



## Personal Financial Management and Wealth Inequality in South Africa

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**Abstract:** Like many developing countries, South Africa has persistently experienced high levels of wealth inequality since independence in 1994. Despite government policy formulated to address this problem, there has been almost no improvement to the wealth status of the country's majority population. This study thus examines how personal financial choices influenced wealth inequality in South Africa over the period 2010 to 2019 using a behavioural life-cycle model. Despite a decrease in wealth inequality over this period, the extent of this decrease is almost negligible. Results show that the majority of South African households do not possess enough wealth for household decision-making on wealth allocation to have a meaningful impact in reducing wealth inequality through more efficient use of assets. South African households should prioritise increased allocation of resources to education in labour sectors that possess and foresee a critical shortage of skills in the future. Such labour sectors are characterised by stable and higher levels of income, which then provides a mechanism for the accumulation of wealth.

**Keywords:** personal financial management; wealth inequality; quality of life; behavioural life cycle model; South Africa

**JEL Classification:** D14, D15, D31, E21, E24, G5

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## 1. Introduction

Income earned by individuals in the labour market provides a natural mechanism to procure and accumulate wealth over the long-term (Von Fintel & Orthofer, 2020). Liquid assets and wealth provide access to individuals to facilitate the consumption of goods and services that have a direct effect on both their standard of living (SoL) and quality of life (QoL). According to Luburić and Fabris (2017), these SoL and QoL indicators can be described by several dimensions including material living conditions, employment, health, education, economic security and physical safety, governance and rights and exposure to pollution (Eurostat, 2019).

In allocating income and current assets, less affluent households also allocate a larger share to meet their basic needs, centred on the different QoL dimensions (Bureau for Food and Agricultural Policy, 2020; Statistics South Africa, 2017). Choices on how financial resources are consumed thus have an impact on individual wealth in the long-term. Although South Africa has experienced a large increase in financial inclusion from an access perspective, the manner in which South Africans use financial products suggest that financial literacy is low (Abrahams, 2017; Deloitte, 2019). Financial literacy is the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being. Choices on how to manage investment and savings also affect wealth accumulation through investment returns over time. Wealthier households tend to assume riskier investment profiles in equities and bonds, compared to less affluent households who can afford informal savings (Murendo & Mutsonziwa, 2016; Beckmann, 2019; Kochaniak, 2020). To reduce wealth inequality in South Africa, personal finance factors, such as financial literacy and the allocation of resources are key determinants in reducing wealth inequality and improving SoL and QoL (Struwig & Plaatjes, 2007; Lusardi, Michaud & Mitchell, 2017).

The aim of this study is two-fold. Firstly, the study seeks to determine the degree of wealth most South Africans need to access a meaningful quality of life (QoL). Secondly, the study intends to propose a model on how personal finance factors can affect wealth inequality, with the objective being to reduce wealth inequality in South Africa. This study complements the work of Fortuin, Grebe and Makoni (2022), who assessed the role of government policy in addressing wealth inequality in South Africa. The focus of Fortuin *et al.*'s (2022) paper was perspectives at a macro-economic level, while in this study we consider what individuals can do to improve their personal wealth circumstances at a micro-level.

## 2. Literature Review

The life-cycle theory, developed by Modigliani, Brumberg and Ando during the 1950s, suggests that individuals actively manage their consumption and savings behaviour over their life-cycle (Baranzini, 2005). Individuals will tend to accumulate savings when earnings are positive, and dis-save when they are retired. Key assumptions of the theory are that individuals choose to maintain stable lifestyles and that they do not save up in one period to spend excessively in the next period, implying that consumption levels remain largely stable from one period to the next. Income is also assumed to be constant until retirement, and zero thereafter; while interest rates are zero; bequests do not exist; and that consumption remains constant over the life-cycle.

