

Measuring the Distribution of Household Wealth in South Africa

Aroop Chatterjee¹ Léo Czajka^{2,3} Amory Gethin³

February 2020

¹Southern Centre for Inequality Studies

²Université Catholique de Louvain

³World Inequality Lab

Introduction

Relevance of wealth:

- Inequality: more polarised, structural
- Economy: influences household consumption, savings, investments
- Society: effective determinant of access to other spheres – education, healthcare, labour markets

This paper: estimate the distribution of personal wealth in South Africa

- Comparison and evaluation of available data sources.
- First attempt to distribute the official households' balance sheets → bridge the micro-macro gap.
- Pushing further the existing literature (e.g. Orthofer 2016).

Outline

1. What is wealth and how to measure it?
2. Measuring wealth in South Africa: data sources and limitations
3. The distribution of wealth in South Africa, 1993-2018

**What is wealth and how to
measure it?**

Wealth according to the System of National Accounts (SNA)

- This study: estimate the distribution of private wealth as defined by the United Nations' System of National Accounts.
- Net national wealth is the total market value of financial and non-financial assets owned by the national economy, minus its debts.
- Net national wealth = Private wealth + Public wealth.
 - Private wealth - households
 - Public wealth - general government.
- Advantages of the definition:
 - quantifiable;
 - internationally comparable;
 - comparable across time.
- Disadvantages:
 - limited to marketable objects;
 - excludes human capital or natural capital;
 - not always comparable across countries (e.g. pension wealth).

The households' balance sheets

Household wealth decomposed into three broad components:

- Non-financial assets = Housing assets + Assets of unincorporated enterprises (machinery, equipment, inventories...).
- Financial assets = Currency, notes and coins, deposits, bonds, stock, pension and other retirement assets, long-term insurance.
- Debts = Mortgage debts, consumer credits, other loans.

The national accounts provide estimates of aggregate household wealth and its components. Three methods exist to distribute them:

- Direct measurement
- Estate multiplier
- Income capitalisation

The direct measurement method

- Ask directly households or individuals to estimate the market value of their assets and liabilities.
- Survey data
 - Limitations: low sample size, measurement error, misreporting and underrepresentation of the top end.
 - In South Africa: National Income Dynamics Survey
- Tax data: administrative records of assets and liabilities.
 - Limitations: measurement error, underreporting, evasion, inconsistencies between tax definitions and national accounts definitions.
 - Does not exist in South Africa.

The estate multiplier method

- Few countries tax the wealth of the living. But a lot of them tax inheritance.
- We can view inheritance as a survey on wealth, where weights are the inverse probability of death of the decedents. The assets of the deceased can therefore be used to estimate the assets of the living, using a mortality multiplier.
- Key assumption: death is random conditional on observable variables (usually age and gender).
- This is often not true: rich people may live longer; they may also anticipate their death and manage their wealth accordingly. This bias may also change over time.
- Data not available in South Africa for the recent period.

The income capitalisation method

- Data on incomes are more commonly available than data on wealth.
- Some assets generate income flows: shares generate dividends, bonds generate interest, houses generate rental income.
- The income capitalisation method assumes that the distribution of an asset (e.g. corporate shares) is the same as the distribution of the corresponding income flow (e.g. dividends). The income flow is “capitalised”: its values are blown up to match the total values of the assets recorded in the national accounts.
- Key assumption: rates of return by asset class do not vary with wealth. If wealthier individuals have higher rates of return, then the method will *overestimate* wealth inequality.
- Many potential sources in South Africa - household surveys and income tax data.

Measuring the wealth distribution in practice: mixed methods

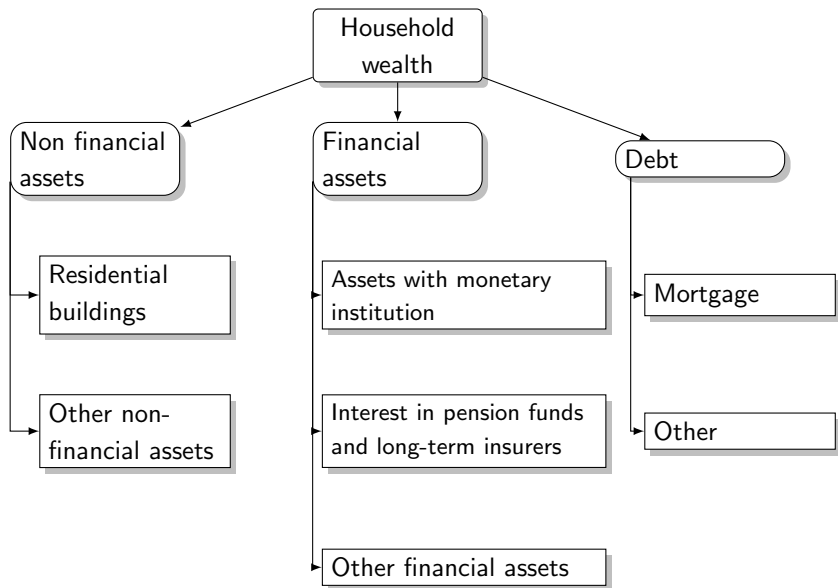
- In practice, recent studies have relied on a combination of direct measurement and income capitalisation.
- Saez & Zucman (2016) for the US or Garbinti, Goupille-Lebret & Piketty (2019) for France follow a broadly similar methodology:
 - Direct measurement of owner-occupied housing, non-mortgage debts, non-interest financial assets.
 - Capitalisation of financial assets, offshore wealth, tenant-occupied housing, business assets.
 - Comparison of estimates with estate multiplier method.
- Other approaches: combining wealth surveys with rich lists (Piketty, Yang & Zucman 2019 for China; Novokmet, Piketty & Zucman 2019 for Russia; Bharti 2019 for India).

