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A from-whom-to-whom approach to understand the financial structure of South Africa

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Abstract: This paper constructs a *from-whom-to-whom* matrix of financial stock positions for the South African economy and analyses the resulting data to illuminate its evolving financial structure over the last decade. Focusing on seven institutional sectors and multiple financial instruments over the last decade, we detail the dataset's construction before highlighting the key findings. From-whom-to-whom positions reveal a deeply interconnected financial system in which each sector fulfils distinct but interdependent roles. The time-series analysis captures recent trends in financial deepening, financialization, and growing global linkages. Overall, this *from-whom-to-whom* analysis offers new insights into the structure of South Africa's financial network and the conditions under which it can fund key investments for sustainable long-term growth.

Key words: from-whom-to-whom matrix, financial stock positions, financial networks, sectoral financial accounts, financial deepening, corporate financialization, South African economy

JEL classification: E01, E44, G15, O55

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1 Introduction

Macroeconomic stability and effective policy design depend on understanding balance sheets—who borrows from and lends to whom, through which instruments, and at what scale. Aggregate indicators can conceal interdependencies, leverage, maturity, and currency mismatches that propagate shocks (Setser et al., 2002) or influence economic behaviours. For instance, when private or public balance sheets deteriorate, firms and households retrench, investment stalls, and recoveries weaken, as in ‘balance sheet recessions’ (Koo, 2011, 2013). Financial frictions embedded in sectoral balance sheets can also shape the transmission of monetary and fiscal policy (Calvo et al., 2004; 2006; Eggertsson & Krugman, 2012; Borio & Zhu, 2012). A disaggregated lens that tracks gross and net exposures across sectors is therefore essential for assessing systemic risk and capital allocation.

This imperative can be even sharper in developing and emerging economies. External shocks—sudden stops, terms-of-trade swings, global risk-off episodes—harm growth most when they interact with fragile domestic balance sheets (Mishkin, 1999). Cross-border banking and portfolio flows transmit liquidity booms and busts (Bruno & Shin, 2015; Lane, 2013); large equity inflows can inflate asset prices and raise crisis risk even without domestic credit booms (Caballero, 2016). Currency hierarchies and ‘original sin redux’ mean that exchange-rate depreciations can trigger sell-offs of local-currency assets, worsening outflows and instability (De Paula et al., 2024). In such contexts, diagnosing vulnerabilities requires looking through sectoral balance sheets, not just at macro aggregates.

South Africa exemplifies both the opportunity and the risk. It has a sophisticated but concentrated banking system alongside large non-bank financial institutions (NBFIs), notably pension funds and insurers, that intermediate long-term savings (Bara et al., 2017). The economy is tightly coupled to the global financial cycle (Magubane & Mncayi-Makhanya, 2025): swings in foreign portfolio sentiment have repeatedly moved domestic liquidity and credit conditions, from the 2008 crisis through the 2015 sell-off and the COVID-19 shock (Wang et al., 2022; Meerholz, 2023). Policymakers have responded with reserve accumulation and a macroprudential toolkit—including countercyclical buffers—to smooth procyclicality (Hollander & Van Lill, 2019; Gumata & Ndou, 2021), but fiscal constraints and rising sovereign risk premia complicate stabilization (Loewald et al., 2020). These features make the composition and interlinkages of balance sheets—public, corporate, household, bank, NBFI, and external—central to macro-financial resilience.

They are also central to South Africa’s development challenge: financing climate-compatible investment in the water-energy-food (WEF) nexus. Recent assessments point to a multi-trillion-rand requirement over coming decades to secure energy, water, and food infrastructures in face of climate change (Development Bank of Southern Africa et al., 2025a, 2025b, 2025c; World Bank, 2023, Engelbrecht & al., 2024). Yet prevailing incentives and portfolio norms channel a modest share of institutional assets to the real economy—and even less to infrastructure—leaving South Africa an outlier relative to peers (Swilling & Murau, 2025). On the banking side, liquidity and risk-weight regulations can tilt balance sheets toward government securities rather than riskier project finance (Loewald et al., 2020). Aligning prudential rules and classification (e.g., treating qualifying green bonds as high-quality liquid assets) could crowd in private finance, but effective design requires precision about which balance sheets can expand, by how much, and through which instruments without generating new systemic risks.