Later, Shefrin and Thaler (1988) proposed the behavioural life-cycle hypothesis, developed from the theory of self-control (Thaler & Shefrin, 1981). Individuals practise mental accounting, suggesting that individuals have different propensities to save in different categories of accounts. Individuals are thus either long-or short-term planners, and that money in different accounts are used for different purposes. Wealth is assumed to consist of three types of accounts: current income, current assets, and future income. The theory infers that the propensity to spend is highest in the current income account, and lowest in the future income account. The behavioural life-cycle hypothesis does not account for optimal selection of assets regarding savings and long-term wealth generation, nor for the behaviour of individuals who elect to spend future income, using credit and income advance mechanisms, especially in relation to ventures related to investment and entrepreneurship.

Building on from the theoretical framework, Maina (2010) investigated whether financial literacy has an effect on personal financial management. The results of the study show that individuals working in the finance and investment industries do not possess significantly different financial behaviours from those who do not work in these industries. These two different groups exhibit similar financial management patterns, though in different magnitudes. The financially literate population saves in larger magnitude than the other population. The study is limited in the results obtained due to the population sampled being restricted to Nairobi. All individuals who are identified as working in the finance or investment industries are assumed to possess financial literacy by virtue through their exposure to their work environment.

Van Rooij, Lusardi and Alessie (2012) examined how wealth might accumulate through the channels of financial knowledge and financial literacy. The results show that there exists a positive relationship between financial literacy and wealth accumulation, after controlling for other wealth-determinant factors, such as age, income, education, risk tolerance, savings behaviour and family composition. Individuals with a high degree of financial knowledge are found to be more likely to

invest in riskier and higher-yield investments, such as stocks. Financial literacy is also shown to be positively associated with retirement planning behaviour. These two factors lead to a general decrease in wealth inequality over time. The study is limited in that it is assumed that the effect of financial literacy stems from financial education programmes, when this may not necessarily be the case (Lusardi and Mitchell, 2011). Along similar lines, Johan, Rowlingson and Appleyard (2020) considered the impact of personal financial education on financial knowledge, and consequent financial behaviour. Their results show that personal financial education has a positive and statistically significant effect on financial knowledge, while the relationship between personal financial education and financial behaviour shared no statistically significant relationship. The results further indicate that family financial socialisation, income, work experience, year and field of study and discussing financial management socially with friends and family are all important factors in driving increased financial knowledge, and more refined financial behaviour.

### 3. Methodology

The population consisted of all South Africans of working age (15 to 60 years old) and post-retirement age (61 years and older), over the period 2010 to 2019. The sample of South Africans used for this study was obtained in the form of secondary data from Statistics South Africa, and from the Human Sciences Research Council.

To investigate the relationship between personal financial management and wealth inequality, this study applies the behavioural life-cycle theory proposed by Shefrin and Thaler (1988). The model assumes that an individual follows the life cycle wherein the individual is born, attains an education, enters the labour market and buys property. Later, the individual has children, retires, and subsequently passes away, while bequeathing their estate to the next generation.

In order to determine the degree of wealth most South Africans require to access a meaningful QoL, the model will be used to determine an average QoL, represented as cost of living, per quintile of wealth distribution and construct a consumption distribution using South African General Household Survey data. A meaningful QoL can be approximated as the average monetary lifetime requirements the average South African may face with respect to specific QoL indicators, such as material living conditions, healthcare, education, bequeathed estate and quality of employment. Secondly, the study aims to propose a model on how personal finance factors can affect wealth inequality, with the objective being to decrease wealth inequality in South Africa. The outcomes of this model will then be used to construct a matrix distribution of QoL and wealth inequality, that will be used to determine the level at which wealth inequality will maximise access to higher levels of QoL.

Similar to Fortuin *et al.* (2022), we measure the level of wealth  $W$ , at which a meaningful QoL can be attained by the average South African, as described by equations 1 and 2:

$$W_{QoL}(T) = (1 + q_5) \times (\sum_{i=1}^3 q_i) + q_4 + \alpha \quad (1)$$

$$W'_{QoL}(T) = (1 + q_5) \times (\sum_{i=1}^3 q_i) \quad (2)$$

where  $W_{QoL}(T)$  is the quality of life wealth variable,  $W'_{QoL}(T)$  is the 0<sup>th</sup> generation quality of life wealth.  $q_1$  refers to material living conditions,  $q_2$  refers to healthcare requirements,  $q_3$  refers to educational requirements,  $q_4$  refers to bequeathed estate passed onto the next generation,  $T$  refers to the life expectancy of the average South African,  $q_5$  refers to quality of employment and  $\alpha$  is the bequeathed estate received from the previous generation.