Measuring wealth in South Africa: data sources and their limitations

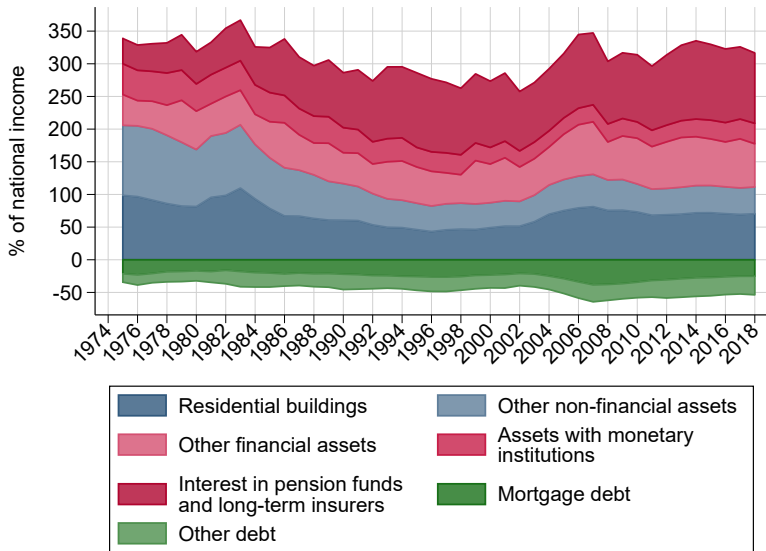
Macrodata sources: South Africa's households balance sheets

- First attempt to estimate the market value of households' assets and liabilities in South Africa goes back to Muellbauer and Aron (1999) and Aron, Muellbauer, and Prinsloo (2007)
- The SARB has since then published official households balance sheets covering the period going from 1970 until today. The definition of household wealth is in line with SNA guidelines.

Macrodata sources: South Africa's households balance sheets



Macrodata sources: South Africa's households balance sheets



Macrodata sources: limitations and imputations

The balance sheets does not provide sufficiently detailed information to properly measure the wealth distribution. We use auxiliary data to correct for five limitations:

- **Land underlying dwellings** is included in “other non-financial assets”. We estimate that it corresponds to 70% of this total, the remaining being the assets of unincorporated businesses.
- **Tenant- and owner-occupied housing** are not published separately. We estimate from survey data (General Household Surveys) that about 75% of housing is owner-occupied.
- **Pensions and life insurance** are not published separately. We estimate from capital market statistics that about a third of “interest in pension funds and long-term insurers” corresponds to life insurance assets.

Macrodata sources: limitations and imputations (continued)

- **Other financial assets** include stock, bonds, deposits and non-interest financial assets. We separate currency, notes and coins using capital market statistics (series KBP1312). We assume that the split between bonds and stock can be approximated by applying the portfolio composition of unit trusts.
- **Offshore wealth** corresponds to wealth hidden in tax havens, which Alstadsæter, Johannesen, and Zucman (2018) estimate to be approximately 12% of GDP in South Africa – or 5% of net wealth.

Survey microdata: overview of sources

Labour force surveys:

- October Household Surveys (OHS: 1994-1999)
- Labour Force Surveys (LFS: 2000-2007)
- Quarterly Labour Force Surveys (QLFS: 2008-2018)

Income surveys:

- Project for Stats on Living Standards and Develop. (PSLSD: 1993)
- Income and Expenditure Surveys (IES: 1995, 2000, 2005, 2010)
- Living Conditions Surveys (LCS: 2008, 2015)
- National Income Dynamics (NIDS: 2008, 2010, 2012, 2015, 2017)

Wealth surveys:

- NIDS (2010, 2015, 2017)
- Momentum/Unisa survey (2011)
- PSLSD/IES/LCS collected data on owner-occupied housing wealth and household debts.

