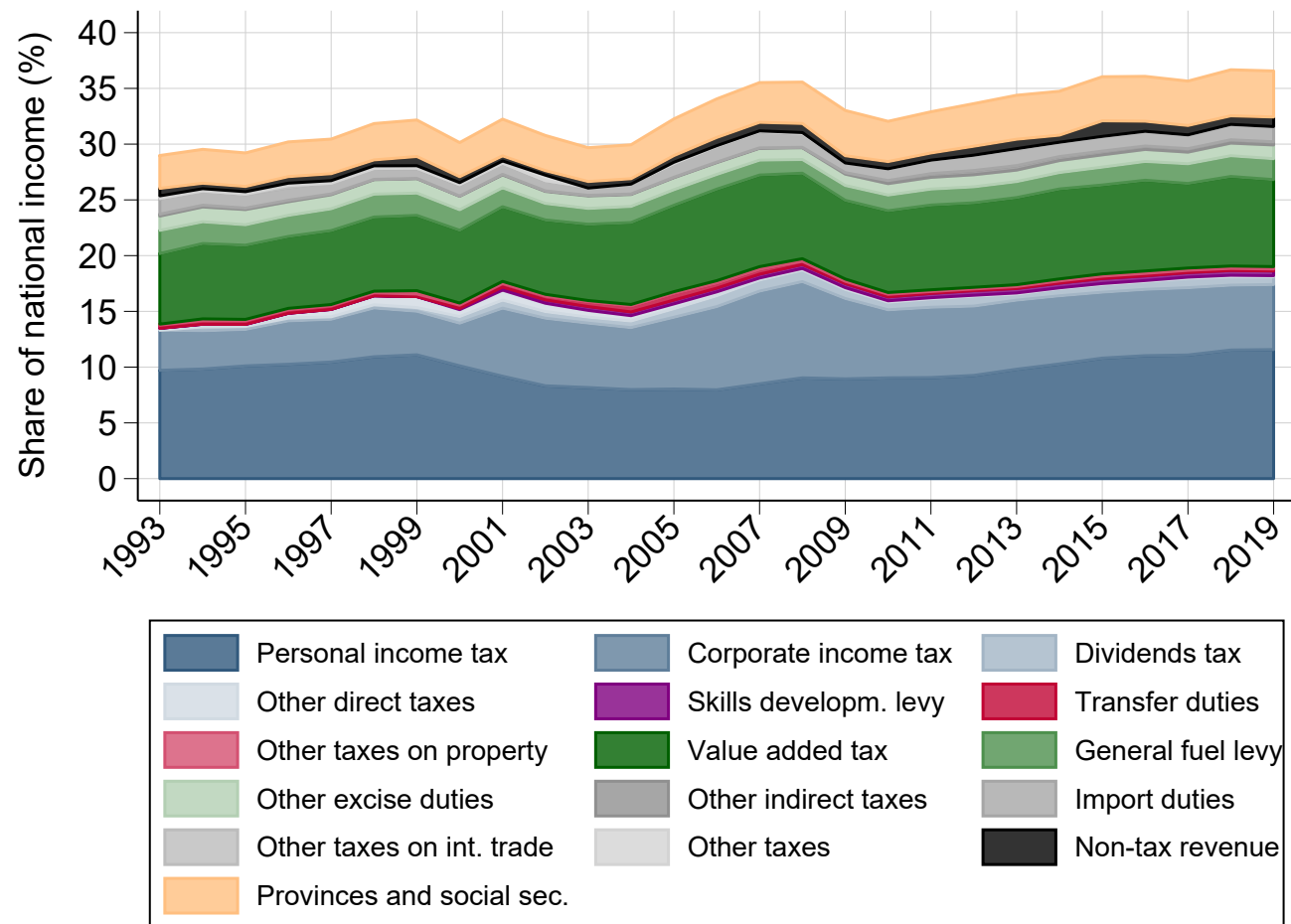
Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the composition of the factor income of top 1% earners.

Figure 4 – From factor to pretax income: net transfers operated between factor income groups by the pension and unemployment insurance systems



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the net transfers received or paid by factor income group through the pension and unemployment insurance systems (that is, the difference between total benefits received and total contributions paid), expressed as a share of national income.

Figure 5 – Government revenue in South Africa



Notes. Authors' computations combining national accounts series from the South African Reserve Bank Quarterly Bulletin with government budget data collected from Treasury National Budget Reports.

Figure 6 – Taxes paid by pretax national income group: 1993 versus 2019

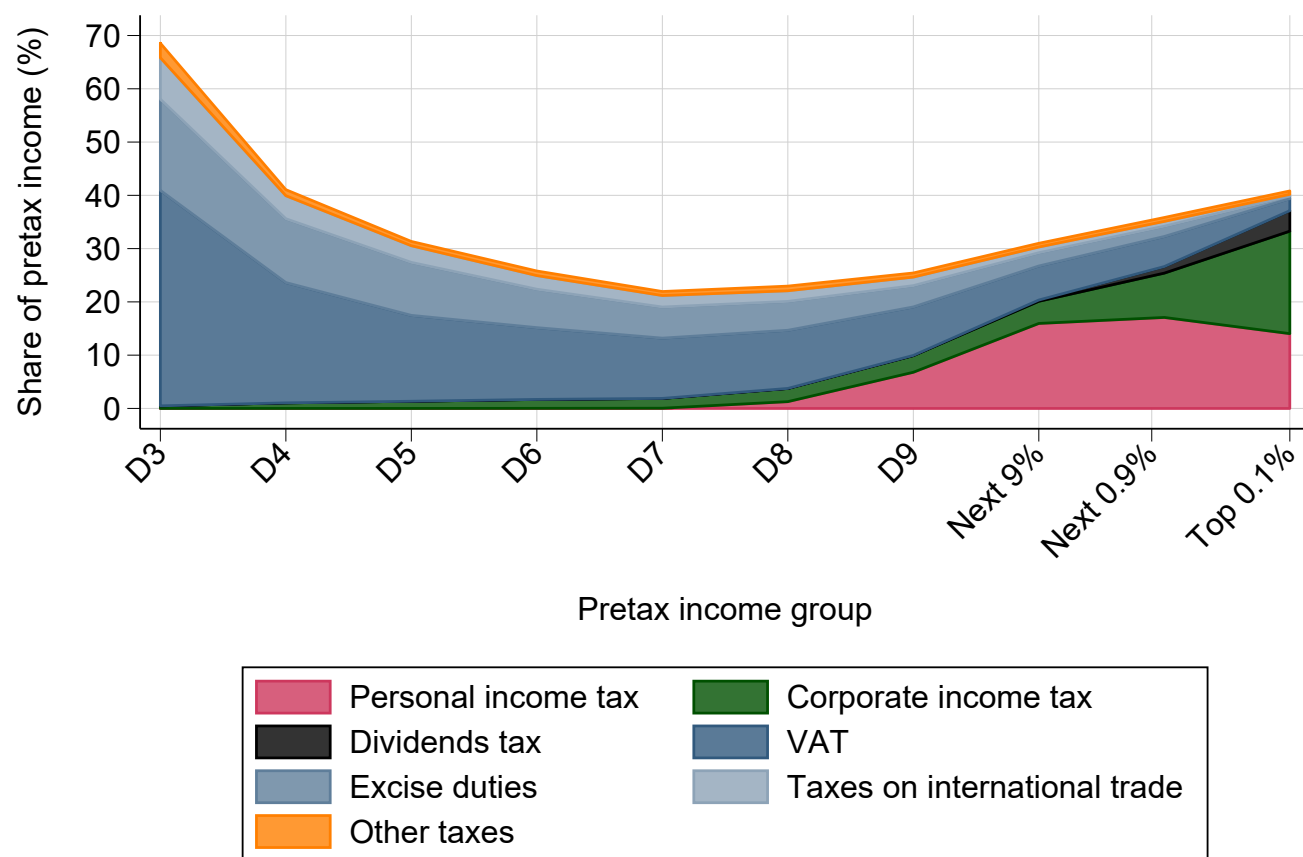
(A) 1993



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the effective tax rate faced by pretax income group in South Africa in 1993, expressed as a share of pretax income.