Each variable  $q_i$  can be approximated to a specific monetary value required and is determined through sub-equations, which are in turn determined by other variables.  $q_1$  is determined by income levels and can be approximated as the lifetime subsistence requirements, retirement savings contribution, retirement withdrawals and household savings of an average South African, represented as consumption, accounting for the period where there are child dependents in the household.  $q_2$  is determined as the lifetime cost of healthcare associated with the individual, accounting for periods of excess cost across the life cycle, associated with periods where the individual bears responsibility for their children's healthcare needs.  $q_3$  is the expected cost of education requirements for further development and growth in the labour market regarding career growth and costs associated with education requirements regarding children.  $q_4$  is determined as the bequeathed estate, approximated as the real-return value of the average transferred property plus the remaining real-return pension asset at the cessation of the individual, while  $q_5$  is the opportunity cost of unemployment.

The model will determine the quality of life wealth  $W_{QoL}(T)$  and the 0<sup>th</sup> generation quality of life wealth  $W'_{QoL}(T)$  for each year for the period 2010 to 2019, by fixing each year in the period as a separate state, and then extending each state by the respective period  $T$  for all independent variables as determined by each state's underlying data. The dependent variables are  $W_{QoL}(T)$  and  $W'_{QoL}(T)$ , respectively.

The personal finance wealth inequality model compares the results obtained from  $W'_{QoL}(T)$  with the result of equation 3:

$$W(T) = \frac{1}{N_{RT}} \sum_{23}^{60} \frac{t_{PI}}{r_{ET}} - t_{PI} \quad (3)$$

where  $W(T)$  is the lifetime level of wealth accumulated over the period  $T = 60 - 23$ .  $T$  is fixed at 38, since this corresponds to the same employment period for

$W'_{QOL}(T)$ .  $N_{RT}$  represents the number of registered personal income taxpayers. The total amount of tax collected on personal income is the variable  $t_{PI}$ . The effective tax rate on personal income is represented by  $r_{ET}$ .  $W(T)$  is thus the average total lifetime after-tax personal income of an individual.  $W(T)$  is also determined for the different percentile income groups: the 0<sup>th</sup> percentile income group  $PI_0$ ; the 0-50<sup>th</sup> percentile income group  $PI_{0-50}$  and the 50-90<sup>th</sup> percentile income group  $PI_{50-90}$ ; the 90-100<sup>th</sup> percentile income group  $PI_{90-100}$ .

Table 1 shows that the percentile income groups 0-50 ( $PI_{0-50}$ ), 50-90 ( $PI_{50-90}$ ) and 90-100 ( $PI_{90-100}$ ) are determined from the number of employed individuals registered for pay-as-you-earn (PAYE) income tax. The 0<sup>th</sup> percentile income group is defined as either unemployed, discouraged work seekers or employed individuals not registered for PAYE income tax. The individuals in the latter case earn below the income threshold for PAYE income tax. Individuals in this group may be employed in the informal sector or as seasonal employees. The model will assume that the population in this income group earn zero income, since the population is so large relative to the income generated.

**Table 1. Population Income Groups in the Personal Finance Wealth Inequality Model.**

Population of working age		Population income group		
Employed	Registered for PAYE	$W(T): PI_{0-50}$	$W(T): PI_{50-90}$	$W(T): PI_{90-100}$
Employed	Not registered for PAYE	$W(T): PI_0$		
Unemployed				
Discouraged job seekers				

