

# Southern Africa Labour and Development Research Unit

## Wealth in the National Income Dynamics Study Wave 2

*by*

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and Sibongile Musundwa*



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**N.i.D.S.**  
NATIONAL INCOME DYNAMICS STUDY

NIDS Discussion Paper  
2012/6

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## 1. Introduction

This document investigates the composition and distribution of individual and household wealth in the National Income Dynamics Study (NIDS) Wave 2 dataset (SALDRU, 2010-2011). The NIDS Wave 2 instrument marks the first time in South Africa that a nationally representative household survey obtained sufficient information to calculate individual and household net worth. As such, it represents a very important contribution to the stock of knowledge on these concepts, and the dataset itself also contains rich information on concepts related to wealth, such as income, expenditure, savings and debt.

The focus in this paper is directed to household portfolio composition and net worth. It should be noted that net worth was not measured in NIDS Wave 1; therefore, the longitudinal nature of NIDS is not applicable to wealth data, which must be evaluated as a cross-section instead (with the correct weights designed for this purpose – see Brown, Daniels, De Villiers, Leibbrandt, & Woolard, 2012 for a discussion of the weights in Wave 2). Outliers in the net worth distribution need to be clearly understood, with suitable methods chosen for their removal. The identification of outliers is often complicated by the cross-sectional weights, which in turn were affected by attrition in Wave 2 of NIDS. Researchers therefore have to be fully aware of how to analyse survey

data with these features in order to reach valid conclusions about the composition and distribution of wealth in South Africa.

The evolution of household wealth over time is often linked to societies' own (mis)fortunes. Large-scale events such as the global recession of 2008 – a catalyst to South Africa's own recession in 2009 – have a major impact on the accumulation and distribution of household wealth. They also impact the composition of wealth and the allocation of financial resources across different asset classes, as individuals and households attempt to diversify their risk and insulate themselves against negative shocks. The converse is equally true in the case of positive shocks as far as portfolio composition is concerned. Risk-loving individuals may shift resources into riskier assets, while risk-neutral or risk-averse individuals may choose to consolidate their household portfolios in different ways.

Crucial to the analysis of wealth is understanding peoples' motives to accumulate it. Be it for long-term goals such as retirement planning, or more short- to medium-term goals such as the payment of lobola, wealth planning over the course of the life-cycle has different objectives. From an economic point of view, the life cycle hypothesis and permanent income hypothesis offer very useful insights about the expected trajectory of wealth over different age cohorts, and we utilise aspects of these theories to interpret the observed trends in the data.

The rest of the paper proceeds as follows: firstly, some background is given on the wealth construct, the measurement and interpretation of wealth. Then, an assessment of the quality of the NIDS Wave 2 data is made. Household portfolio composition over the wealth distribution is then analysed, before net worth by age cohort is discussed. Outliers in the distribution of wealth are then discussed before a specific analysis of wealth inequality is conducted. Here, the combined effects of outliers, attrition in Wave 2 of NIDS and weights play a very important role that researchers need to understand. Recommendations for future NIDS wealth modules are then made before the conclusion summarises.

## 2. The Wealth Construct

Unlike income or expenditure, wealth is a stock variable that reflects the net financial position of an individual or household at a given point in time. It is often measured by the concept of net worth, which can be negative, reflecting the fact that the relationship between assets and liabilities, savings and credit must be understood when interpreting wealth data. While income and consumption are important determinants of current well-being, assets are a key indicator of future, sustainable consumption.

Accruing wealth is dependent both on the ability to access credit and the capacity to save, which in turn is a prerequisite for investing. The expected return on investments varies over time and over different asset classes, and individuals typically manage risk by reducing their exposure to any one financial instrument and diversifying their portfolio of investments. The choice of financial instruments that individuals invest in is summarised by evaluating the composition of their investment portfolios. This imparts information about their risk and time preferences, and gives us some insight into how individuals plan for an uncertain future.

Preferences change as circumstances change and over the course of the life cycle of individuals. Therefore, typically we observe the pattern that individuals have negative net worth in the early part of adulthood, when they start using credit to accrue assets (e.g. vehicles, housing mortgages) or repay loans (e.g. student loans), before transitioning into positive net worth in early middle age, then reaching the peak of their net worth shortly before retirement, and finally beginning to dissave after retirement. In economics, this almost universally observed pattern is formalised by the life-cycle hypothesis, which predicts an inverted-u shape to the wealth profile of individuals as they get older.

This general pattern is obviated when individuals are left without the means to earn an income, such as when they are, or become unemployed. Unemployment forces people to focus on meeting their subsistence needs through current consumption and deprives individuals of the capacity to save, implying that wealth accrual is impossible. In these circumstances, the net worth of the unemployed will be very close to zero. In poorer countries, unstable countries and countries like South Africa that have high

unemployment, aggregate wealth accrual will therefore be significantly affected by unemployment.

But it is not only unemployment that can lead to near-zero net worth; all it takes is individuals to have sufficiently high discount rates. By high discount rates we mean that even if someone is employed, if they are relatively impatient and discount the future highly, they may engage in a pattern of borrowing and spending that leads to negative or near-zero net worth. On the other hand, even people with low discount rates can have negative net worth. For relatively patient individuals, negative net worth would be observed when, for example, the individual had just purchased a house and financed it with a bond close to 100 percent of the purchase price of the home, making the combined value of the principal of the loan plus interest exceed the purchase price of the home (this is often called negative equity).

The interpretation of wealth data therefore is dependent on the risk and time preferences of individuals, which in turn is dependent on their broader circumstances and individual characteristics including age, family composition and financial interdependence, and employment status.

## **2.1 The Measurement of Wealth**

Wealth is particularly challenging to measure in household interview surveys because of its social sensitivity and the difficulties associated with obtaining accurate estimates of the market value of different asset types (whether physical or financial). In household surveys, questions about wealth often have the highest non-response rates because of the social sensitivity of the questions. Furthermore, wealth questions often involve complex calculation tasks, imposing a high cognitive burden on the respondent that can lead to recall bias. The net result of social sensitivity, high cognitive burden and recall bias is data with potentially high non-response and measurement error – both of which must be investigated by researchers in order to understand the influence they exert on point estimation.

The concept of net worth is most often used when measuring wealth, and can be described as the difference between total assets and total liabilities. Assets can broadly

be divided into financial assets, real assets and retirement annuities. Financial assets consist of liquid accounts, shares, bonds and insurance while real assets include property, businesses, vehicles, livestock and equipment. Debt consists of mortgages, other real asset debts and loans (Haliassos, 2008). Loans can include personal bank loans and loans from other lenders (including friends, family, employers), and study loans.

Accurate estimates of wealth therefore require detailed questions about the components of assets and liabilities. However, even if we have such detailed measures, wealth data are still challenging to interpret because an individual or household's net worth at a given point in time reveals nothing about the financial behaviour of the respondent. This requires detailed information about the risk and time preferences of individuals, which is not present in the NIDS wealth module. We evaluate how wealth was measured in NIDS Wave 2 below.