The importance of balance sheets-related dynamics has notably been analysed in the South African context using a Stock-Flow Consistent (SFC) model that captures the interconnections between all balance sheets in the economy (Makrelov et al. 2018). This model also integrates economic activity, asset price fluctuations, bank capital, risk perceptions in the financial sector, and lending spreads (the gap between the loan rate and the repo rate), thereby incorporating some of the mechanisms identified by Woodford (2010) and Borio and Zhu (2012). It has been used to illustrate the role of balance sheet dynamics in understanding fiscal multipliers (Makrelov et al. 2020; Van Rensburg et al. 2022), leverage ratios (Makrelov et al. 2021), and capital flow reversals (Makrelov et al. 2022). The model highlights that cyclical flow changes have long-term effects on financial wealth, reinforcing the importance of tracking institutional asset-liability structures (Makrelov et al. 2018).

That precision is what a from-whom-to-whom (W2W) perspective provides (Hagino & Kim, 2021). The W2W accounting framework maps financial assets and liabilities by instrument (deposits, loans, debt securities, equity, insurance/pension entitlements, derivatives, other accounts) and by counterpart sector (who holds, who issues). It thus reveals the network of intermediation, funding bottlenecks, maturity and currency exposures, and potential contagion paths. International experience shows its value: W2W has been used to identify financial fragility transmission channels (Castrén & Kavonius, 2009, Girón & al., 2018), quantify systemic interlinkages in Financial Social Accounting Matrices (Pedauga et al., 2023, Aray & al., 2017), and incorporate bank–NBFI liquidity chains into risk surveillance (Acharya et al., 2024). Asset–liability matrix approaches clarify how evolving dependencies shape asset prices and cross-border flows (Tsujimura & Tsujimura, 2008, 2018). The Federal Reserve has embedded W2W links into official U.S. financial accounts (Batty et al., 2023), and—consistent with the G20 Data Gaps Initiative and IMF guidance that call on countries to compile from-whom-to-whom sectoral accounts—many jurisdictions are now developing W2W datasets as part of their core macro-financial statistics.

Applied to South Africa, W2W data enable three tasks that are otherwise difficult to perform. First, they help identify the principal balance sheets—banks, pension funds, insurers, public entities, and foreign investors—that provide financing to government, corporates, and households through different instruments, and reveal where potential capacity or ‘elasticity space’ exists to expand investment in the water–energy–food (WEF) nexus. Second, they allow the tracing of risk transmission: how shocks (for example, rising term premia on sovereign debt) reprice portfolios and propagate through funding markets, with consequences for bank capital adequacy, NBFI liquidity, and credit supply. Third, they clarify the channels through which policy measures operate: by showing how regulatory adjustments (e.g., changes in risk weights, liquidity treatment, or investment limits) reshape funding flows, W2W evidence supports the calibration of macroprudential, and development-finance interventions aimed at mobilizing climate-compatible investment while maintaining systemic stability.

In sum, analysing balance sheets through a W2W perspective is indispensable for macro-financial management in emerging economies, and nowhere more so than in South Africa, where financing a just and resilient WEF transition must be achieved under tight fiscal and macroprudential constraints. A granular W2W mapping of ‘who funds whom, and through which instruments’ provides the empirical basis for diagnosing vulnerabilities, informing policy reforms, and mobilizing both public and private capital at the scale required by the transition.