Survey microdata: ownership rates and coverage of balance sheets components in NIDS

	% of adults with asset or debt		% of balance sheets covered	
	Wave 4	Wave 5	Wave 4	Wave 5
Household assets				
Owner-occupied housing	72.3 %	65.2 %	151.7 %	220.8 %
Tenant-occupied housing	3.3 %	3.5 %	122.4 %	97.2 %
Business assets	5.6 %	5.0 %	135.4 %	59.6 %
Pension and life insurance	25.7 %	24.4 %	110.0 %	104.3 %
Bonds and stock	1.5 %	1.3 %	3.9 %	3.8 %
Household debts				
Mortgage debt	8.0 %	7.0 %	71.0 %	56.8 %
Other debts	36.3 %	33.7 %	54.5 %	37.0 %

Survey microdata: coverage of housing and debts

	Owner-occupied housing	Mortgage debt	Other debt
PSLSD, 1993	143.5 %	86.5 %	37.4 %
IES, 1995	121.7 %	27.2 %	16.5 %
IES, 2000		40.3 %	34.9 %
IES, 2005	105.9 %	67.9 %	41.5 %
IES, 2010	193.9 %	16.4 %	20.5 %
LCS, 2008	145.4 %	13.9 %	18.4 %
LCS, 2015	179.5 %	51.0 %	22.2 %
NIDS, wave 4	122.3 %	74.3 %	57.4 %
NIDS, wave 5	258.8 %	56.8 %	37.0 %

Survey microdata: coverage of national accounts

	Gross wages	Mixed income	Rental income	Interest and dividends
PSLSD, 1993	87.7 %	51.7 %	38.4 %	11.5 %
IES, 1995	76.9 %	55.0 %	9.9 %	8.8 %
IES, 2000	70.9 %	37.2 %	23.1 %	3.4 %
IES, 2005	80.5 %	64.2 %	21.7 %	3.8 %
IES, 2010	80.2 %	71.9 %	13.5 %	4.5 %
LCS, 2008	77.7 %	75.8 %	16.3 %	8.4 %
LCS, 2015	74.6 %	86.8 %	21.6 %	12.6 %
NIDS, wave 1	62.7 %	12.0 %	65.4 %	7.3 %
NIDS, wave 2	67.6 %	4.1 %	13.0 %	0.8 %
NIDS, wave 3	65.7 %	20.6 %	20.7 %	7.3 %
NIDS, wave 4	73.5 %	12.9 %	43.9 %	2.5 %
NIDS, wave 5	72.1 %	14.1 %	41.0 %	5.5 %

Tax microdata: overview of sources

- IRP5 data: income tax forms submitted to the South African Revenue Service (SARS) by employers on behalf of their employees, hence covers incomes related to the employment relationship (wages, pension income, contributions...).
- ITR12 data: self-assessment forms that require taxpayers to disclose income from sources other than employment (interest, rental income, business income, specific forms of dividends...).
- We have access to a matched IRP5-ITR12 panel covering the 2011-2018 tax years.
- Income flows reported in the tax data can be used to apply the income capitalization method.

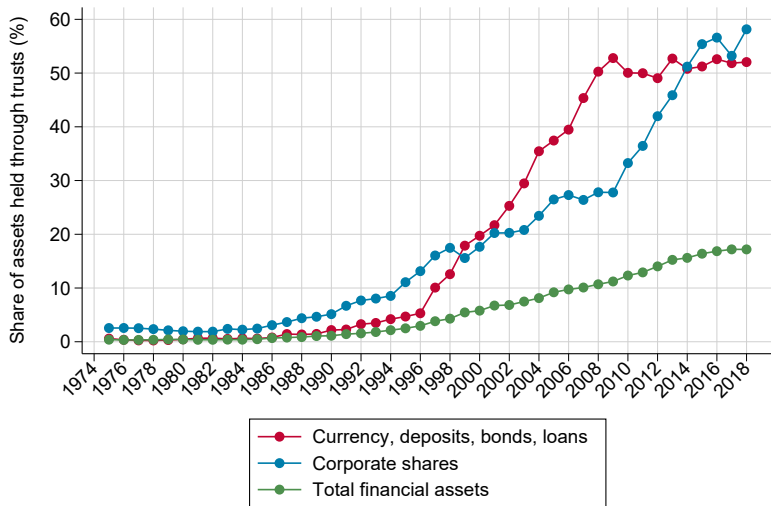
Tax microdata: coverage of capital incomes

	Rental income	Interest income	Dividends
2010	9.5 %	25.4 %	2.4 %
2011	11.7 %	25.0 %	5.3 %
2012	12.3 %	28.3 %	3.9 %
2013	13.4 %	28.8 %	5.2 %
2014	12.1 %	27.8 %	25.1 %
2015	12.3 %	27.8 %	10.6 %
2016	13.7 %	31.0 %	13.1 %
2017	6.9 %	18.3 %	15.8 %