Figure 6 – Taxes paid by pretax national income group: 1993 versus 2019

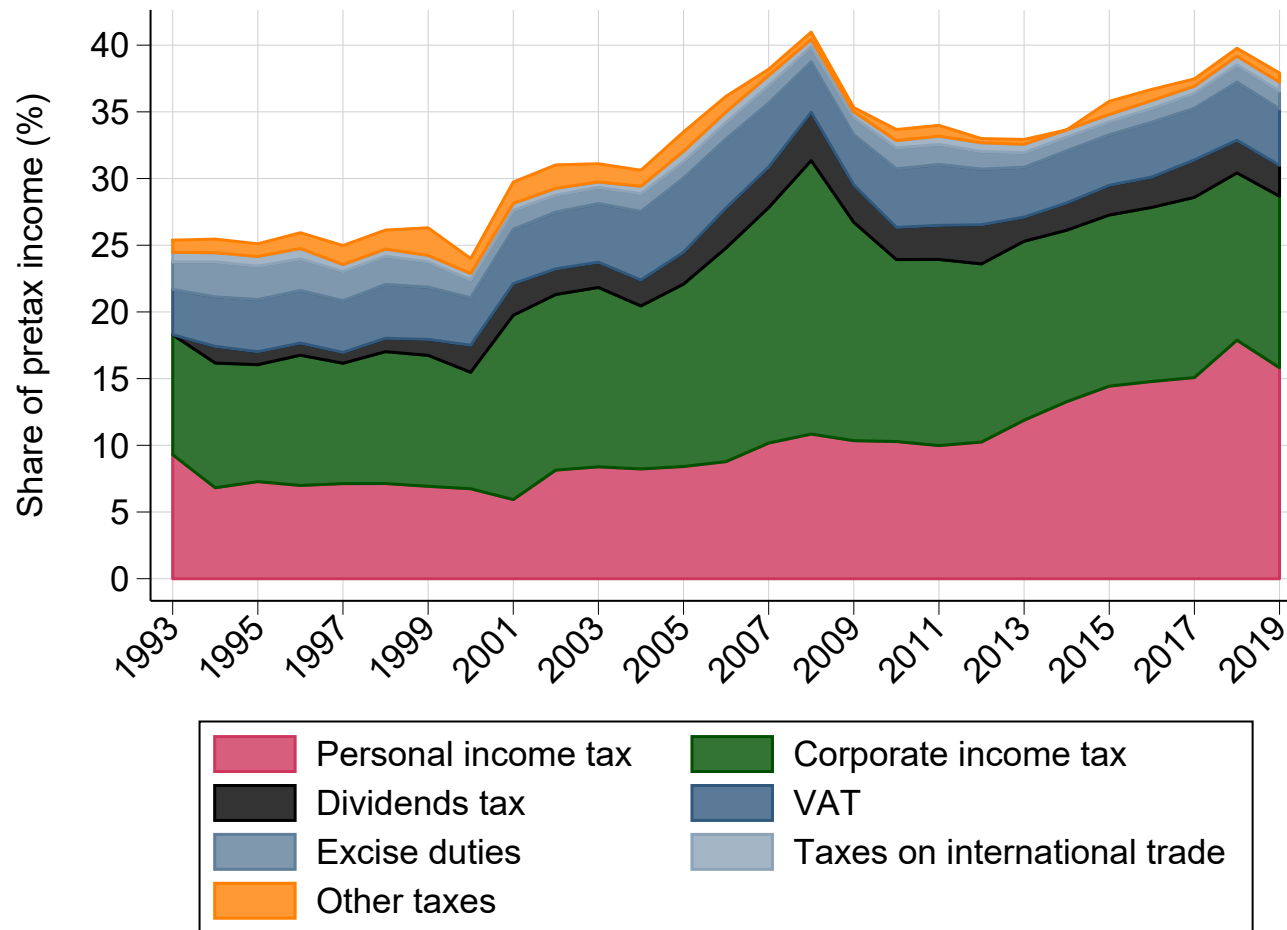
(B) 2019



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the effective tax rate faced by pretax income group in South Africa in 2019, expressed as a share of pretax income.

Figure 7 – Taxes paid by the top 1% and the bottom 50%

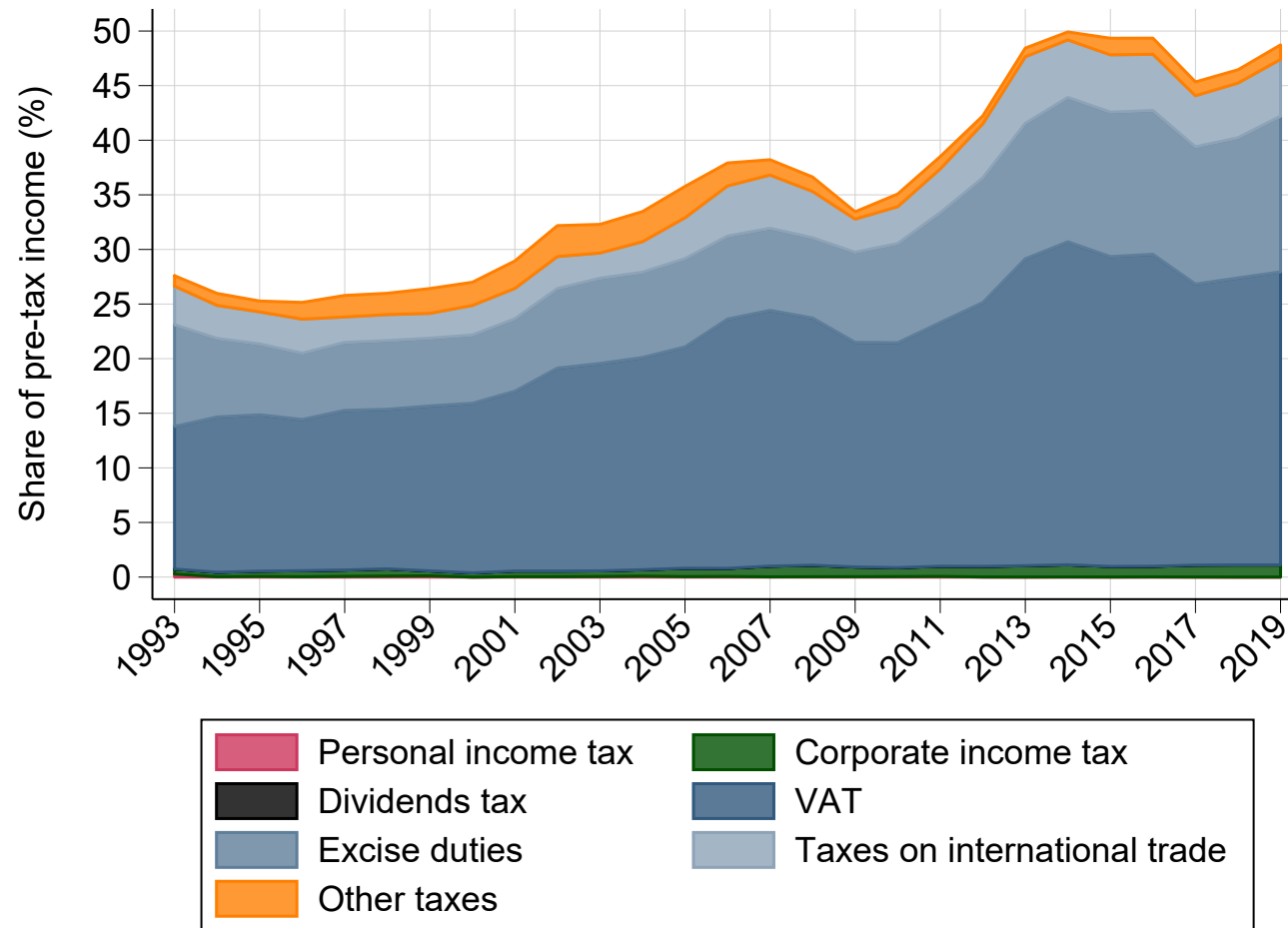
(A) Top 1%



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the effective tax rates faced by top 1% pretax income earners (panel A) and bottom 50% pretax income earners (panel B), expressed as a share of pretax income.

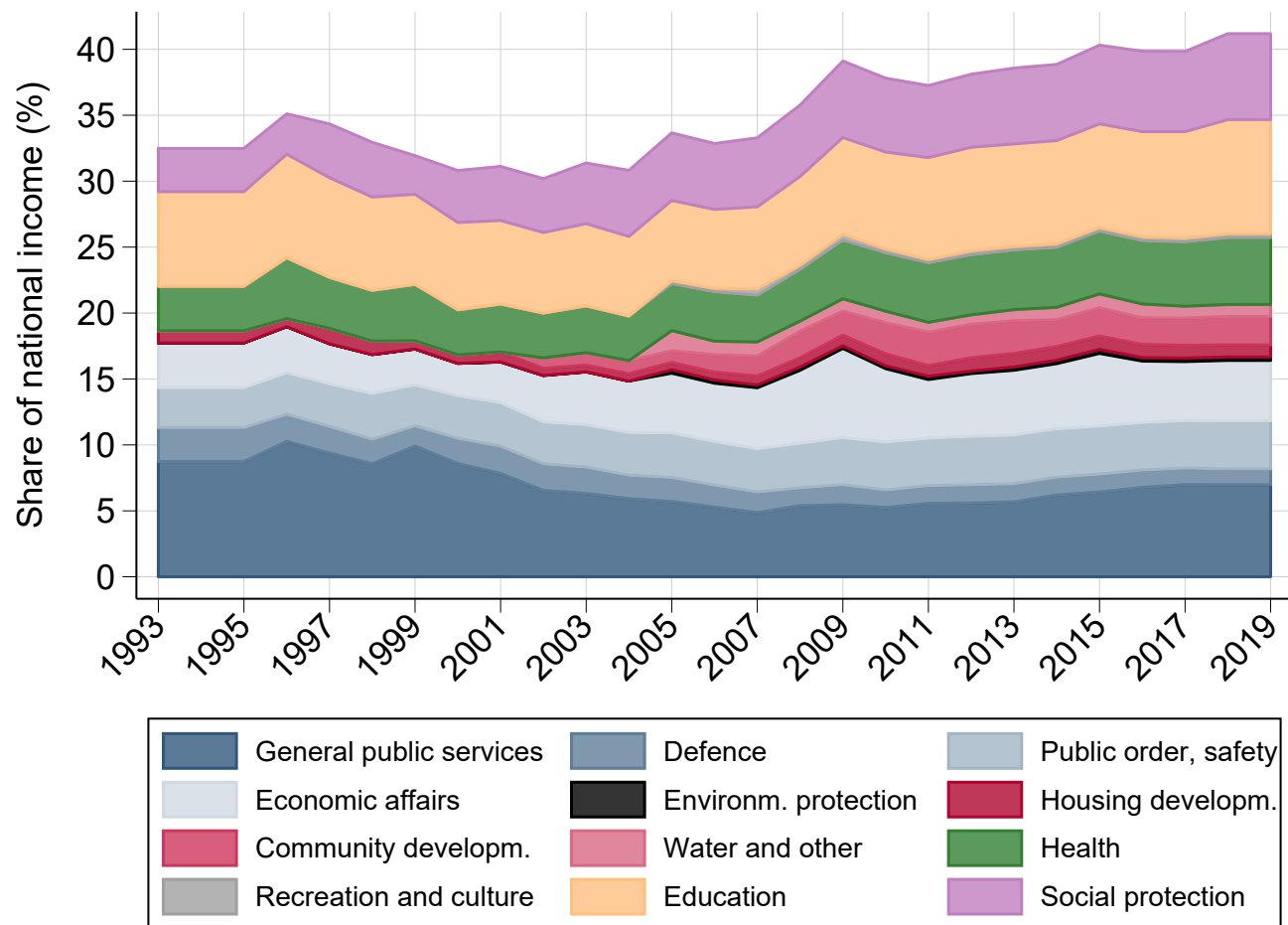
Figure 7 – Taxes paid by the top 1% and the bottom 50%