*Source: Authors' own conceptualisation*

Equation 4 describes wealth inequality as given by the ratio:

$$WI = \frac{W(T)}{W'_{QOL}(T)}, W'_{QOL}(T) > 0 \tag{4}$$

where  $WI$  is the wealth inequality ratio and  $W(T)$  is the average wealth owned by an average South African.  $W(T)$  is analogous to  $W'_{QOL}(T)$ , in that  $W(T)$  is the sum of all income over the average lifetime  $T$  of the average South African, as given by equation 5:

$$W(T) = \sum_{i=1}^T y_i \cong \sum_{T_1}^{T_3} y_i \tag{5}$$

where  $y_i$  is the total income and bequests at each point  $T_i$ . When the wealth inequality ratio is greater than 1, this implies that the average South African owns more wealth than what is required for a meaningful QoL. When the ratio is less than 1, this implies that for the income level  $W(T)$  the average individual owns less wealth than what is required for a meaningful QoL. Wealth inequality trends can be

revealed by plotting  $WI$  over time. Different population income groups, classified according to the income distribution in the population, can also be used to determine their relationship to the meaningful QoL as given by  $W'_{QOL}(T)$ . The wealth inequality ratio can be expanded to determine which variables contribute the greatest to wealth inequality component-wise regarding the personal finance factor.

#### 4. Results and Discussion of Findings

Quality of life wealth  $W_{QOL}(T)$  and 0<sup>th</sup> generation quality of life wealth  $W'_{QOL}(T)$  is determined for each tranche year for the period 2010 to 2019. The summarised results for the model's dependent and independent variables are shown in table 2.

**Table 2. Quality of Life Cost of Living Results**

Year	q1 (ZAR)	q2 (ZAR)	q3 (ZAR)	q4 (ZAR)	q5 (%)	$W_{QOL}$ (ZAR)	$W'_{QOL}$ (ZAR)
2010	8 108 224	2 816 900	946 734	2 644 016	49.7	20 417 454	17 773 438
2011	6 480 462	2 922 634	837 898	2 299 716	50.1	17 667 666	15 367 950
2012	5 894 897	2 982 316	752 682	2 110 880	49.7	16 529 157	14 418 277
2013	6 433 143	3 335 832	783 642	2 374 146	47.4	17 930 953	15 556 807
2014	6 948 248	3 661 267	861 002	2 515 992	47.1	19 388 721	16 872 728
2015	7 800 180	4 141 359	879 790	2 718 180	45.4	21 362 409	18 664 229
2016	8 374 092	4 335 774	814 602	2 829 587	46.3	22 610 957	19 781 370
2017	8 193 179	4 752 234	832 123	2 724 402	44.7	22 656 063	19 931 661
2018	10 714 026	4 985 666	890 485	3 913 170	44.8	27 940 762	24 027 591
2019	9 509 116	5 256 561	954 278	3 375 730	45.3	26 218 242	22 842 512

*Source: Authors' own computations*

The results in table 2 show that quality of life wealth  $W_{QOL}(T)$  and 0<sup>th</sup> generation quality of life wealth  $W'_{QOL}(T)$  is largest for the 2018 year tranche, and lowest for the 2012 year tranche. The large magnitude of the 2018 year tranche can be attributed to the results obtained for  $q_1$  and  $q_4$ , which are markedly higher in this tranche as opposed to other tranches. This indicates an increased cost of consumption and cumulative prevalence related to the purchase of more expensive property and increased retirement contributions. The 2012 tranche shows the same variable

sensitivity as the 2018 tranche, in reverse fashion. The consumption variable  $q_1$  is largest in 2018 and the smallest in 2012. Healthcare variable  $q_2$  has a strong linear increasing trend across the year tranches in the series.  $q_2$  is largest in the 2019 tranche and smallest in the 2010 tranche. The education variable  $q_3$  is largest in the 2019 tranche, and smallest in the 2012 tranche. This result is obtained, despite the trend that the average graduation rate decreased from 8 years in the 2010 tranche to 5 years in the 2019 tranche. The education variable  $q_3$  showcases a parabolic trend over the tranche series. The bequeathed estate variable  $q_4$  has the same maximum and minimum values as variable  $q_3$ . Variable  $q_5$ , cost of unemployment, is largest in the 2011 tranche and smallest in the 2017 tranche, with a negative linear trend across the tranche range. This indicates that there has been a general increase in employment across the different tranches. This difference is highly marginal between tranches.