## **2.2 Wealth in the NIDS Survey**

The first Wave of NIDS allowed us to measure certain components of wealth on an individual and household level, but did not include enough questions to calculate a complete measure of net worth for either individuals or households. Wealth was one of the special themes of Wave 2 and the instrument included questions about assets and liabilities as well as an overall question about net worth.

Wealth questions were present only in the NIDS household and adult questionnaires, and therefore wealth data can only be calculated for the sample of resident adult members of the household present at the time of interview. There are no wealth questions in the Proxy or Child questionnaires.

Two variables can be utilised to evaluate household net worth in the NIDS Wave 2 data, while only one variable can be utilised to evaluate individual net worth. The two variables at the household level include one that asks the respondent directly their net worth and a second variable that is derived as the sum of the components of disaggregated assets and liabilities (see Brown *et al*, 2012: 37-41 for details of how aggregate net worth was calculated from components of assets and liabilities). The

direct question is asked in both the household and individual questionnaires, as are certain components of assets and liabilities. In the household questionnaire, the direct question to the respondent is:

“Suppose you (and your household members living here) were to sell off all your major possessions (including your home), turn all of your investments into cash and pay all your debts – would you have something left over, breakeven or be in debt?”

The individual question in the adult questionnaire is almost identical, with the exception that it is phrased without reference to the household.

These questions ask respondents to estimate their net worth, which can be either positive, zero or negative. If the respondent is unable to provide an exact value, they are led into a series of unfolding brackets (for either positive or negative net worth) that identify a plausible range into which it falls. If they are still unable to identify a value, they can state that they don't know or refuse to answer the question.

The second variable is a constructed net worth variable and can be found in the derived files dataset. Also found in this file are disaggregated components of wealth that are used in the construction of household net worth. The household net worth variable is constructed as the difference between total assets and total liabilities. The total value of assets is calculated as the sum of real estate, vehicles, business assets, financial assets, retirement annuities and livestock wealth. The total value of liabilities is calculated as the sum of real estate debt, vehicle, business and financial debt.

### **2.2.1 Stocks & Flows in the Components of Wealth**

Questions relating to household net worth were asked in both the household and the adult questionnaires. These questions often have two components to them – one that measures a monthly flow in Rands associated with the given asset or liability, and one that measures the present value of each asset or the remaining outstanding balance of each liability. The latter two are stocks and these are used to calculate individual and household net worth. The exact questions utilised for this purpose include:

- Household Questionnaire



- Question F2.1 established whether the household would be in debt, breakeven or have something left over if the home and all major possessions were sold, all investments were turned into cash and all debts were paid off.
- If something would be left over, then F2.2 asked for the Rand value. If respondents refused or did not know, then a series of unfolding brackets from F2.3.1 to F2.3.5 kicked in.
- If the household would be in debt, F2.4 asked for the Rand value of that debt. Once again, if the respondent refused or did not know, a series of unfolding brackets kicked in from F2.5.1 to F2.5.5.
- H8.4.1 to H8.4.7 asks about the value of livestock in the household's possession, over seven categories of animals.

The household questionnaire also contained questions about the market value of all properties owned by members of the household, as well as the outstanding amount owing on bonds attached to these properties.

- Question D11 asked for the amount of bond still owing on the property if it is owned by a member of the household.
  - D15 asked for a reasonable value for which the household could be sold.
  - D21 asked about a reasonable market value for which all other properties owned by the household could be sold for.
  - D23 asked about the total value of bonds that were still owing on all other properties owned by resident household members.
- Adult Questionnaire
    - Question E46 established whether the respondent would be in debt, breakeven or have something left over if all business assets and investments were turned into cash and all debts were paid off.
    - E47a (point estimate) and E47b1-5 (unfolding brackets) asked about how much money would be left over.
    - E47c (point estimate) and E47d1-5 (unfolding brackets) asked about how much debt would be left over.

- G4, G5 and G6 asked about the value of all motor vehicles, bakkies/trucks and motorbikes owned by the respondent.
- G11 asked about home loans/bonds.
- G12 to G16 and G18 to G27 asked about a variety of other assets and debts, such as personal bank loans, store cards and study loans.
- G17 asked about vehicle finance.
- G28 and G30 asked about life insurance and unit trusts/stocks/shares respectively.
- G29 asked about pensions/retirement annuities.

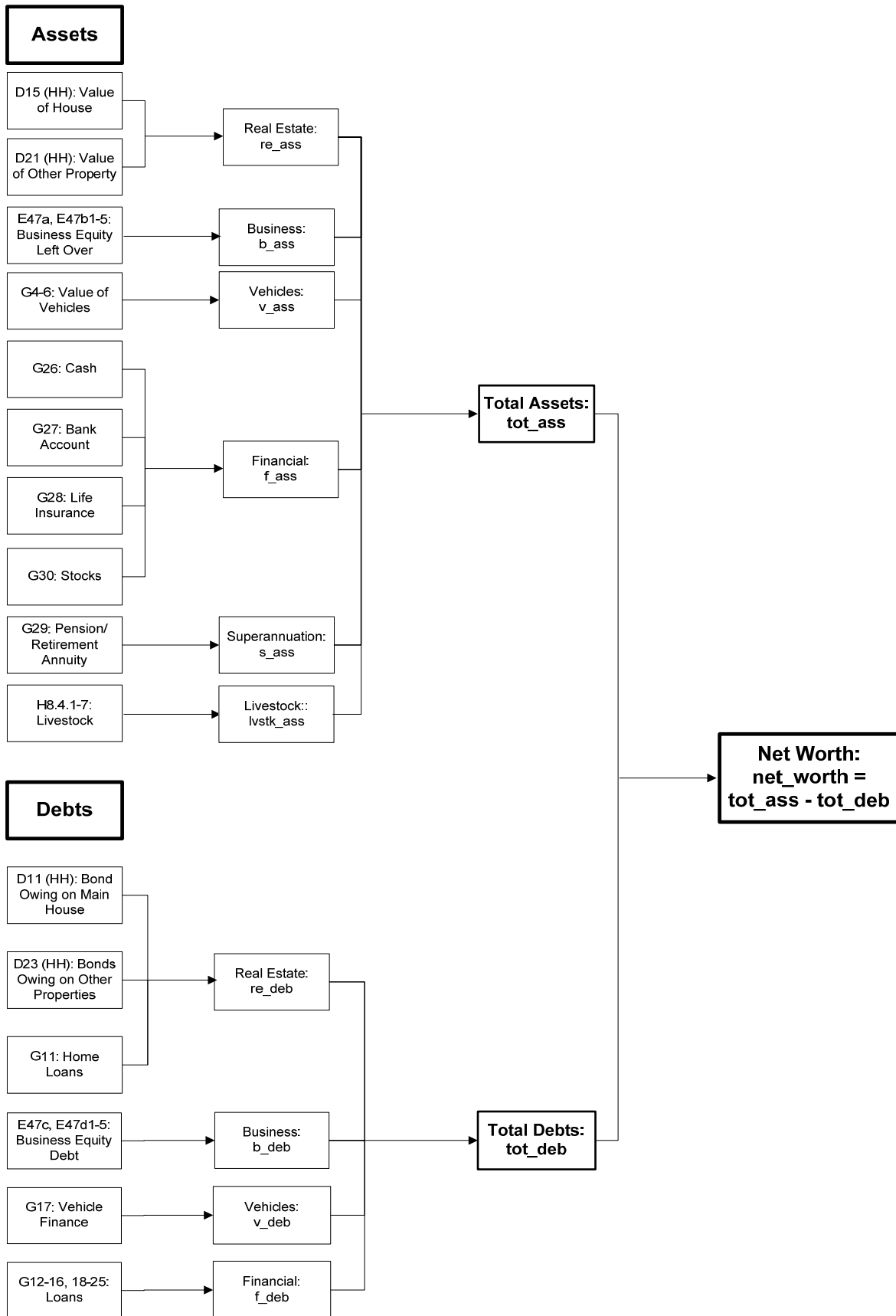
### **2.2.2 Deflating Wealth Data**

Given the fact that fieldwork in NIDS Wave 2 took place over twelve months, all financial data are deflated to the modal month of interview, i.e. September 2010.