(B) Bottom 50%



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the effective tax rates faced by top 1% pretax income earners (panel A) and bottom 50% pretax income earners (panel B), expressed as a share of pretax income.

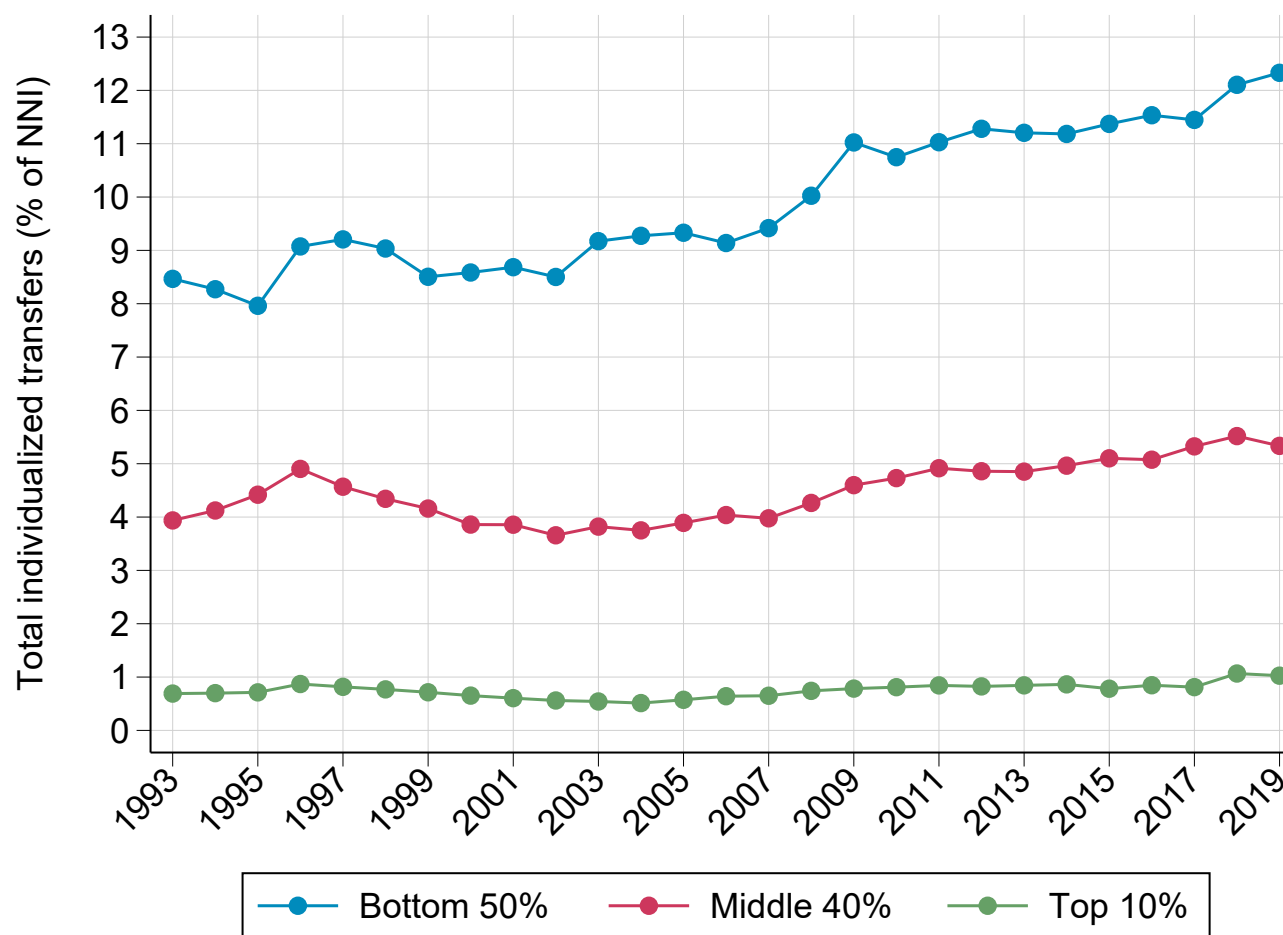
Figure 8 – Government expenditure in South Africa



Notes. Authors' computations combining national accounts series from the South African Reserve Bank Quarterly Bulletin with government budget data collected from Treasury National Budget Reports.

Figure 9 – The rise of social transfers

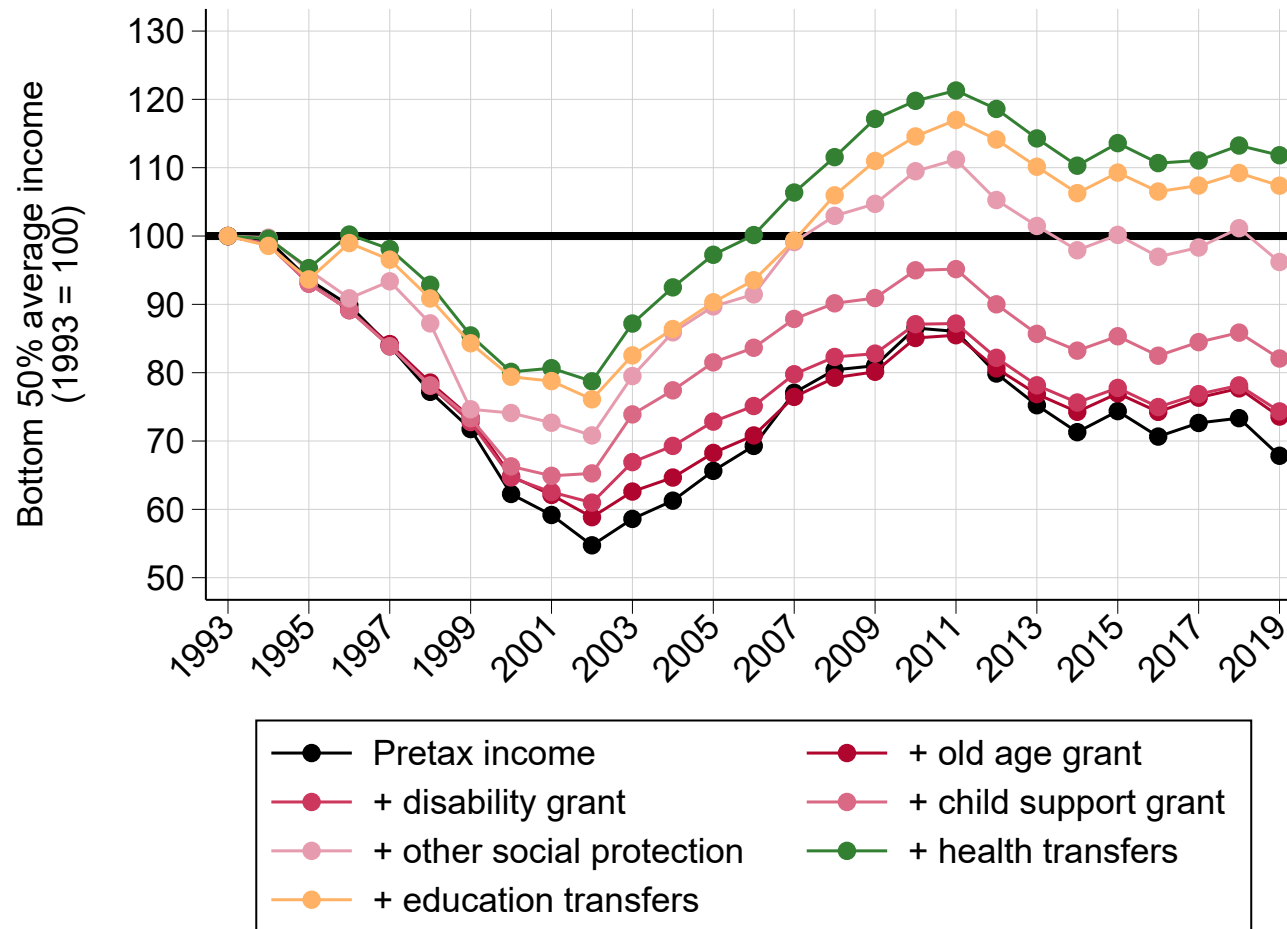
(A) Total individualized transfers received by pretax income group



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the total individualized transfers (social protection, education, and health transfers) received by bottom 50%, middle 40%, and top 10% pretax income earners, expressed as a share of national income.