In this regard, the paper makes two main contributions. First, it constructs a detailed W2W financial stock dataset for South Africa, systematically mapping financial intermediation and inter-sectoral linkages across seven institutional sectors and multiple instrument types. Second, it applies a macro-financial lens to analyse South Africa’s financial network, providing empirical evidence on how its

composition and structure have evolved over the past decade. The analysis highlights trends such as financial deepening, emerging financialization patterns, and shifting exposures to global capital flows, offering new insights into the conditions under which South Africa's financial system can fund long-term investment needs—including those linked to sustainable development and climate transitions—while preserving stability.

The remainder of the paper is organized as follows. Section 2 describes the construction of the dataset, including data sources, methodology, and accuracy checks. Section 3 presents the empirical findings, with a 2021 snapshot of South Africa's financial structure and a decade-long view of sectoral trends. Section 4 discusses emerging structural patterns shaping South Africa's financial dynamics, and Section 5 concludes with key insights and policy implications.

2 Construction of the whom-to-whom financial stocks data

2.1 Whom-to-whom accounting of financial stocks

W2W accounting is a framework for organizing financial data by linking the asset and liability positions of institutional sectors (United Nations, 2015). It improves understanding of inter-sectoral relationships by explicitly identifying the counterpart sector for each financial transaction or stock, enabling detailed analysis of financial interconnectedness and supporting macroeconomic and financial stability assessments.

W2W can capture both *stocks* (the value of financial instruments held at a given point in time, such as year-end balance sheets) and *flows* (transactions, revaluations, and other changes affecting these stocks over a period). It extends traditional balance sheet datasets—two dimensions of assets vs. liabilities and type of instrument—by adding a third dimension: the counterpart sector.

The three dimensions thus are:

- The institutional sectors holding the financial asset (creditors).
- The institutional sectors issuing the liability (debtors).
- Financial instruments (e.g., loans, equity, bonds, deposits) used in the transactions or held as stocks.

This structure ensures a clear mapping of 'who owes what to whom' across the economy.

2.2 Structure of the W2W framework for South Africa

We categorize economic agents into distinct institutional sectors, consistent with international standards like the System of National Accounts (SNA) and tailored for South Africa (SARB, 2024). They include:

- Non-financial corporations (NFCs)

- Financial corporations further divided into two types of agents:
 - Banks
 - Non-bank financial institutions (NBFIs) such as pension funds, insurance corporations, investment funds, mutual funds...
- General government
- Households
- Rest of the world (RoW)

We categorize financial instruments (assets and liabilities) consistently with the SNA. They include:

- Gold and other foreign reserves
- Deposits
- Debt securities
- Loans further divided into
 - Mortgage
 - Non-mortgage (commercial loans)
- Equity and investment fund shares
- Insurance, pension and standardized guarantee schemes
- Financial derivatives and employee stock options
- Other accounts receivable/payable.

In addition to this list of instrument categories, we differentiate between ZAR-denominated and foreign currencies-denominated instruments.

In this study we deal with stocks at market value. This means that, when comparing the same item (a triplet of instrument, issuer and holder) at two different points in time, three types of changes are intertwined: financial transactions (or Flows of Funds, FoF), re-evaluation (changes in the prices of assets), and other change in the volume of assets and liabilities (e.g., non-performing-loans).

2.3 Data sources and construction process

We constructed the W2W financial stocks data for South Africa using a parsimonious process of data collection, interpretation, and cross-referencing, primarily relying on the SARB's *Quarterly Bulletin* (QB) publications. This involved searching and extracting relevant financial information, interpreting sectoral and financial allocations, and reconciling values to ensure consistency. The principal operation that we based our calculations on was the sum of the QB values. Additionally, we used a filtered version of the SARB's Financial Balance Sheet and Accumulation Accounts¹ (FBSAA) to compute a few weighting factors which facilitated the distribution of some aggregated QB values across institutional sectors and instruments. The resulting series covers the period between 2010 and 2021.