Lifetime level of wealth  $W(T)$  is determined for each tranche for the period 2010 to 2019. Lifetime level of wealth is also determined for the different percentile income groups: the 0<sup>th</sup> percentile income group  $PI_0$ ; the 0-50<sup>th</sup> percentile income group  $PI_{0-50}$ ; the 50-90<sup>th</sup> percentile income group  $PI_{50-90}$ ; the 90-100<sup>th</sup> percentile income group  $PI_{90-100}$ . These results are shown in table 3.

**Table 3. Lifetime Level of Wealth  $W(T)$  Results.**

Year	$W(T): PI_0$ (ZAR)	$W(T): PI_{0-50}$ (ZAR)	$W(T): PI_{50-90}$ (ZAR)	$W(T): PI_{90-100}$ (ZAR)	$W(T)$ (ZAR)
2010	0	923 506	4 488 777	35 951 182	1 084 633
2011	0	552 126	2 832 832	23 416 578	1 196 454
2012	0	370 246	2 248 147	20 532 971	1 306 807
2013	0	362 556	2 221 121	20 237 569	1 374 112
2014	0	365 749	2 269 376	20 623 813	1 497 411
2015	0	383 790	2 381 316	21 641 105	1 673 409
2016	0	399 391	2 478 120	22 520 854	1 794 887
2017	0	399 318	2 477 662	22 516 689	1 848 064
2018	0	400 219	2 483 258	22 567 546	1 924 657
2019	0	396 591	2 460 746	22 362 961	1 972 229

*Source: Authors' own computations*

The results in table 3 show that  $W(T)$  varies widely between the different percentile income groups.  $W(T)$  is on average 53 times smaller for the 0-50<sup>th</sup> percentile income group, in comparison to the 90-100<sup>th</sup> percentile income group.  $W(T)$  is on average 9 times smaller for the 50-90<sup>th</sup> percentile income group as opposed to the 90-100<sup>th</sup> percentile income group.  $W(T)$  is on average 6 times smaller for the 0-50<sup>th</sup> percentile income group as opposed to the 50-90<sup>th</sup> percentile income group. All income groups show a negative linear trend across the different tranche years, except for the 0<sup>th</sup> percentile income group.  $W(T)$  however, increases between the 2010 and 2019 tranches, at an average rate of 7% per tranche year. Lastly,  $W(T)$  is largest in the



2019 tranche, and smallest in the 2010 tranche, attributable to a continuous shift of population members from lower percentile income groups to higher percentile income groups. Table 4 shows the number of individuals per series  $W(T):PI$  for each percentile income group.

**Table 4. Number of Individuals per Income Group for Each Tranche Year (2010-2019).**

Year	$N:PI_0$	$N:PI_{0-50}$	$N:PI_{50-90}$	$N:PI_{90-100}$	$N_{RT}$
2010	26 025 388	2 960 306	2 368 245	592 061	31 946 000
2011	22 088 825	5 173 088	4 138 470	1 034 618	32 435 000
2012	19 199 283	6 851 859	5 481 487	1 370 372	32 903 000
2013	19 293 080	7 709 460	6 167 568	1 541 892	34 712 000
2014	18 552 289	8 389 856	6 711 884	1 677 971	35 332 000
2015	17 769 462	9 092 769	7 274 215	1 818 554	35 955 000
2016	17 515 730	9 537 635	7 630 108	1 907 527	36 591 000
2017	17 236 890	9 990 055	7 992 044	1 998 011	37 217 000
2018	16 727 625	10 552 188	8 441 750	2 110 438	37 832 000
2019	16 262 454	11 085 273	8 868 218	2 217 055	38 433 000

*Source: Authors' own computations*

Table 4 shows that the number of registered personal income taxpayers  $N_{RT}$  increased at a steady rate across the entire period, with a large shift upwards to higher wealth levels between the population groups  $N:PI_0$ ,  $N:PI_{0-50}$  and  $N:PI_{50-90}$ . These large proportional increases indicate that there has been upward mobility in the income distribution over this period of time, increasing the wealth distribution over the same period for each tranche in succession.