### **2.2.3 The Calculation of Derived Household Net Worth**

The diagram below (Figure 1) outlines how the final net worth measure was calculated from components of wealth for each household in the NIDS household derived dataset. Evident from the diagram is that components of *household* net worth are estimated from both the household and adult questionnaire variables. Here, all individual-level variables are summed over all residents in the household in order to derive aggregate household net worth.

**Figure 1: Derivation of Household Net Worth from Components of Assets & Liabilities**



### 3. An Assessment of the Quality of NIDS Wealth Data

In this section we evaluate response rates and the distributions of the wealth variables. The objective is to assess the overall quality of each variable in the dataset, paying attention to the characteristics of the unweighted sample of respondents. The weighted distributions will be analysed in the next section.

The following table tabulates responses to the one-shot household net worth question: “Suppose you (and your household members living here) were to sell off all your major possessions (including your home), turn all of your investments into cash and pay all your debts – would you have something left over, breakeven or be in debt?”

**Table 1: Household-Level Response for One-Shot Wealth**

One-shot HH Net Worth (Question F2.1)	Freq.	Percent	Cumul.
Don't Know	2 379	34.94	34.94
Refuse	357	5.24	40.18
Missing	4	0.06	40.24
Not asked in Phase 2	387	5.68	45.92
Something left over	1 220	17.92	63.84
Breakeven	2 314	33.98	97.83
Debt	148	2.17	100
Total	6 809	100	

\*For "Successfully Interviewed" households only

The table shows that when taking only successfully interviewed households (6 809 / 9 170), more than one third of respondents (2 379 / 6 809) answered that they didn't know their overall net worth. 5 percent refused to answer the question and four observations are missing any information. The overall one-shot wealth question was not asked in Phase 2, resulting in missing observations for this subset of households too. The overall non-response rate is therefore 46 percent.

At the individual level, response rates were as follows:

**Table 2: Individual-Level Response for One-Shot Wealth**

One-shot Individual Net Worth (Question G31)	Freq	Percent	Cumul.
Don't Know	7 552	42.71	42.71
Refused	842	4.76	47.47
Missing	8	0.05	47.52
Not asked in Phase 2	754	4.26	51.78
Something left over	2 184	12.35	64.13
Breakeven	6 051	34.22	98.35
In debt	291	1.65	100
Total	17 682	100	

\*For "Successfully Interviewed" individuals only

The table shows the sample of adult respondents (17 682 / 21 955) that answered the one-shot individual net worth question in the adult questionnaire. We can see from the table that once again a large fraction of respondents (7 552 of 17 682) stated that they didn't know their individual net worth. The overall non-response rate for this question (this is the sum of Don't Know, Refused, Missing and Not asked in Phase 2), is 52 percent.

Important to note is that at the individual level, net worth is more difficult to conceptualise because it is unclear what it means as a construct when resources are shared with other household members. In other words, a couple that own a house together have a clearly defined household net worth, but an ambiguously defined individual net worth, for it depends on each individual's equity in the house (which we do not know from the NIDS questionnaires). Consequently, there is no derived net worth analogue to household net worth at the individual level. For the remainder of this document, we will therefore focus on the household net worth and its distribution.

The large fraction of "Don't Know" responses for both the household and the individual one-shot net worth questions suggest that the cognitive burden of these questions is high indeed. This is despite the fact that in both the household and the adult questionnaires, the net worth questions are preceded by numerous questions concerning the components of wealth, which serve as anchoring cues to improve respondent recall to the overall net worth questions.

As mentioned above, a second measure of household net worth is present in the data. This measure is derived from the components of assets and liabilities present in both the individual and household questionnaires. Figure 1 schematically presents how this variable is calculated. The advantage of using this variable to analyse net worth is that it sums up the respondent's answers to each of the asset and liability questions. Partly because of this, it has a larger sample size than the one-shot measure. Table 3 present the findings:

**Table 3: Distributions of Two Measures of Household Net Worth (2010 Rands, Unweighted)**

Variable	Min	P10	P25	P50	Mean	P75	P95	Max	Coeff. of Var	N
Derived Net Worth	-17 500 000	0	148	10 009	413 959	61 425	750 668	312 000 000	16.30	5 845
One-shot Net Worth	-2 016 144	0	0	0	156 817	10 081	500 445	99 800 000	11.99	3 639

The table shows parameters of the two household net worth variables including percentiles, means and the coefficient of variation (i.e. the standard deviation divided by the mean). It should be noted that in the household derived dataset, the one-shot measure needs to be created by researchers in a sequential fashion that (1) transforms the debt variable into the negative number line, and (2) replaces otherwise missing observations for those that answer that their net worth breaks even to zero. The latter action results in many more zero observations for the one-shot measure compared to the derived measure – as can be seen in Table 3 above. Given that the zeros are reflecting an approximation by the respondent to break-even point, there is nothing inherently problematic about this variable containing substantially more zeros than the derived variable. However, the differences between the two variables must be borne in mind when conducting any analysis of household net worth.

The reason why the sample size is so much larger for derived net worth is because if a respondent answers any one of the components of net worth questions identified in Figure 1 above, then the derived net worth variable will record that answer as an observation even if all other components of wealth questions have missing data for that

respondent. This partly explains why the variance is so much larger for derived net worth, where the coefficient of variation is nearly 50 percent larger than one-shot net worth. In fact, outliers play a very significant role in the means of both wealth measures, and the sizes of the outliers are enormous (e.g. the largest asset outlier was 63 standard deviations from the mean). After a preliminary investigation of these outliers, we decided to trim the asset, liability and net worth variables to the 99<sup>th</sup> percentile in order to reduce their impact on parameter estimates (outliers are discussed in more detail below).

Despite the differences in the two household net worth variables, the correlation between them is approximately 0.75, which suggests that there is a non-trivial degree of measurement error in the data, but that the two measurements are nevertheless highly correlated.

The distribution of assets, debt and net worth is summarised in the table below.