Figure 9 – The rise of social transfers

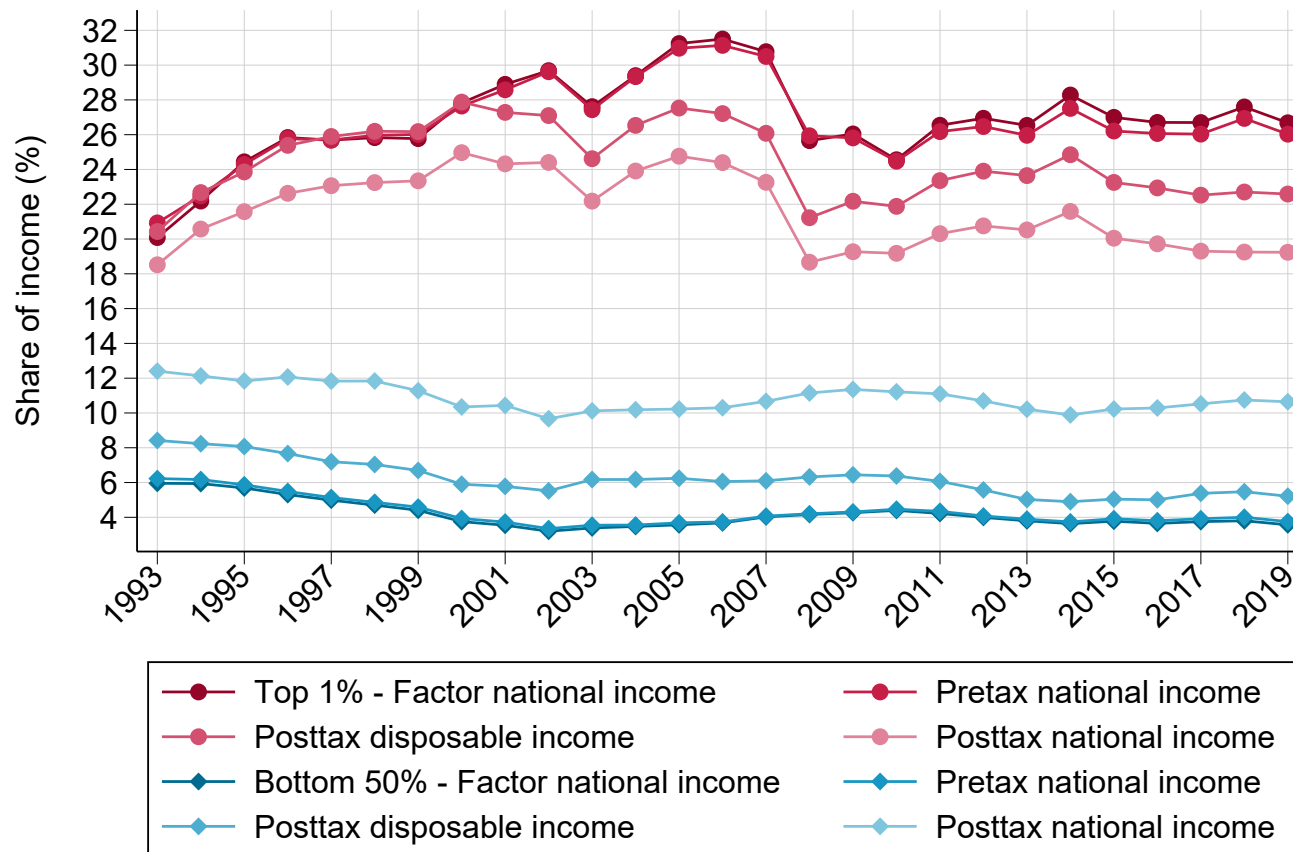
(B) Bottom 50% average income growth, before and after transfers



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the cumulated income growth rate of bottom 50% earners between 1993 and 2019, before and after adding specific social transfers to individual pretax incomes.

Figure 10 – The overall impact of taxes and transfers on inequality

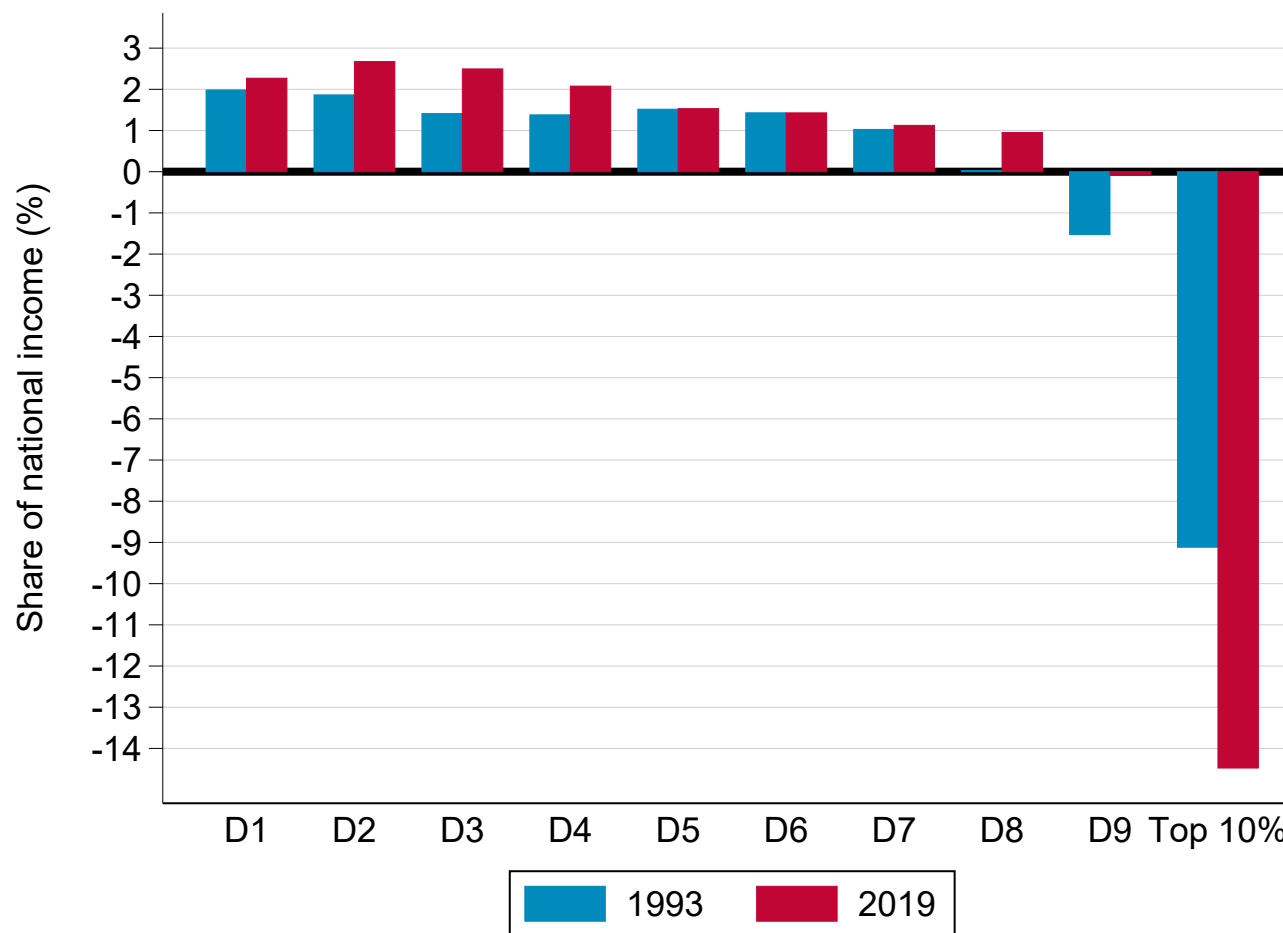
(A) Top 1% versus bottom 50%: from factor to posttax national income



Notes. Authors' computations combining survey, tax, and national accounts data.