Other (unavailable) data sources

- Other survey data (Momentum-UNISA)
- Estate duty data
- Dividends tax data
- Trust data
- Land audit data

Hidden wealth: share of assets held through unit trusts



The distribution of wealth in South Africa, 1993-2018

Comparing methods to estimate the wealth distribution

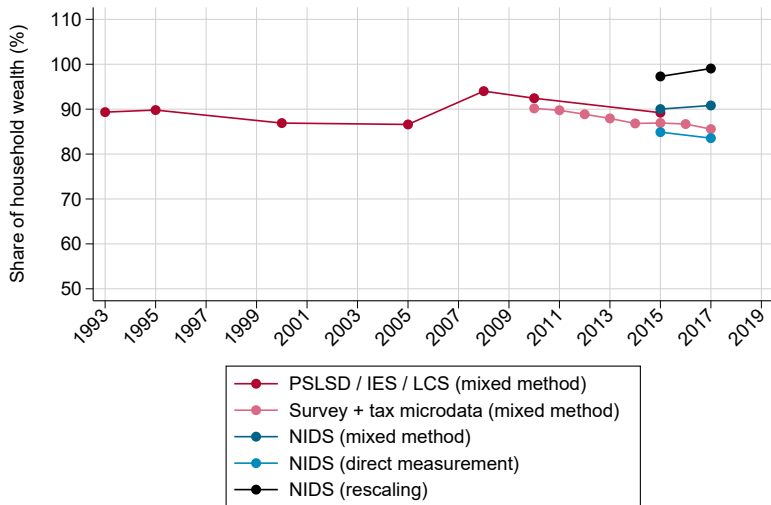
We perform a measurement exercise, whereby we compare three ways of measuring the wealth distribution:

1. **Direct measurement:** wealth measured as the sum of reported assets and liabilities in NIDS.
2. **Rescaling:** wealth measured as the sum of reported assets and liabilities in NIDS, but assets and debts are “blown up” to match official balance sheets statistics.
3. **Mixed capitalisation method:** combination of (1) reported assets which are rescaled to match balance sheets and (2) capitalisation of income flows (e.g. interest income) to approximate the distribution of assets (e.g. bonds and interest deposits).

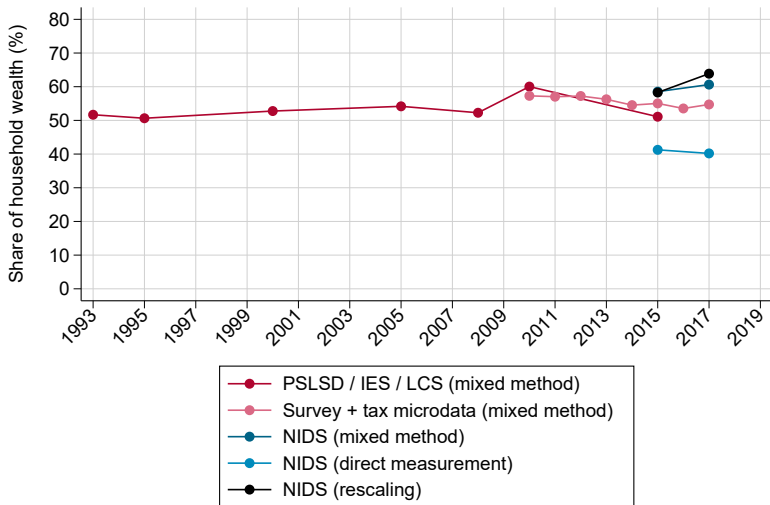
The mixed approach

Asset / liability	Variable	Measurement method
Non-financial assets		
Owner-occupied dwellings	Value of home (GHS)	Rescaling
Tenant-occupied dwellings	Rental income	Capitalisation
Business assets	Business income	Capitalisation
Financial assets		
Pension assets	Pension contributions and income	Mixed method
Life insurance assets	Factor income	Mixed method
Currency, notes and coins	Bank account balance (NIDS)	Rescaling
Bonds and interest deposits	Interest income	Capitalisation
Corporate shares and equity	Dividends	Capitalisation
Liabilities		
Mortgage debt	Reported debt and house value	Mixed method
Other debts	Reported debts and consumption	Mixed method