The wealth inequality ratio ( $WI$ ) is determined for each percentile income group, as given in table 1, as well as the overall population of working age. The results for the wealth inequality ratio  $WI$  are shown in table 5.

**Table 5. Wealth Inequality Ratio (WI) for Each Tranche for the Period 2010 to 2019**

Year	$WI:PI_0$	$WI:PI_0 - 50$	$WI:PI_{50} - 90$	$WI:PI_{90} - 100$	$WI$
2010	0	0.052	0.253	2.023	0.061
2011	0	0.036	0.184	1.524	0.078
2012	0	0.026	0.156	1.424	0.091
2013	0	0.023	0.143	1.301	0.088
2014	0	0.022	0.134	1.222	0.089
2015	0	0.021	0.128	1.159	0.090
2016	0	0.020	0.125	1.138	0.091
2017	0	0.020	0.124	1.130	0.093
2018	0	0.017	0.103	0.939	0.080
2019	0	0.017	0.108	0.979	0.086

*Source: Authors' own computations.*

The results in table 5 shows that  $WI$  has increased from the 2010 tranche to the 2019 tranche.  $WI$  is quite small in magnitude however, at an average of 0.085 over all the tranche years.  $WI:PI_0$  is fixed at zero across all tranche years.  $WI:PI_{0-50}$ ,  $WI:PI_{50-90}$  and  $WI:PI_{90-100}$  all decreased over the different tranche years at different rates.  $WI:PI_{0-50}$  is largest in the 2010 tranche and smallest in the 2018 and 2019 tranches, decreasing by 0.035 at an average rate of -10.7% per tranche year.  $WI:PI_{50-90}$  decreased by 0.145 at a rate of -8.6% per tranche year.  $WI:PI_{90-100}$  decreased by 1.044 from tranche year 2010 to 2019 at a rate of -7.4% per tranche year.

The results of our model show that wealth inequality has decreased only marginally, and that all individuals who generate a taxable income have experienced declined wealth over the time period. The wealth inequality ratio ( $WI$ ) increased only marginally, implying that very little wealth has been redistributed to increase the QoL meaningfully for the most marginalised.

The model also shows that the average South African household allocates a much higher proportion of wealth to consumption and healthcare, and smaller contributions to education and bequeathed estate. The allocation of wealth to education and bequeathed estate have also both decreased relatively to consumption and healthcare across the period.

The outcome of the personal finance wealth inequality model illustrates that the majority of South African households do not possess enough wealth for household decision-making on wealth allocation to have a meaningful impact in reducing wealth inequality through more efficient use of assets. This is evident through consumption requirements alone exceeding the lifetime level of wealth ( $W(T)$ ) for every year in the period by an average factor of five. South Africans' personal finance choices thus have a small effect on wealth inequality.

## 5. Conclusion

According to our findings, on average, the required degree of wealth to access a meaningful QoL in South Africa, is 12 times larger than the actual lifetime level of wealth ( $W(T)$ ). Our model also shows that the average South African household allocates a much higher proportion of wealth to consumption and healthcare, and smaller contributions to education and bequeathed estate. The results of the personal finance wealth inequality model confirm that many South African households do not possess enough wealth for household decision-making on wealth allocation to have a meaningful impact in reducing wealth inequality through more efficient use of assets. This is evident through consumption requirements alone exceeding the lifetime level of wealth for every year in the period by an average factor of five. South Africans' personal finance choices thus have a small effect on wealth inequality. Allocating current income and assets from future bequeathed estates to current education requirements could provide greater capacity to acquire such assets in the near future, at a relatively higher income and consequent wealth level, decreasing wealth inequality, in line with assertions by Yubiliano (2020).

A key limitation of this study is that it did not include all forms of wealth currently owned by South Africans as part of determining the wealth distribution in the models. Including these assets in further studies could provide greater sensitivity in the models to changes in personal finance factors. In addition, by including population dynamics, such as age and gender, future studies could further enhance and show differentials in wealth inequality to a more sensitive degree, especially considering persistently high youth unemployment and wage and wealth disparities between genders, not only in South Africa, but many developing countries across the world.

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