**Table 4: The Distribution of Components of Assets & Liabilities (2010 Rands, Unweighted)**

Variable	Min	P10	P25	P50	Mean	P75	P95	Max	Coeff. of Var.	N
Total Assets	1	118	998	19 665	503 068	80 193	923 656	364 000 000	15.48	5 037
Real Estate	1	1 497	8 090	35 000	591 639	100 807	898 401	353 000 000	15.24	3 413
Business	3	541	4 751	24 956	524 117	149 734	2 016 144	23 800 000	4.77	109
Vehicles	30	11 979	24 956	50 000	179 033	100 000	300 267	68 200 000	13.54	794
Financial	1	45	100	300	82 353	1 583	79 011	101 000 000	22.21	3 269
Retirement Annuity	39	230	701	1 808	266 791	130 232	981 000	15 000 000	5.07	146
Livestock	20	499	2 368	9 463	31 227	39 787	120 500	518 539	1.81	232
Total Debts	1	321	1 216	4 404	99 576	18 232	314 681	59 900 000	15.39	1 683
Real Estate	35	7 012	35 031	147 475	521 822	300 535	712 595	59 900 000	7.51	253
Business	1	95	1 002	5 000	18 341	8 000	104 514	200 178	2.26	29
Vehicles	160	8 014	20 000	50 104	135 823	103 936	350 312	3 040 247	2.55	159
Financial	5	299	1 001	3 055	8 846	8 114	33 050	409 665	2.59	1 519

We can see from the table that for several variables, the minima are recorded as R1.00. This highlights measurement error in these variables and future research on outlier detection in the assets, liabilities and net worth variables should focus equally on

outliers at the bottom end of these distributions. We also see large differences in the range of the coefficient of variation, suggesting once again that skewness in the statistical distributions of these variables is rather pronounced.

Given these characteristics of the data, we now turn to analysing portfolio composition at the household level. We trim all asset, liability and net worth distributions to the 99<sup>th</sup> percentile in order to reduce the impact of outliers. Henceforth, all estimates are cross-sectionally weighted to reflect the population of South Africa in 2011. Because we evaluate asset and liability composition separately and then combined with household net worth, the variable that will be utilised for the remainder of this document for household net worth is the derived variable.

### **3.1 Outliers in components of assets, liabilities & net worth**

Outliers are a major concern when dealing with this wealth data, as they skew the distribution far more than outliers in the income data. The ratio of the income of the household in the 99<sup>th</sup> percentile of the income distribution to the median household in the distribution is 24, while the corresponding ratio for assets is 355. The sheer distance of the outliers from the mean (the largest asset outlier is 63 standard deviations from the mean) and the high weights associated with each outlier household, assert a level of influence that skews our analysis to a great extent. For this reason, the default position in this report has been to present results that exclude the top percentile of net-worth households. This is because they are suspected to have a high probability of measurement error. Despite excluding the top percent, we still capture many high-net-worth households.

A positive correlation between income and net-worth, assets and debts is to be expected, as richer households accumulate more assets and, in all likelihood, have easier access to credit than poorer households. In assessing the impact of outliers in our analysis, the table below shows that when outliers are included, the correlation between household income and household net worth is extremely low at 4.6% (5848 observations). Excluding the outliers increases the correlation to 44.8% (5782 observations). Note that the correlation of the log of income and the log of assets is approximately 0.4, whether or not outliers are excluded). The same dynamic holds true



for the correlation between income and assets, where the increase in the correlation is even stronger once outliers are removed.

**Table 5: Correlation of Income, Assets & Debt**

	Correlation	Observations
Income and Net Worth	0.05	5845
Without Outliers	0.45	5782
Income and Assets	0.04	5037
Without Outliers	0.54	4979
Income and Debt	0.09	1683
Without Outliers	0.51	1654
Assets and Debts	0.63	1504
Without Outliers	0.30	1471

The correlation between total household assets and total household debts relies on a relatively small number of households (1504), and is far higher when outliers are included, than when they are excluded. This speaks to the fact that some of the extreme outliers are having a disproportionately large impact on the correlation. For example, removing the single largest outlier (one household out of 1504) reduces the correlation from 0.63 to 0.08.

### **3.2 Estimating measures of wealth inequality in the presence of outliers**

Assessing wealth inequality is an important undertaking, as an unequal distribution of the stock of wealth is likely to be more persistent than its income counterpart. Assets influence short and long-term welfare and financial security, and a high level of inequality in net worth suggests that tackling income inequality will be more challenging than simply transferring income to those at the bottom of the distribution. Income inequality in the NIDS data is discussed in Finn, Leibbrandt and Levinsohn (2012), where it was found that inequality in both waves was very high, with a Gini coefficient of around 0.68 for the sub-sample of balanced panel members.

As Table 6 indicates, the overall Gini coefficient for net worth stands at an extremely high 0.901. The Gini coefficient for total assets is similar to that of net worth, at 0.903, while the corresponding figure for total debt is slightly lower at 0.840. When we exclude

net worth, asset and debt outliers by trimming at the 99<sup>th</sup> percentile, the measured inequality declines significantly, though it remains extremely high. Assets and net worth display very similar levels of inequality, whether the outliers are included or not.

Amongst the components of assets and debts, financial assets are the most unequally distributed, with a Gini coefficient of 0.951. Property debt has the lowest Gini coefficient (0.506), but this is probably driven by the low number of households reporting any figure in this category (253).

**Table 6: Gini Coefficients of Assets & Debt Variables**

Assets/Debts/Income	Gini
Total Assets	0.903
Without Outliers	0.839
Total Debts	0.840
Without Outliers	0.800
Net Worth	0.901
Without Outliers	0.830
Income	0.699
Property Assets	0.754
Retirement Annuities	0.862
Financial Assets	0.951
Property Debt	0.506

The vast majority of assets are concentrated in the top asset decile, as Table 7 indicates. This decile accounts for about 84% of assets in the data, with a median value of R1.76 million. Even amongst the top decile, assets are very unequally distributed, with the top 5% accruing 79% of all assets. When we remove outliers, the share of the top decile decreases to 54.4%.

**Table 7: Quantile Shares in Net Worth**

Decile	Share (%)		Median Value (Rands)	Share (%)	
	With Outliers	Without Outliers		With Outliers	Without Outliers
1	0.0		R60	0.0	
2	0.0		R300	0.0	
3	0.0		R1 352	0.1	
4	0.1		R5 004	0.3	
5	0.4		R15 131	1.1	

6	0.9	R35 062	2.5
7	1.8	R70 062	5.2
8	4.1	R200 503	13.0
9	8.5	R636 290	23.4
10	84.3	R1 764 168	54.4

The clear take-home message from this analysis is that researchers need to be very careful when using the wealth data in NIDS, and clear decision rules about outliers need to be taken. Ideally, multivariate outlier detection methods should be employed to obtain greater insight into outlier identification before their removal. Furthermore, sensitivity analyses should be conducted to assess the combined effect of outliers and weights (that, in turn, have been affected by attrition in Wave 2), which can yield very different results.