Figure 10 – The overall impact of taxes and transfers on inequality

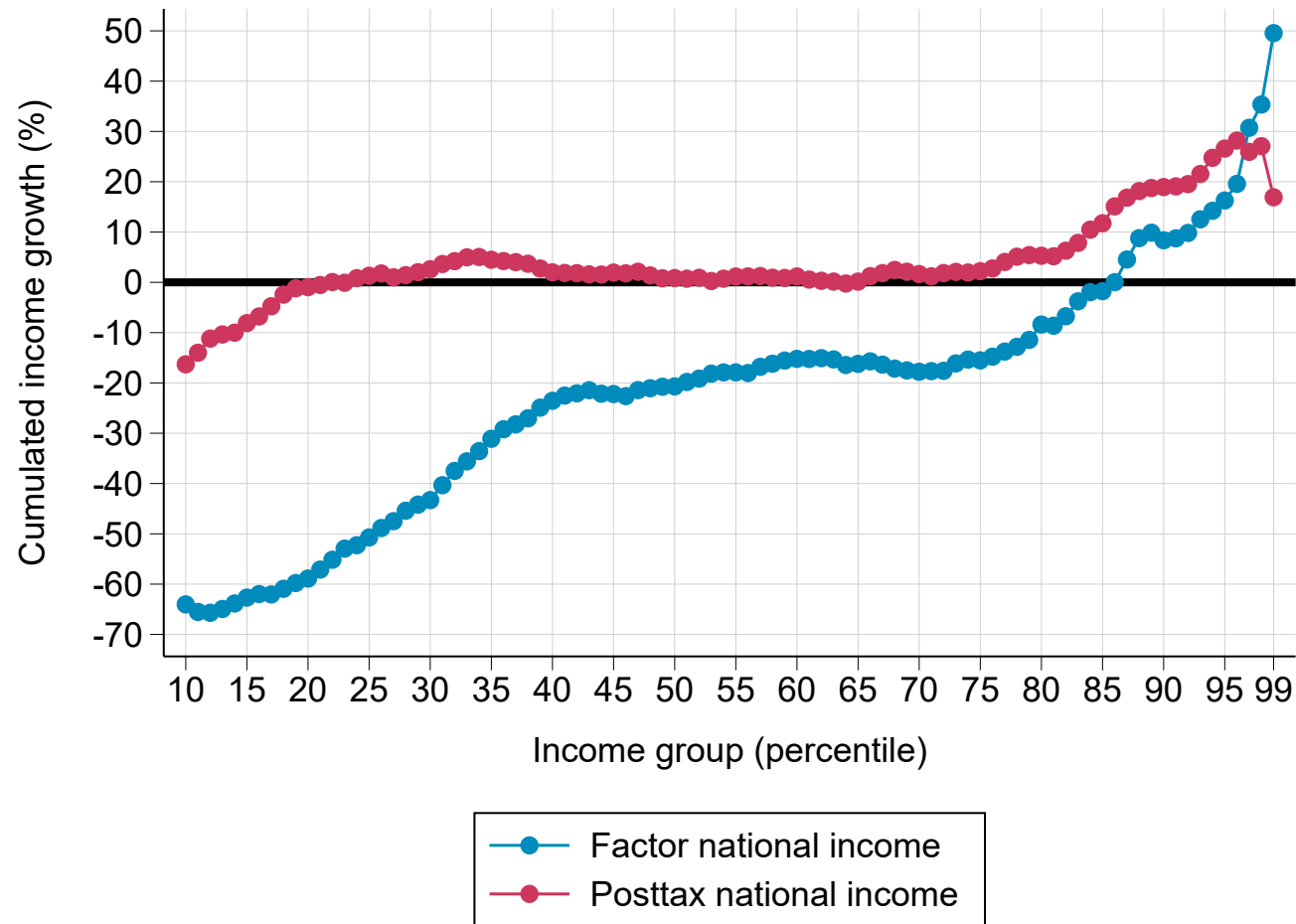
(B) Net transfers operated by the tax-and-transfer system by factor income group



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the net transfers operated between factor income deciles by the tax-and-transfer system, that is, the difference between total transfers received and total taxes paid, expressed as a share of national income.

Figure 11 – Redistribution, inequality, and growth

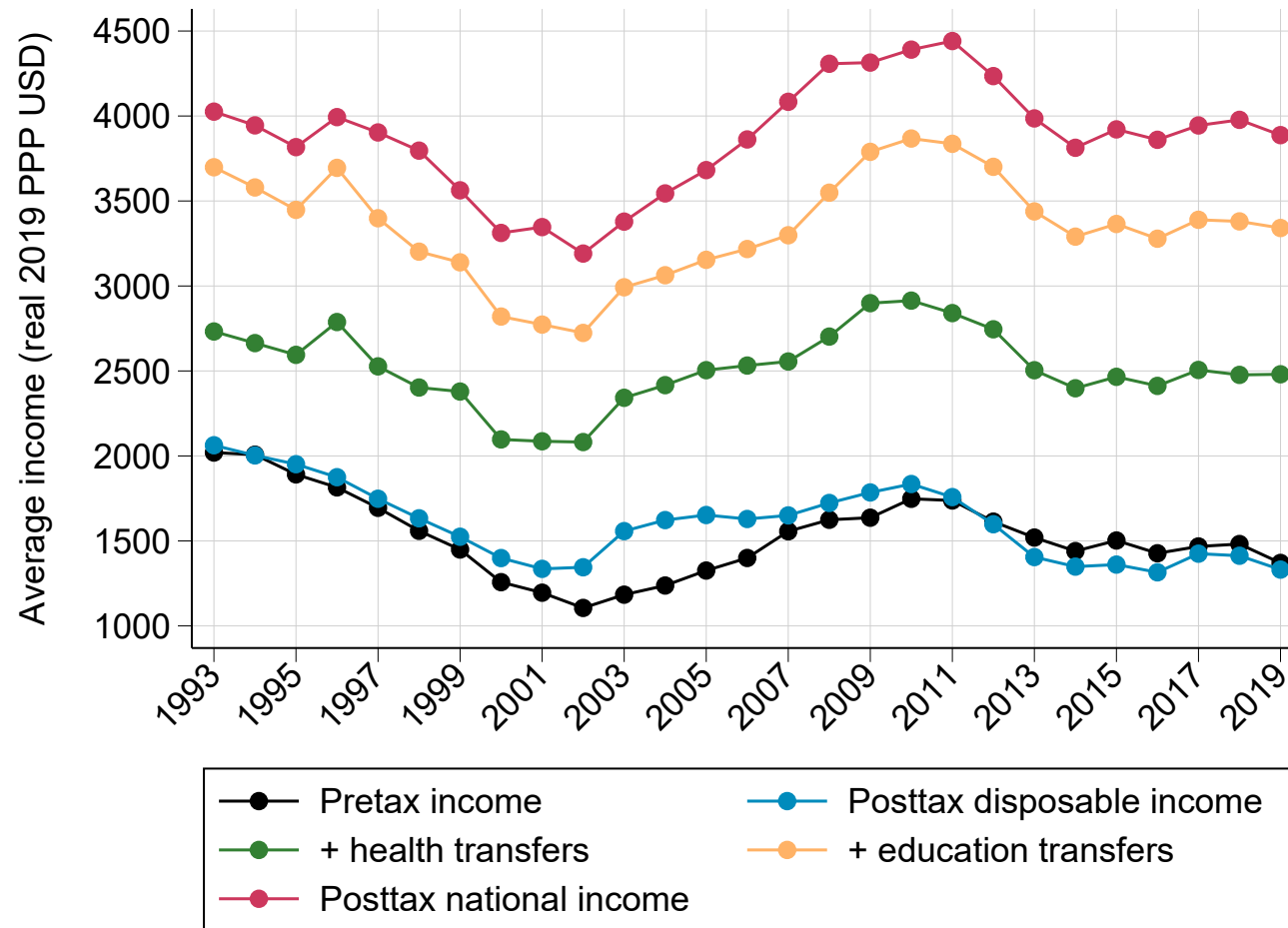
(A) Cumulated income growth by percentile, 1993-2019



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the cumulated income growth rate by percentile between 1993 and 2019 in terms of factor national income and posttax national income.