¹ It is important to note that while the FBSAA experimental data and QB aggregates are not directly comparable due to differences in compilation methodologies, classification schemes for financial instruments and institutional sectors, and the balancing status of the datasets, the use of FBSAA data provides a structured and internally consistent representation of sectoral financial stocks. This balanced nature, despite methodological divergences, offers a useful reference point for distributing certain QB items in relative terms. However, caution is required in interpreting absolute values, and any discrepancies between the two sources should be considered when analysing results.

Table 1 presents (a part of) the KBP-based formulas (codes used in the QBs) for 82 items of the W2W matrix (a triplet of instrument, issuer and holder) that result from this process. For confidentiality reasons, the rest of the table is not publicly available but can be shared upon request.

Table 1: Summary of W2W financial positions expressed as QB KBP codes

Item	Holder Sector	Issuer Sector	Instrument	Formula
1	Banks	GoV	Debt securities in domestic currency	KBP4082+KBP4153+KBP4162
2	NBFIs	GoV	Debt securities in domestic currency	KBP4150+KBP4160+KBP2795+KBP2877+KBP2813+KBP2701+KBP2740+KBP2776-KBP4675-KBP4662-KBP4974-KBP4975-KBP4976
3	SARB	GoV	Debt securities in domestic currency	KBP1027
4	RoW	GoV	Debt securities in domestic currency	KBP5554-MSFL5
5	NFC	Banks	Currency and deposits in domestic currency	KBP1042+KBP1145+(KBP1147-(KBP2794+KBP2876+KBP2812+KBP2700+KBP2845+KBP2739+KBP2775))
6	Banks	Banks	Currency and deposits in domestic currency	KBP1153+KBP1155
7	Banks	SARB	Currency and deposits in domestic currency	KBP1067+KBP1100+KBP1102
8	NBFIs	Banks	Currency and deposits in domestic currency	KBP2794+KBP2876+KBP2812+KBP2700+KBP2845+KBP2739+KBP2775
9	SARB	Banks	Currency and deposits in domestic currency	KBP1155
10	GoV	Banks	Currency and deposits in domestic currency	KBP1053+KBP1143+KBP1144
11	Households	Banks	Currency and deposits in domestic currency	KBP1154
12	RoW	Banks	Currency and deposits in domestic currency	KBP1047+KBP1152
13	Banks	NFC	Loans in foreign currency	KBP1120*L_dnbps_NFC
14	Banks	NBFIs	Loans in foreign currency	KBP1120*L_dnbps_nbFC
Continues...				

Source: Authors' own construction.

Here are some explanations related to those shown in the above table:

- Government debt securities in domestic currencies were disaggregated into R929 billion held by commercial banks (item 1 in Table 1), R2 216 billion by non-bank financial corporations (item 2), R41 billion by the SARB (item 3), and R811 billion by the Rest of the World (item 4). To achieve this breakdown, data from the Public Finance and External Economic Accounts sections of the QB were instrumental in identifying the holders of government debt.
- Another case involved specifying the sectoral distribution of deposits held with commercial banks or identifying the types of loans and their borrowers. In these instances (items 5 to 12), figures were drawn from the Money and Banking and Capital Market publications of the QB, which provided detailed information on the composition of financial instruments and their holders.
- Foreign currency loans and advances granted by domestic banks (KBP1120) have been allocated between NFCs and NBFIs (items 13 and 14) based on the relative share of these two sectors in loan liabilities on their balance sheets (source: FBSAA). This allocation rule thus assumes a similar proportionality of borrowing in domestic and foreign currency within these sectors and that only these two sectors borrow in foreign currency. To express it more explicitly than in the table:

$$\text{Loans in FX of NFC} = \text{KBP1120} * (\text{Loans on the liability side of NFCs' BS} / (\text{Loans on the liability side of NFCs' BS} + \text{Loans on the liability side of NBFIs' BS}))$$

- Other financial relationships denominated in foreign currencies are based on values from the 'Maturity structure of foreign currency-denominated debt' table (KB525 of the QB's External Accounts), abbreviated by MSFL in table X (see for instance item 4). When using this table, we assumed that the sector 'Public corporations' comprise solely *financial* state-owned enterprises, thus assigned to the sector NBFIs, which probably implies an underestimation of the debt issued in FX by non-financial corporations.