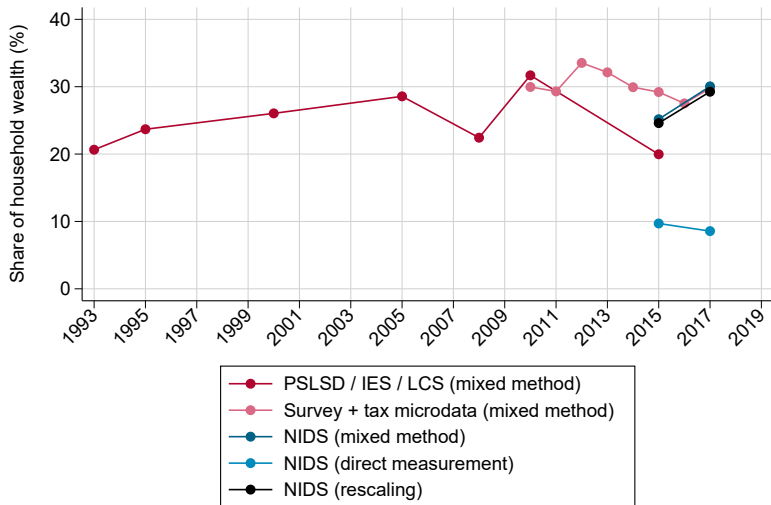
Results from the three approaches: top 10% share



Results from the three approaches: top 1% share



Results from the three approaches: top 0.1% share



Towards preliminary estimates of wealth inequality, 1993-2017

- Our preferred estimate of the wealth distribution is the one obtained from the mixed method with tax microdata.
- We expand the series to 1993 by linking the survey mixed method series with the series obtained from the combination of survey and tax microdata.
- We provide yearly estimates by combining the income surveys with yearly estimates of the distribution of wages and business income obtained from labour force surveys.
- Estimates are *far from being perfect* given the limitations of available data, but can still provide interesting insights.

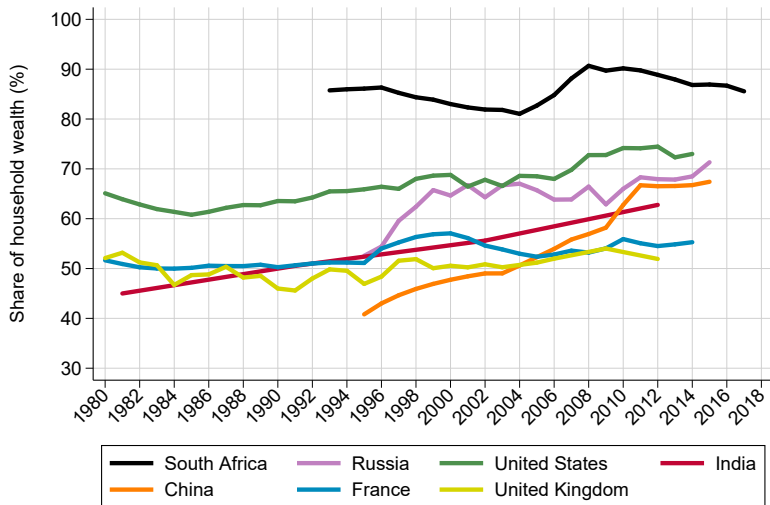
The distribution of wealth in South Africa in 2017

	Number of adults	Wealth threshold	Average (2018 R)	Average (2018 PPP \$)	Wealth Share
Full population	35,400,000		R 326,000	\$ 52,200	100%
Bottom 90% (p0p90)	31,860,000		R 94,100	\$ 15,100	14.4%
Bottom 50% (p0p50)	17,700,000		R -16,000	\$ -2,600	-2.5%
Middle 40% (p50p90)	14,160,000	R 27,700	R 138,000	\$ 22,000	16.9%
Top 10% (p90p100)	3,540,000	R 496,000	R 2,790,000	\$ 447,000	85.6%
Top 1% (p99p100)	354,000	R 3,820,000	R 17,830,000	\$ 2,860,000	54.7%
Top 0.1% (p99.9p100)	35,400	R 30,350,000	R 96,970,000	\$ 15,540,000	29.8%
Top 0.01% (p99.99p100)	3,540	R 146,890,000	R 486,200,000	\$ 77,920,000	14.9%

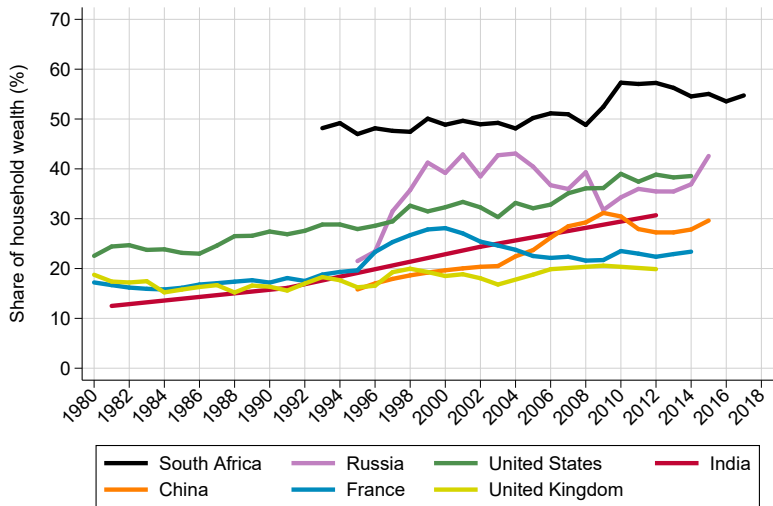
Comparative perspectives: the wid.world project