Figure 11 – Redistribution, inequality, and growth

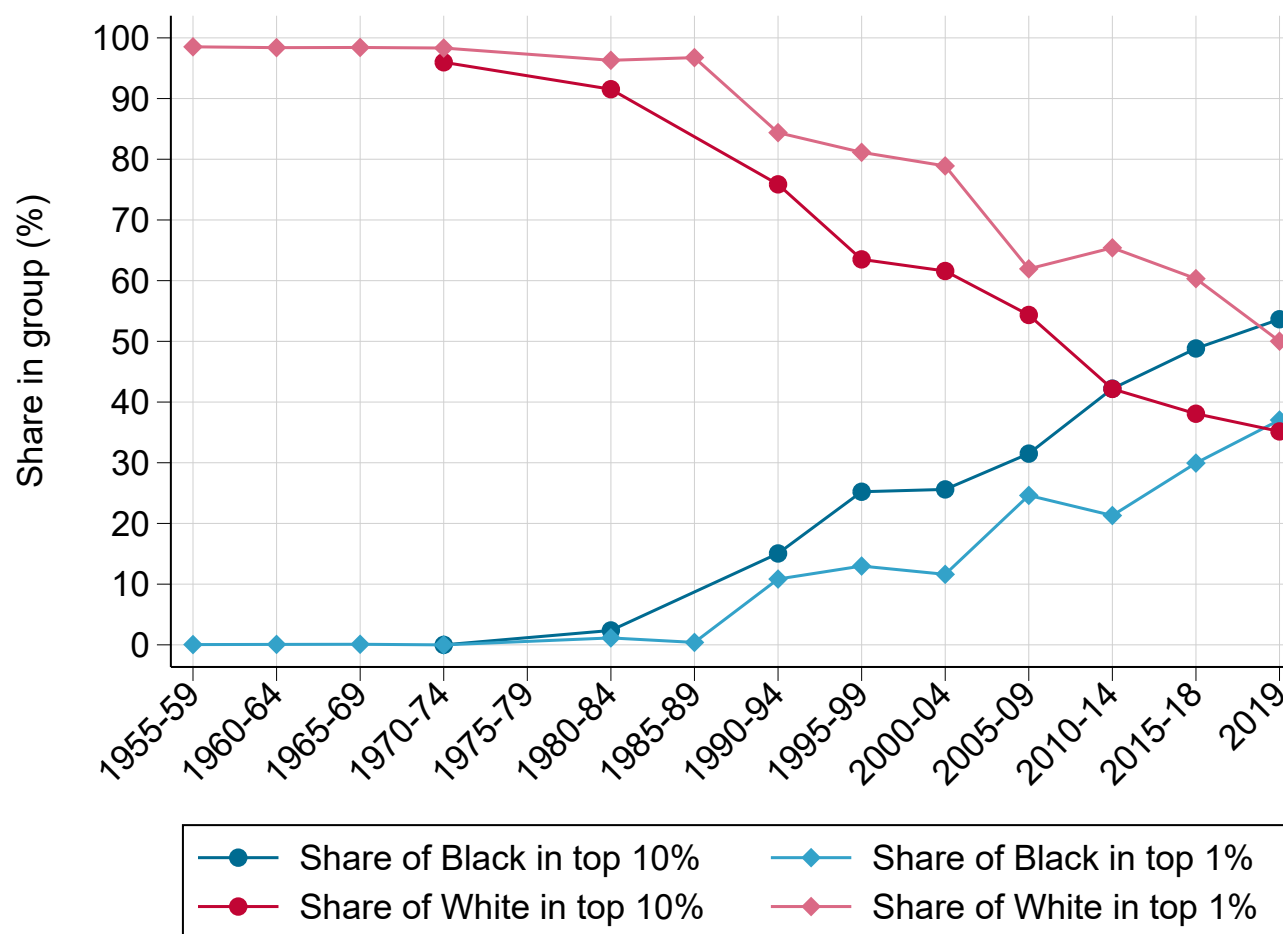
(B) Real income of bottom 50%: from pretax to posttax income



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the evolution of the real income of the bottom 50%, expressed in 2019 PPP US dollars, before and after accounting for the operation of the tax-and-transfer system.

Figure 12 – Racial inequality and top incomes

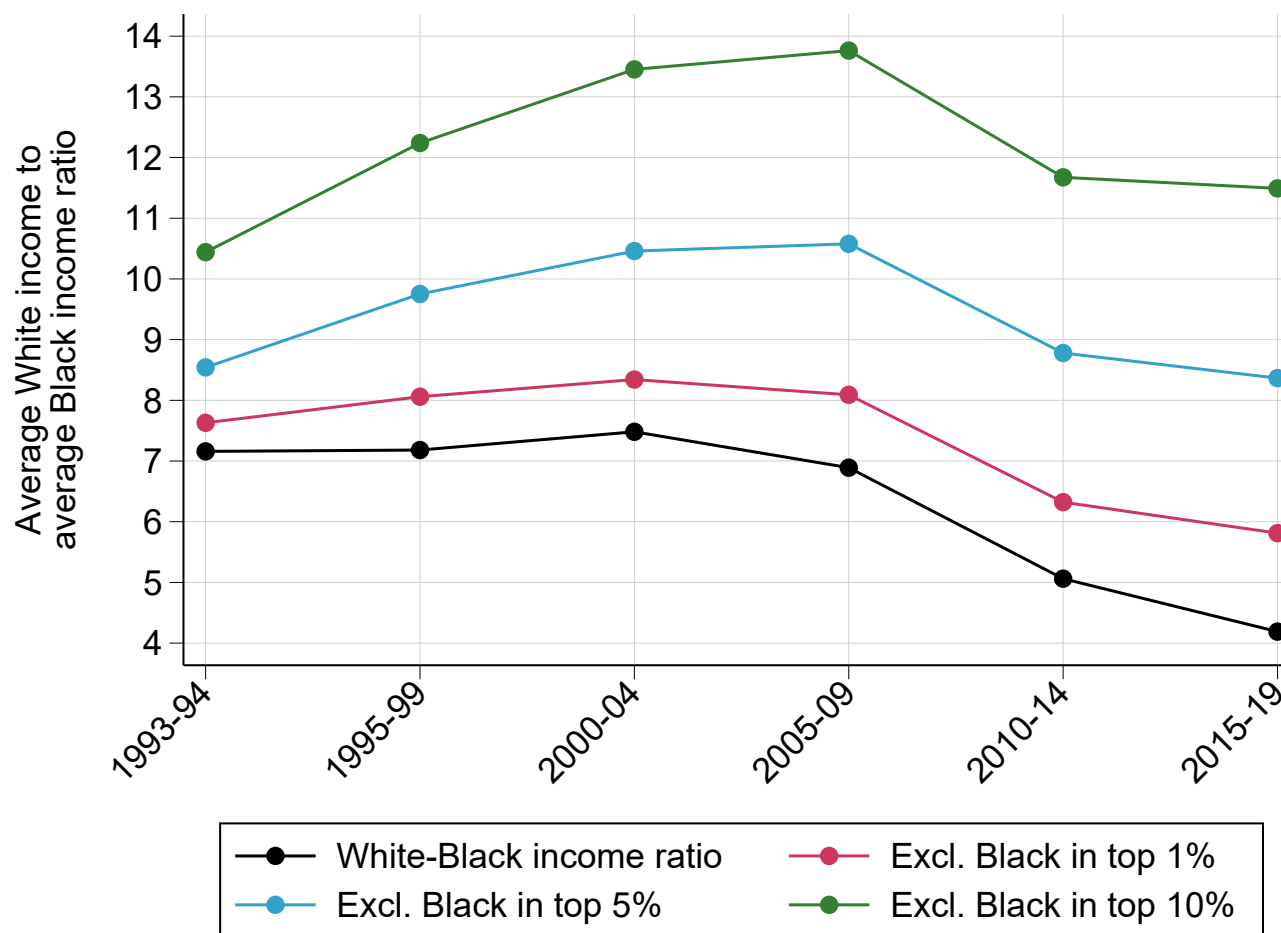
(A) Share of Black versus White earners in top factor income groups, 1955-2019



Notes. Authors' computations using from Alvaredo and Atkinson (2010) for the top 1% before 1993; census data for 1970, 1980, and 1990 (top 10%); distributional national accounts for 1993-2019. The figure represents the share of Black earners and White earners in top factor income groups between 1955 and 2019.