Overall, by carefully reconciling data from multiple publications of the SARB's Quarterly Bulletin and applying consistent allocation rules, we provide a dataset of W2W financial stocks for South Africa. As it will be shown in the result section below, the data provides a robust and transparent mapping of the country's intersectoral financial positions at the macroeconomic level, offering a valuable foundation for further analysis and methodological refinements as more detailed data become available.

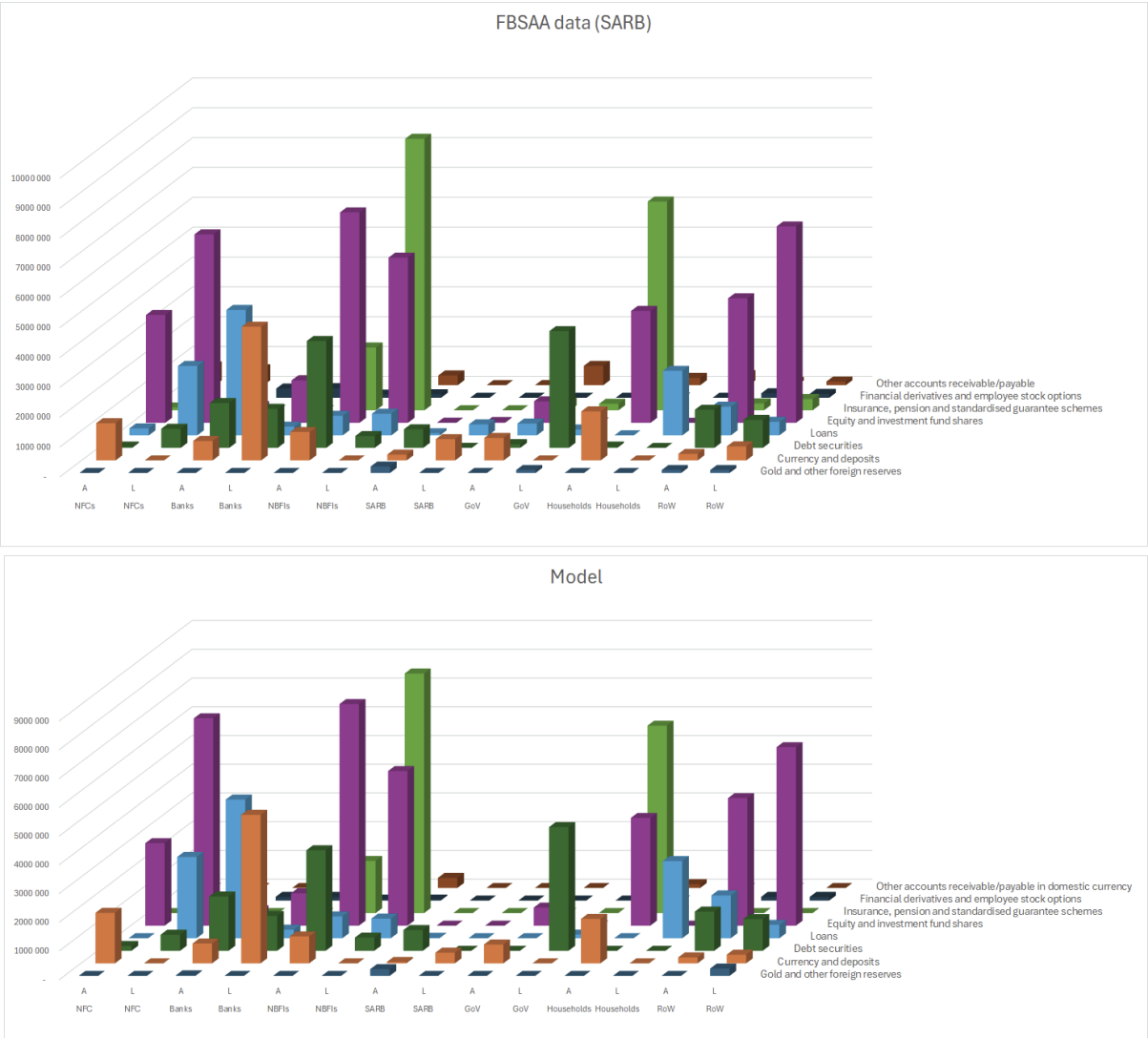
2.4 Accuracy check and principal limitations