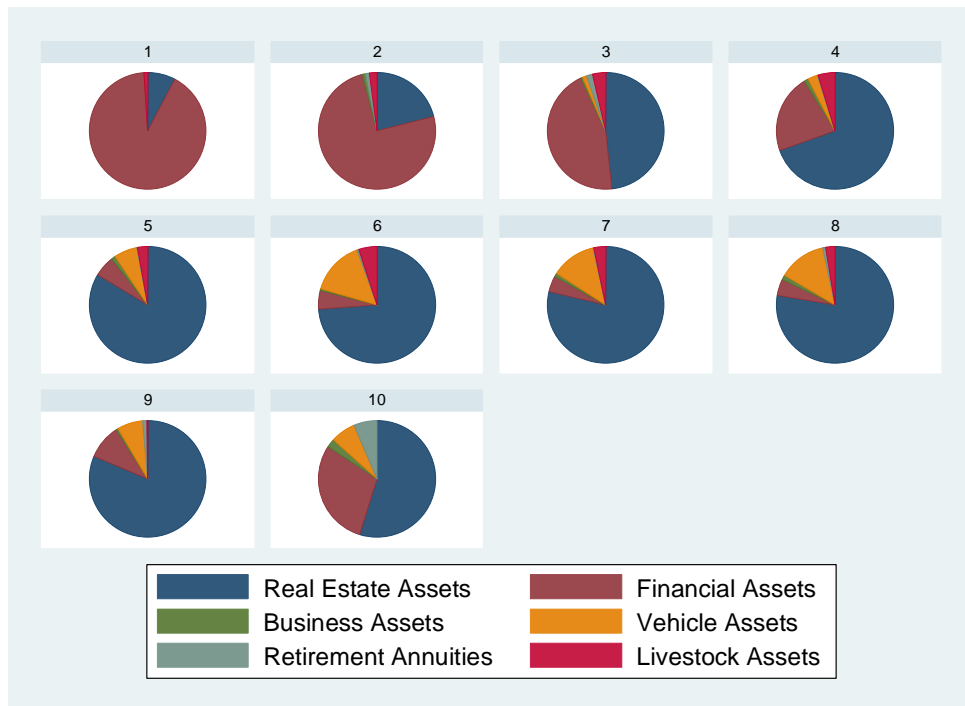
## **4. Household Portfolios in NIDS Wave 2**

In this section we profile household portfolio composition. We commence by isolating assets and liabilities before evaluating them over the net worth distribution. Thereafter we profile net worth over the age distribution to provide some insight into whether predictions from the life-cycle hypothesis are present in the NIDS data.

### **4.1 Composition of Assets & Liabilities**

The composition of household assets and liabilities is discussed below. We commence with assets first before discussing liabilities. The asset portfolio is presented in Figure 2.

**Figure 2: Portfolio of Assets by Asset Decile (Weighted)**

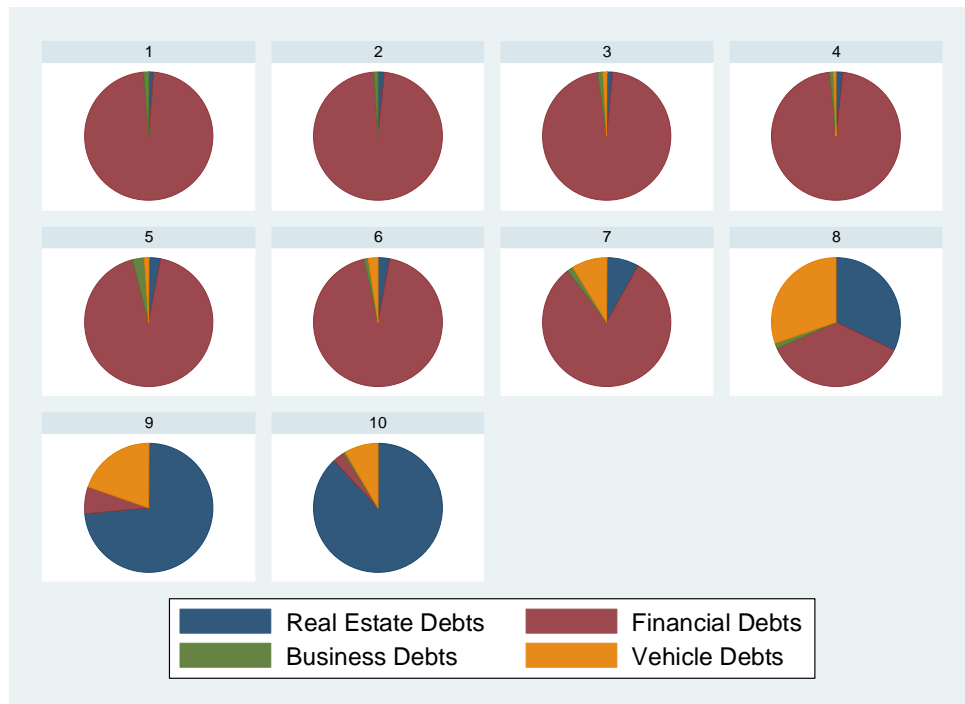


The figure shows six different types of assets: real estate, business, retirement annuities, financial, vehicle and livestock assets. These pie charts profile the change in the composition of assets as the stock of assets increases in value. It is therefore a useful indicator of how households diversify their asset portfolios as they accrue higher-value assets.

We can see from the figure that those with the lowest Rand values of total assets – i.e. deciles one, two and three – have asset portfolios concentrated in financial assets. This changes from decile four onwards, where real estate assets dominate household portfolios. Real estate assets in the top decile drop to just over half of all assets, reflecting the fact that households begin to diversify their assets only at the top end of the asset distribution. This is also the part of the distribution where retirement annuities begin to feature in the asset profile. Livestock assets, however, rarely feature prominently anywhere in the asset distribution, but is discernible in asset deciles three to eight.

The composition of household liabilities is presented below.

**Figure 3: Portfolio of Liabilities by Debt Decile (Weighted)**



We can see from the figure that total debt is disaggregated into four components: real estate debts, business debts, financial debts and vehicle debts. These pie charts profile the change in the composition of liabilities as the stock of liabilities increase in (negative) Rands. It is therefore a useful indicator of the type of goods households incur the largest debts in order to purchase.