Figure 12 – Racial inequality and top incomes

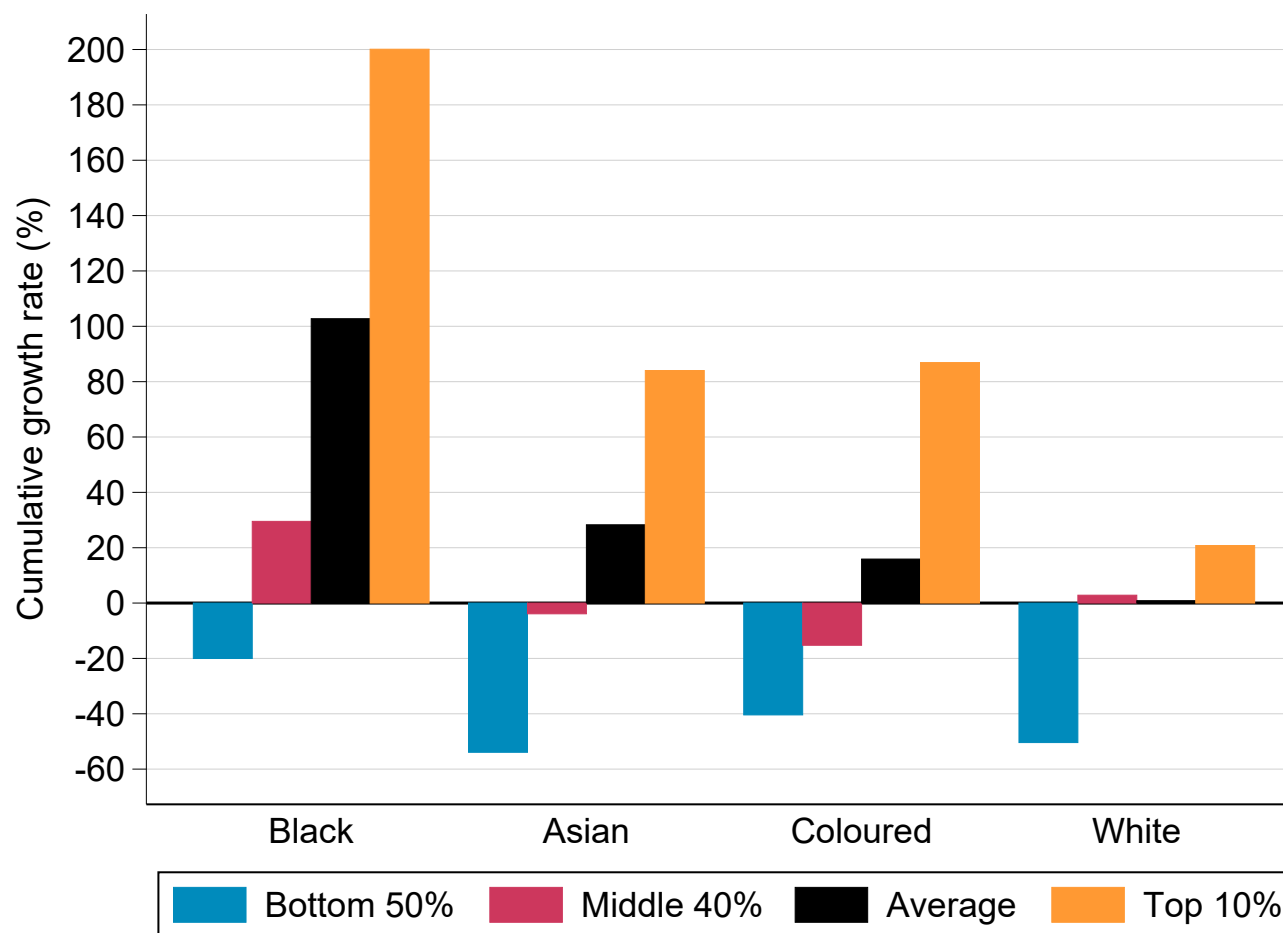
(B) Top Black incomes and the decline in the racial factor income gap



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the ratio of the average factor income of White earners and the average factor income of Black earners between 1993 and 2019, before after excluding all Black earners located in the top 10%, the top 5%, and the top 1% of the overall factor income distribution.

Figure 12 – Racial inequality and top incomes

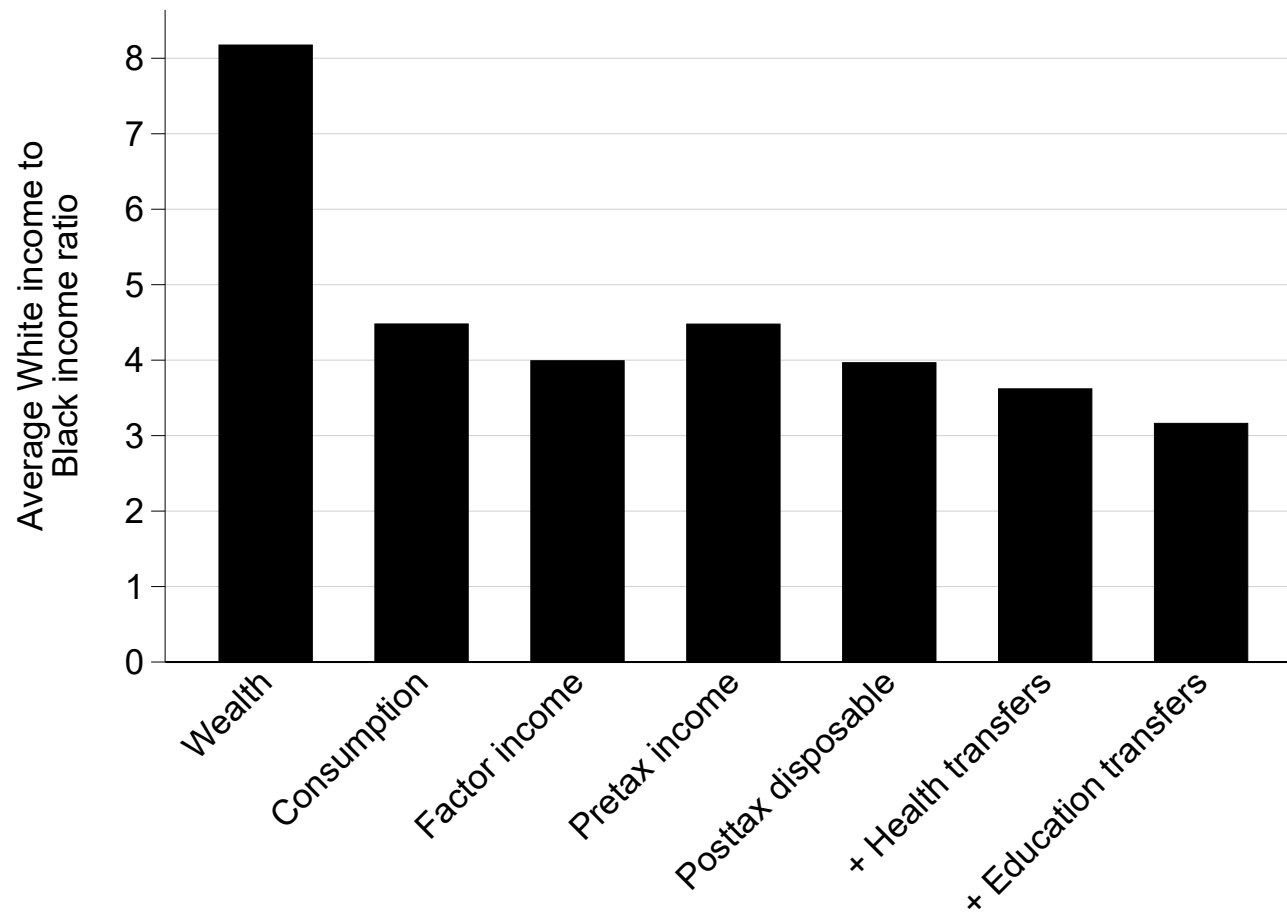
(C) The distribution of growth within population groups, 1993-2019



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the total growth rate of selected factor income groups within each population group from 1993 to 2019. The top 10% of Black earners saw their average income grow by 200% during this period.

Figure 13 – The structure of racial inequality in 2019

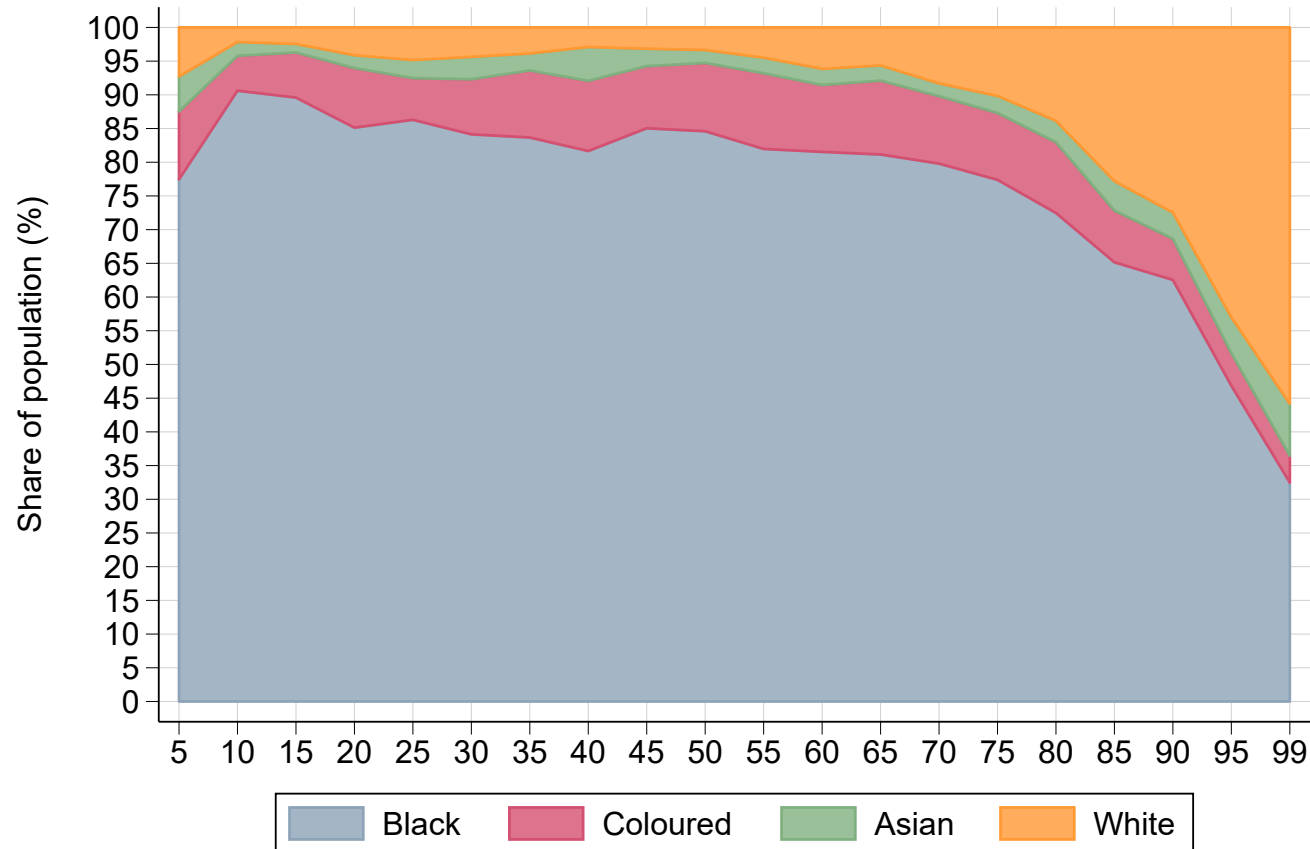
(A) The White-Black gap in income, consumption, and wealth



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the ratio of White to Black average income, consumption, and wealth in 2019.