- A large database on the distribution of income and wealth centralizing contributions from a wide network of scholars all over the world.
- First database to bring together estimates of wealth inequality which are based on comparable methodologies and cover the bottom 1% to the top 0.001% of the distribution.
- Allows direct comparison of our estimates to recently published works on the US (Saez & Zucman 2016), France (Garbinti, Goupille-Lebret & Piketty 2019), China (Piketty, Yang & Zucman 2019), Russia (Novokmet, Piketty & Zucman 2019) or India (Bharti 2019).
- All the data and associated methodological papers are freely available online at <https://wid.world>

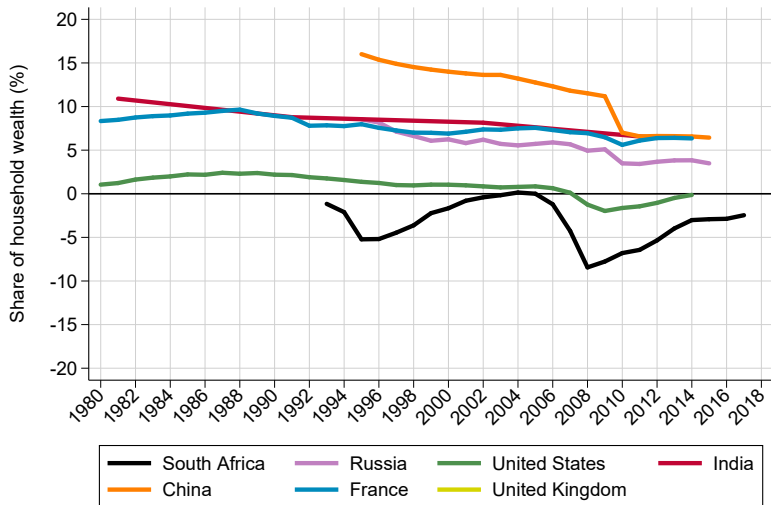
Comparative perspectives: top 10% share



Comparative perspectives: top 1% share



Comparative perspectives: bottom 50% share



Orthofer (2015) provides two estimates of top wealth shares:

- **Wealth shares from PIT:** the distribution of wealth is approximated by the sum of investment income (rental income, interest, dividends, business income) and pension contributions.
- **Wealth shares from NIDS:** comparable to our “direct measurement” results, except for two differences:
 - No correction for misreporting of pension assets.
 - Top tail of the distribution is re-sampled from a Pareto distribution.

CCG vs Orthofer - Orthofer's results

PIT – Income and wealth distribution

	Top 1%	Top 10%	Gini
<i>Investment income</i>			
Local interest*	84	98	0.98
Total investment*	88	99	0.99
Total investment & pensions*	61	96	0.96
<i>Income</i>			
Employment income	16	56	0.70

Note: Quantile shares, PIT, 2010.

Results scaled to the total adult population (see Section 3.3.3). * Adjusted for tax-exempt interest income.

NIDS – Wealth distribution by asset class

	Full sample		Trimmed sample	
	Top 1 %	Top 10 %	Top 1 %	Top 10 %
Wealth	61	95	47	92
Total assets	62	95	50	92
Total liabilities	51	99	42	99
One-shot wealth	63	97	60	97
Pension and life assets	99	100	97	100
Non-pension financial assets	96	99	96	99
Real estate assets	54	80	32	71
Capital income	70	100	58	100

Note: Quantile shares, NIDS, 2010, in percent. Calculations based on weighted sample using adult-level data and post-stratified weights. "Trimmed sample" excludes outliers (see Appendix B.3).

CCG vs Orthofer - comparison of methodologies

Orthofer's methodology suffers from a number of serious limitations which we have attempted to address with our approach:

- PIT: estimates only include investment income and pensions, excluding owner-occupied housing completely (28% of wealth!).
- PIT: estimates do not reweigh income flows to match stocks: e.g. average rental income may be higher than interest income, while in reality tenant-occupied housing is much lower than bonds.
- NIDS: unrealistic distribution of pension assets – top 10% = 99%. This is because of massive misreporting: the majority of pensioners declare having “no pension asset”, which implies pension assets three times lower than in balance sheets. We correct for this discrepancy and get more comparable totals, while increasing the share of individuals with positive pension assets from 6% to 16%.
- No attempt to bridge micro-macro gap → results inconsistent with what we know about wealth aggregates.