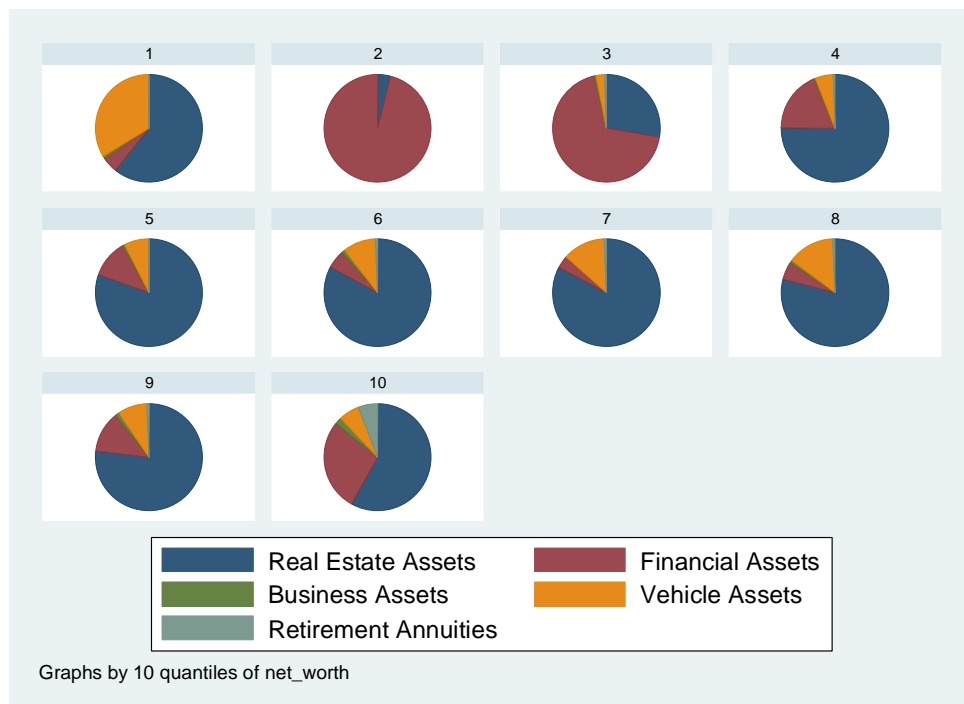
Evident from the figure is that financial debts dominate the first seven liability deciles. Only in debt decile eight does that begin to change. The fact that financial debts play such an important role for so much of the liability distribution suggests that individuals require access to small amounts of credit to overcome binding financial constraints.

Real estate debt dominates the composition of debt deciles only in the top two (deciles nine and ten). This reflects the fact that the distribution of total debt is highly skewed. It also reflects the fact that individuals who qualify for home loans are likely to be the employed, economically active population that can securitise such large debts with either collateral or conditions of employment that qualify them to incur such large debts.

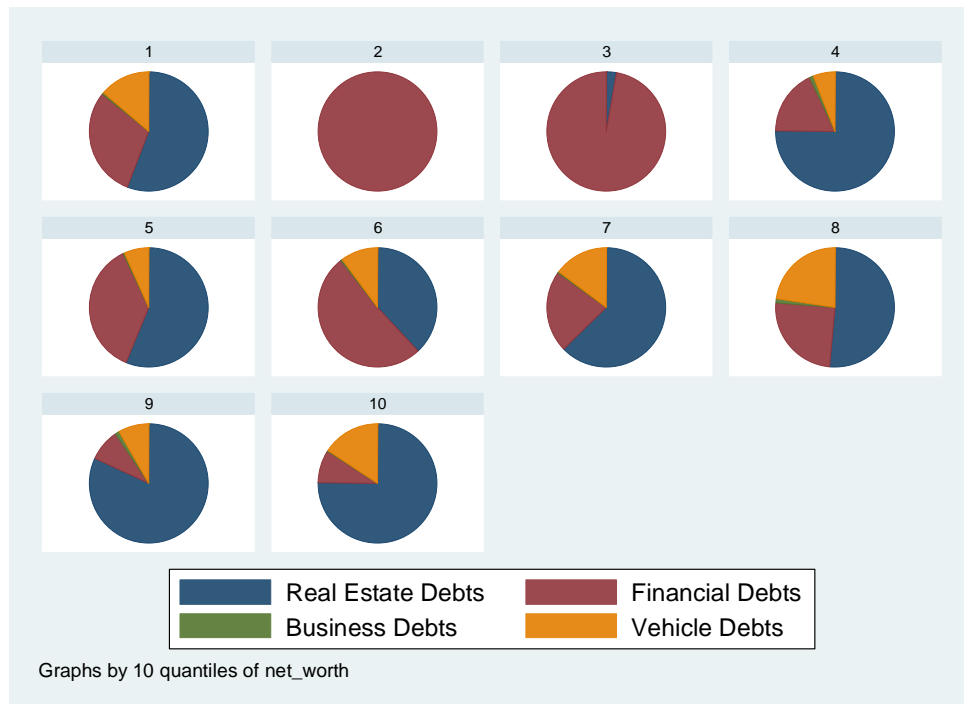
## 4.2 Portfolio Composition over the Net Worth Distribution

While the compositional pie charts above reveal interesting trends for assets and liabilities as separate constructs, they do not provide any further insight into wealth. Because people with high levels of assets can have higher levels of liabilities, resulting in negative net worth, it is useful to compare the composition of assets and liabilities across the net worth distribution. In this regard, the figures below refer.

**Figure 4: Portfolio of Assets by Household Net Worth Decile (Weighted)**



**Figure 5: Portfolio of Liabilities by Household Net Worth Decile (Weighted)**



In the above two figures we now order the asset and liability distributions by net worth deciles. This allows for a more meaningful comparison of portfolio composition across the wealth distribution.

We can see from the figures that in the first wealth decile, which lies in the negative number line owing to liabilities exceeding assets, the profile of both assets and liabilities looks completely different to the second wealth decile, where there is a transition from negative to positive household net worth. Real estate assets and debts constitute more than 50 percent of both assets and debts in this first wealth decile. Once again this reflects the fact that individuals who qualify for housing mortgages are likely to be the employed, economically active population.

On the other hand, the second wealth decile likely has a combination of individuals who are employed and unemployed, economically active and inactive (e.g. retired individuals). In the second wealth decile, the profile of both assets and debts looks very similar to the first wealth asset decile and first wealth debt decile (c.f. Figure 2: Portfolio of Assets by Asset Decile (Weighted) and Figure 3: Portfolio of Liabilities by Debt Decile

(Weighted). Therefore, there is an important transition that takes place in the second decile of the wealth distribution in the profile and characteristics of households.

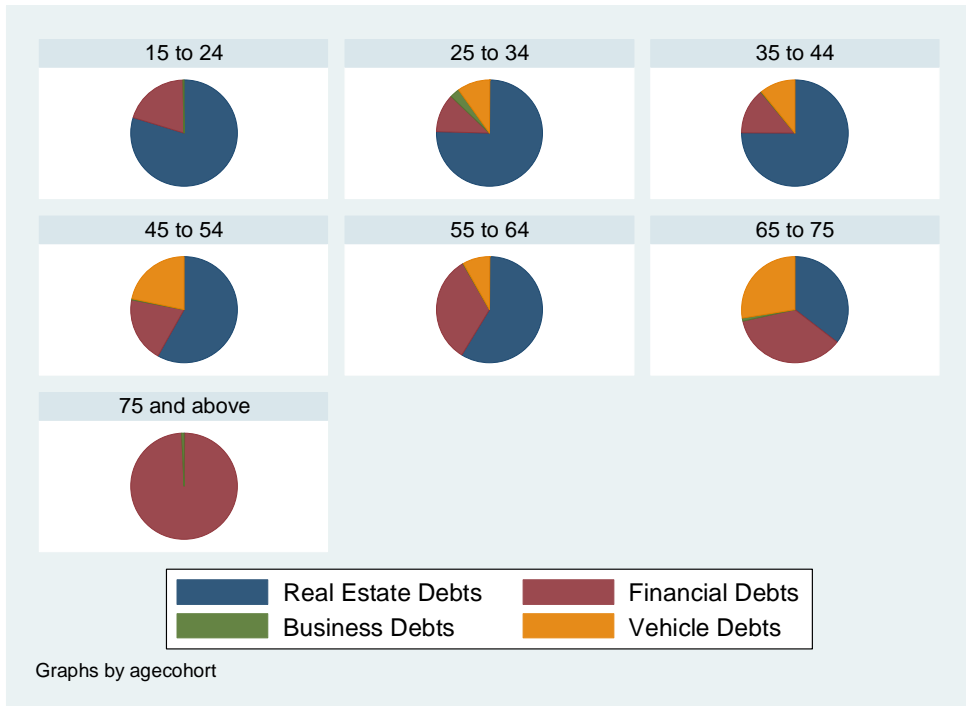
When evaluating net worth, it is useful to remember that individuals that have net worth close to or even slightly above zero may not always be 'richer' than those with negative net worth. For the unemployed, they are locked out of accessing financial services that allow them to invest in either (ordinarily) appreciating assets like housing or even depreciating assets like vehicles. This is because they usually do not qualify for loans, except in instances where rotating credit associations exist or informal credit is available (e.g. from mashonisas). Here, social collateral provides the means to secure credit. Even in these situations, however, this type of credit is unlikely to be of a large enough value to enable an individual to purchase a house, which is the main appreciating asset that can provide long-term wealth creation.