Figure 13 – The structure of racial inequality in 2019

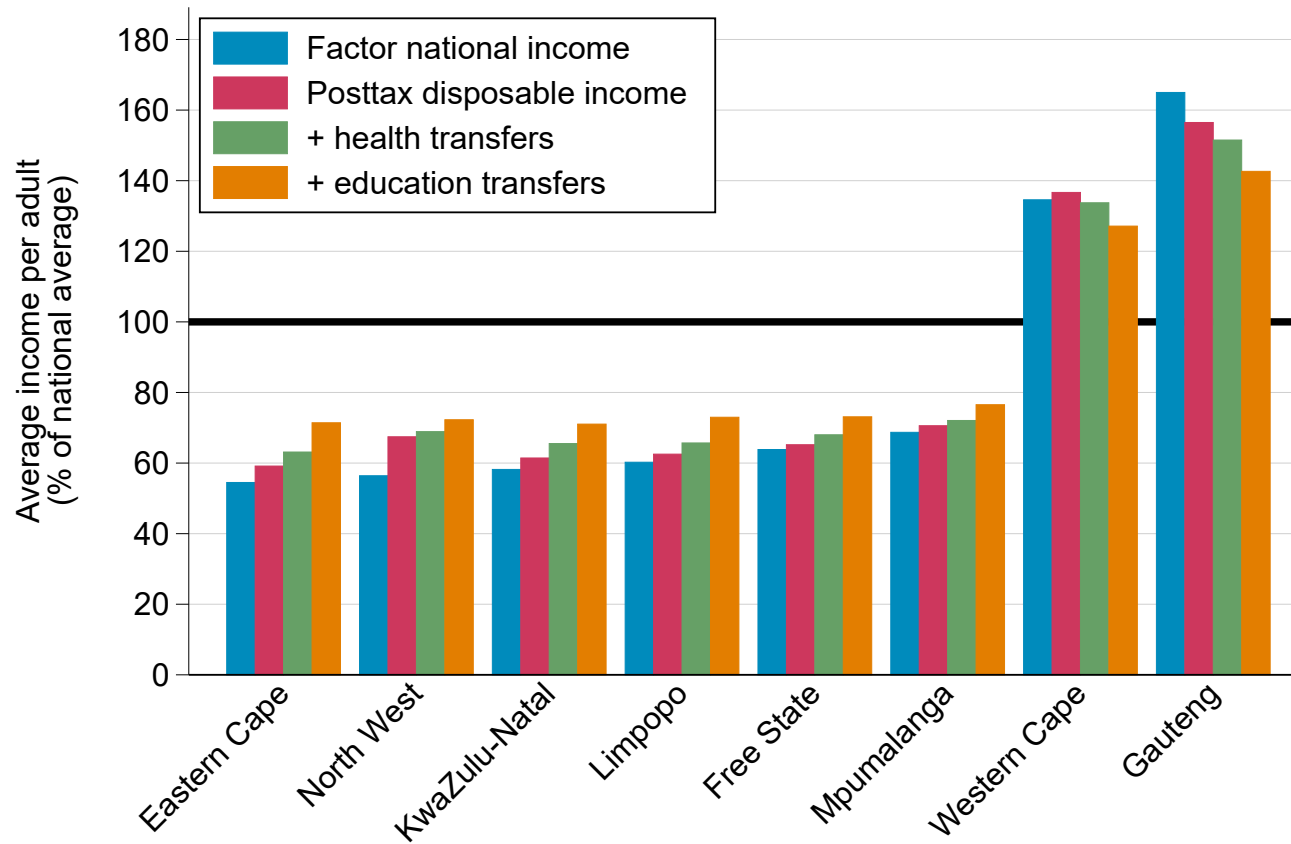
(B) Racial composition of posttax national income groups



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the composition of posttax national income groups (ventiles) by population group in 2019.

Figure 14 – Spatial inequality and redistribution

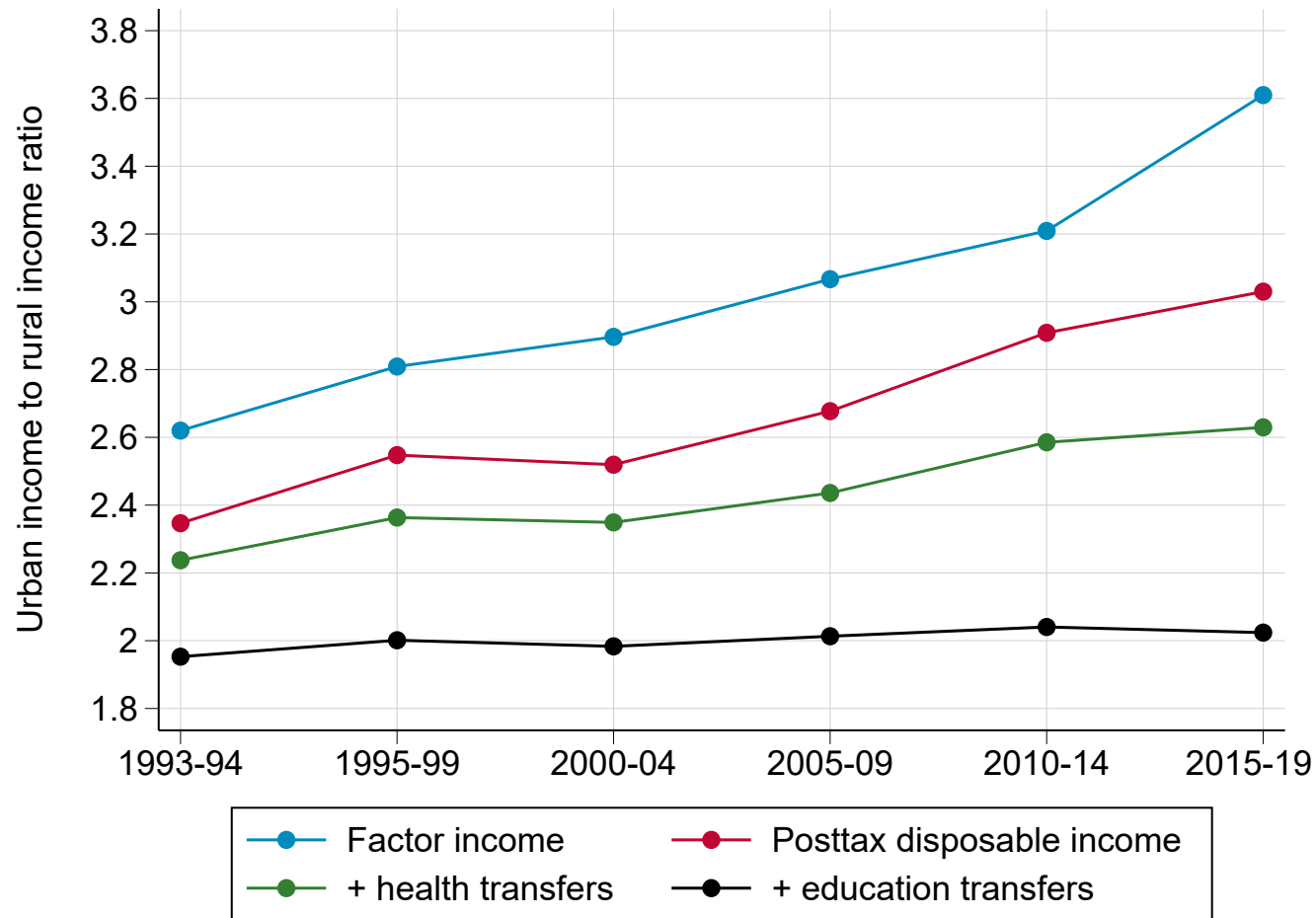
(A) Average income by province relative to national income, 2019



Notes. Authors' computations combining survey, tax, and national accounts data. Limpopo includes the North West province. The figure represents the average income of South African provinces, before and after taxes and transfers, relative to the national average in 2019.

Figure 14 – Spatial inequality and redistribution

(B) Social transfers and the rural-urban income gap



Notes. Authors' computations combining survey, tax, and national accounts data. The figure represents the ratio of the average income of urban areas to the average income of rural areas, before and after accounting for taxes and transfers.