Conclusion

- Available data unanimously points to South Africa being one of the most unequal countries in the world, and even more so when looking at wealth rather than income.
- No sign of decrease in wealth inequality since apartheid.
- Yet lack of data prevents us from properly measuring the bottom end and the top end of the wealth distribution.
- Urgent need to get access to dividends tax data, trust data, estate duty data and to implement proper wealth surveys in South Africa to formulate meaningful policy proposals and inform public debates.

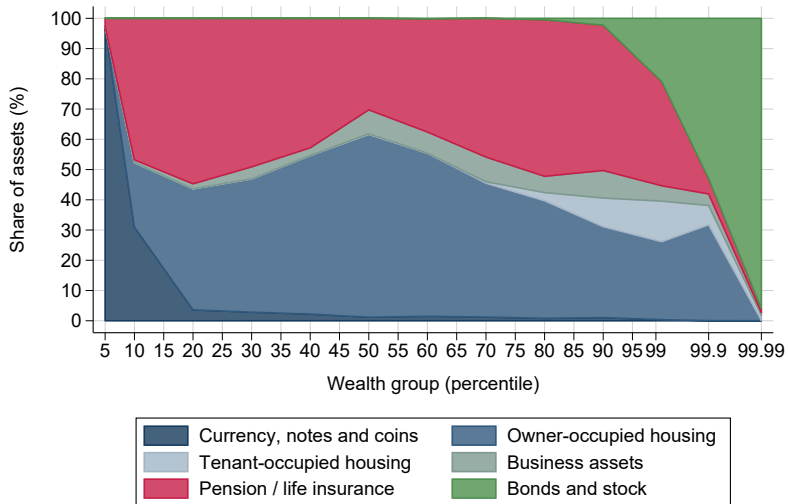
Thank you!

Additional figures and tables

Macrodata sources: composition of wealth in 2018

	Market value (R billion)	% of national income	% of net wealth
Non-financial assets	4504	111.4 %	42.4 %
Owner-occupied housing	3020	74.7 %	28.4 %
Tenant-occupied housing	988	24.4 %	9.3 %
Business assets	497	12.3 %	4.7 %
Financial assets	8294	205.1 %	78.0 %
Pension assets	2944	72.8 %	27.7 %
Life insurance assets	1412	34.9 %	13.3 %
Bonds and interest deposits	1798	44.5 %	16.9 %
Currency, notes and coins	87	2.2 %	0.8 %
Corporate shares	2053	50.8 %	19.3 %
Total liabilities	2170	53.7 %	20.4 %
Mortgage debt	1022	25.3 %	9.6 %
Non-mortgage debt	1148	28.4 %	10.8 %
Net household wealth	10629	262.9 %	100.0 %
Offshore wealth	575	14.2 %	5.4 %
Net wealth incl. offshore wealth	11204	277.1 %	105.4 %

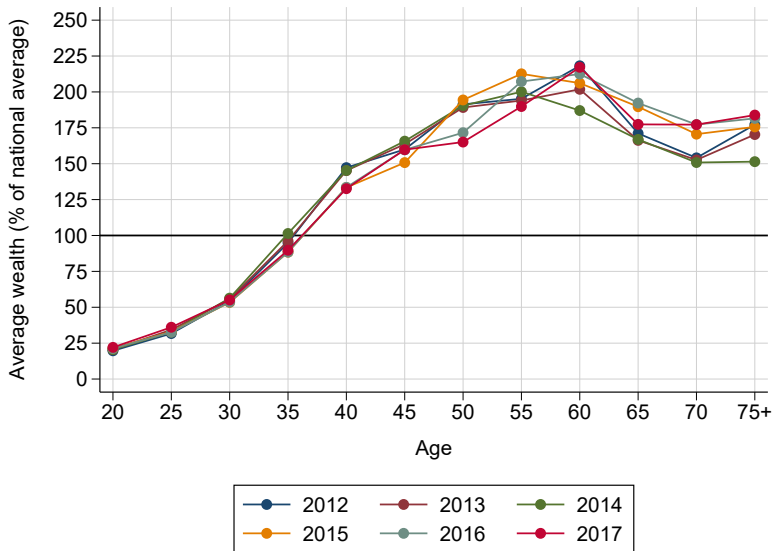
Composition of household assets by asset group, 2017