### **4.3 Portfolio Composition Over the Age Distribution**

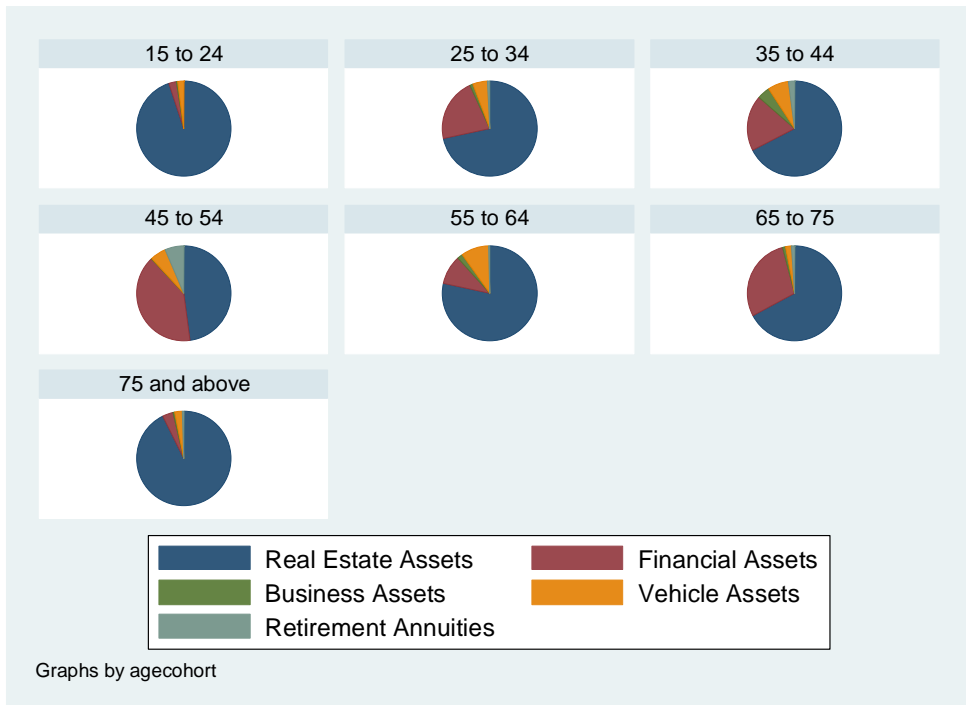
The final dimension of household portfolio composition that we explore is the profile of assets and liabilities over the age distribution. The life-cycle hypothesis sets the basic premise for this enquiry, where, generally, it is expected that households maximise net worth close to retirement age before dissaving. By profiling assets separately from liabilities over seven different age cohorts (where age of the household head is used), we are able to gain insight into the compositional changes in portfolios as people age.



**Figure 6: Portfolio of Liabilities by Age Cohort (Weighted)**



**Figure 7: Portfolio of Assets by Age Cohort (Weighted)**



The figures show a fascinating trend, namely that people gradually pay off their housing loans as they age, and as they do this housing then becomes the largest contributor to

total assets. The capacity to gain access into the housing market is therefore a crucial component of wealth creation: the sooner one can enter this market and pay off housing debt, the better.

It is also interesting to see that retirement annuities do not feature highly in the 55+ age group (i.e. the three oldest age cohorts), but they do feature in the 45-54 age group. Many private sector retirement annuities are in fact accessible after an individual turns 55. The data then correctly reflect the fact that the value of the retirement annuity itself would be highest before 55, whereafter the individual will have access to those funds and likely reinvest it into other asset classes. The data suggest that most people in the 55-64 age cohort take their retirement funds and invest it in housing.

#### 4.4 Net Worth Over the Age Distribution

The evolution of wealth accumulation is closely tied to the age of individuals. The life cycle hypothesis provides testable hypotheses concerning this evolution over time. In this section we analyse net worth by age cohort. Since NIDS Wave 2 contains only cross sectional estimates of net worth, we are restricted to cohort-based analyses. Given that we are dealing with net worth at the household level, we use the age of the head of the household as the basis for assigning a household to an age cohort. The cohorts are for ages 15 to 24, 25 to 34, 35 to 44 and so on (note that using the average age of adults in the household to construct age cohorts yields very similar results to these).

**Table 8: Mean and Median Net Worth by Age of Household Head (Weighted)**

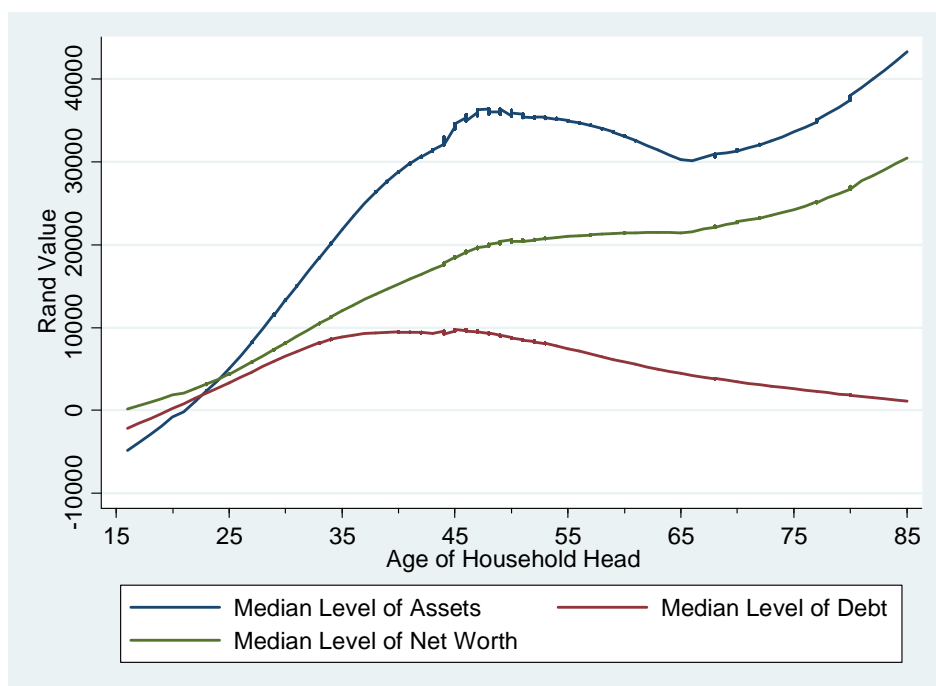
Age of Household Head	Mean (R'000)	Median (R'000)	Obs.
15-24	137	5	299
25-34	132	4	871
35-44	236	18	1228
45-54	398	20	1324
55-64	267	25	1026
65-74	267	15	611
75 and above	274	32	390