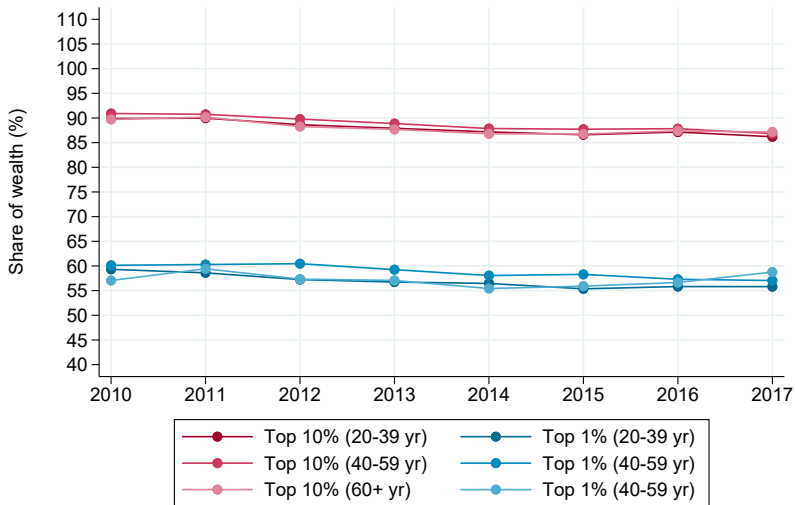
Share of assets held by wealth groups by asset class in 2017

	Deposits	Business assets	Housing	Pensions	Bonds & Stock
Bottom 90% (p0p90)	37.3%	40.4%	41.2%	36.2%	0.2%
Bottom 50% (p0p50)	9.7%	1.4%	14.0%	5.3%	0.0%
Middle 40% (p50p90)	27.7%	39.1%	27.2%	30.9%	0.2%
Top 10% (p90p100)	62.7%	59.6%	58.8%	63.8%	99.8%
Top 1% (p99p100)	10.6%	41.9%	27.8%	14.1%	95.2%
Top 0.01% (p99.99p100)	1.5%	13.4%	8.5%	2.1%	62.7%
% of total assets	0.6%	3.6%	28.8%	32.5%	34.6%

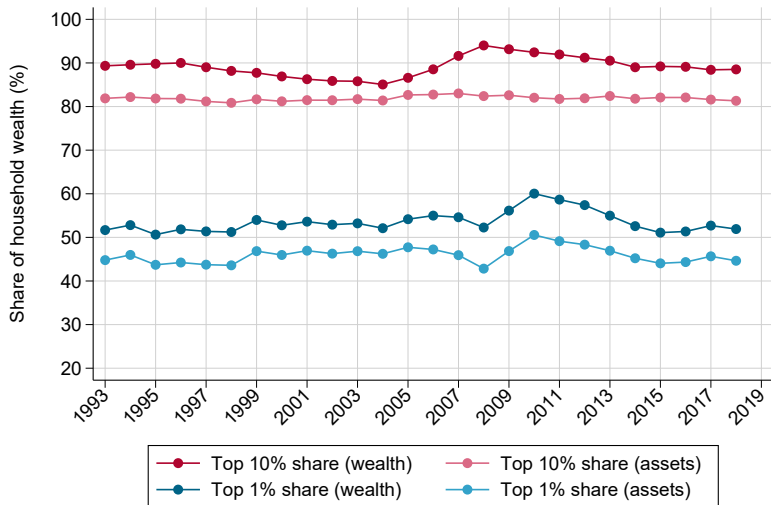
Wealth-age profile



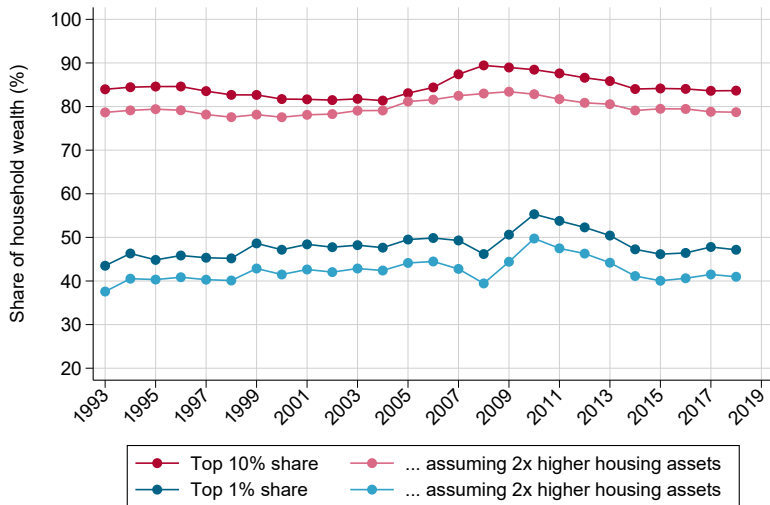
Distribution of wealth by age: top 10% share



Distribution of wealth vs. distribution of assets



Robustness to mismeasurement of housing wealth



Distribution of wealth using different equivalence scales