The table presents the mean and median net worth for each of the seven age cohorts. Note that these results exclude outliers. The households with the lowest average net

worth are those in the 15-24 and 25 to 34 age cohorts. Assets are accumulated in the next 3 cohorts, before falling for those entering retirement after 65 years and then increasing again after 75. The median level of net worth for the youngest two cohorts is between R4 000 and R5 000. This rises to R25 000 for the pre-retirement cohort of 55-64, before dropping for the next cohort, and rising again for the oldest group. The same general pattern holds if we generate 5-year rather than 10-year age cohorts, and if we define household age by the average age of adults in the household, rather than simply the age of the household head.

Plotting the relationship between net worth and the age of the household head yields some interesting results, as shown in Figure 5 below. We evaluate assets, debts and net worth on the same set of axes for 10-year age cohorts. The net worth curve is simply the asset curve minus the debt curve. Its shape closely follows that of the net worth curve (this is largely because the value of assets is much larger than liabilities and because we have far more households reporting assets than households reporting debts).

**Figure 8: Non-Parametric Smoothing of Weighted Median Net Worth by Age Cohort**



The figure shows an interesting trend, namely that the median household does not simply dissave in retirement but actually increases their stock of assets. This is a

predictable feature of the life-cycle hypothesis if one accounts for a bequest motive in household saving behaviour. Further analysis of this finding should be a priority. Note that the trend disappears when the data are unweighted, implying that small sample sizes in the upper age groups that translate into large weights could be driving this finding.

## **5. Recommendations for Future Wealth Modules**

The main limitations with the wealth module is that questions about respondent behaviour in terms of their discount rates and risk preferences are absent from the module. The level of financial literacy and financial behaviour of respondents is also absent. Across the world, household wealth surveys sometimes include the following behavioural questions in the instrument:

- Financial risk taking willingness;
- Demand for safe investments;
- Hypothetical behaviour in the event of a lottery win;
- Self-assessed actual risk-taking in the past;
- Saving motive priorities;
- Amount needed to cover unexpected expenses;
- Financial time horizon;
- Attitude to spending (or saving) unexpected money;
- Effort or time spent in obtaining financial information;
- Sources of financial information;
- Number of credit cards;
- Use of online banking.

It would be useful for NIDS to consider adding some of these questions to future wealth modules. More detailed wealth measures for equity and bonds in the capital and money markets could also be added, though it is likely these will apply to only a small minority of NIDS respondents.

Lastly, individual net worth needs further work if it is to be reliably calculated. In particular, it is presently impossible to determine individual equity in owned housing or

self-employed businesses. Therefore, new questions need to be added that ask for the percentage of the business or house that the respondent owns. This is very invasive, so the ordering and exact question wording need to be carefully considered.

## **6. Conclusion**

This document has evaluated household wealth in the NIDS Wave 2 datasets, as measured by net worth comprised of various assets and liabilities that are found in both the Household and Adult questionnaires. The subsample of respondents who were asked wealth questions were resident adult household members present at the time of interview. Proxy respondents were not asked about wealth questions, though to the extent that they contribute to household wealth their contributions are indirectly observed.

From a data quality perspective, we saw that there was some evidence that respondents had difficulty with the mental arithmetic needed to obtain an estimate of the one-shot individual and household net worth questions. Evidence of this was in the high proportion of respondents that stated that they didn't know whether their net worth was positive, about-even or negative. On the other hand, when we measured household net worth by summing up the components of assets and liabilities, we were able to derive an alternative measure. The relatively high correlation between these two measures of net worth (approximately 0.75) bodes well from a data quality perspective.

As far as portfolio composition is concerned, we analysed the composition of assets and liabilities, as well as portfolio composition over the net worth and age distributions. We saw from the discussion that household portfolios are defined in large measure by the presence of absence of housing as an asset class. It's the single largest component of assets for most households, something that is consistent with observed levels of home ownership in the data. For liabilities, it was found that financial debts dominate the majority of household debt portfolios (for decile 1-7), after which housing becomes the major liability in deciles 8-10. This is suggestive of possible barriers to entry in the housing market that are defined by access to credit (i.e. liquidity constraints).

Portfolio composition over the net worth distribution showed that the highest net worth decile had the most diverse asset portfolio. For liabilities, an important finding was that in the lowest net worth decile, housing debt featured strongly. This suggests that there are a non-trivial number of households with negative equity in their homes. Portfolio composition over the age distribution suggested that people gradually pay off housing debt as they age. Access to retirement annuities from the age of 55 onwards seems to be invested in other asset classes, especially housing.

Wealth over the age distribution showed a non-linear trend and one where the most likely explanation for the lack of dissaving after retirement was conjectured to be due to bequest motives in the financial plans of the aged. This hypothesis needs to be evaluated directly in a multivariate context in order to be (dis)proven.

Future wealth modules should consider either removing the individual one-shot wealth question or adding new questions that aid the identification of individual equity in real estate assets and liabilities particularly.

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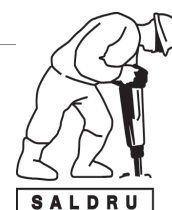


# southern africa labour and development research unit

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The Southern Africa Labour and Development Research Unit (SALDRU) conducts research directed at improving the well-being of South Africa's poor. It was established in 1975. Over the next two decades the unit's research played a central role in documenting the human costs of apartheid. Key projects from this period included the Farm Labour Conference (1976), the Economics of Health Care Conference (1978), and the Second Carnegie Enquiry into Poverty and Development in South Africa (1983-86). At the urging of the African National Congress, from 1992-1994 SALDRU and the World Bank coordinated the Project for Statistics on Living Standards and Development (PSLSD). This project provide baseline data for the implementation of post-apartheid socio-economic policies through South Africa's first non-racial national sample survey.

In the post-apartheid period, SALDRU has continued to gather data and conduct research directed at informing and assessing anti-poverty policy. In line with its historical contribution, SALDRU's researchers continue to conduct research detailing changing patterns of well-being in South Africa and assessing the impact of government policy on the poor. Current research work falls into the following research themes: post-apartheid poverty; employment and migration dynamics; family support structures in an era of rapid social change; public works and public infrastructure programmes, financial strategies of the poor; common property resources and the poor. Key survey projects include the Langeberg Integrated Family Survey (1999), the Khayelitsha/Mitchell's Plain Survey (2000), the ongoing Cape Area Panel Study (2001-) and the Financial Diaries Project.



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