Before presenting the analysis, we conduct an accuracy check and outline limitations of the database.

For the accuracy check, we compare consolidated forms of the constructed (or 'modelled' thereafter) W2W data with two benchmark datasets: the FBSAA balance sheets and the aggregated W2W table provided by the SARB's 2021 *Quarterly Bulletin* Experimental tables. Figure 1 compares the modelled data –consolidated as two-dimensional (sectors; instruments) balance sheets – with the FBSAA.

Table 2 compares the modelled data, aggregated as a W2W table consolidating all assets and liabilities, with the SARB 2021 QB's Experimental W2W table.

Figure 1: Balance sheets of institutional sectors from FBSAA data vs. modelled (2021) in R' million



Source: SARB, own calculations.

Table 2: From-whom-to-whom market value positions of total financial assets and liabilities between institutional sectors from QB's Experimental table (SARB) vs. modelled (2021) in R' million

Experimental table value (Model value)	Non-financial corporations	Financial corporations	General government	Households	Rest of the world	Total assets
Non-financial corporations	207 249 (32 305)	1 856 107 (1 755 652)	195 972 (-)	75 046 (-)	3 527 596 (3 036 851)	5 861 970 (4 824 808)
Financial corporations	4 028 704 (3 553 977)	10 025 644 (9 209 046)	3 063 887 (3 200 375)	2 215 175 (2 682 788)	5 279 420 (5 421 169)	24 729 298 (24 067 356)
General government	686 516 (628 341)	1 616 392 (654 980)	404 511 (-)	229 885 (-)	19 074 (24)	2 956 378 (1 283 345)
Households	2 589 852 (2 746 488)	9 571 739 (9 198 529)	323 511 (-)	93 (-)	231 996 (-)	12 717 191 (11 945 017)
Rest of the world	3 612 200 (3 671 709)	2 213 105 (2 718 981)	1 003 543 (1 229 355)	- (-)	- (-)	6 828 848 (7 620 045)
Total liabilities	11 124 521 (10 632 820)	25 282 987 (23 537 188)	4 991 423 (4 429 730)	2 520 198 (2 682 788)	9 058 086 (8 458 045)	- (-)

Source: SARB and own calculations

To assess the overall accuracy of the modelled data, we compared the modelled matrices with their corresponding benchmarks. Correlation coefficients are 0.9894 and 0.9968 for the two comparisons, indicating a very high degree of linear similarity. This suggests that high values in one matrix correspond proportionally to high values in the other, preserving a near identical structure.

Additionally, the Kullback–Liebler (KL) divergence (a distance metric that quantifies the difference between two probability distributions, where 0 indicates identical distributions) values are 0.3 (FBSAA BSs comparison) and 0.05 (aggregated W2W comparison), confirming that while the matrices are not identical, they are close. The divergence likely stems from small local deviations (hence a higher KL value for the FBSAA BSs comparison) rather than large-scale structural differences (hence a small KL value with respect to the aggregated W2W comparison), meaning that while the overall numerical patterns are highly similar, there are local divergences (about which we elaborate above).

A major issue concerns *Other Payables/Receivables* for NFCs, NBFIs, the Government, and Households. While this instrument is partially captured for NBFIs—though with some aggregation issues in the Quarterly Bulletin (QB2) Capital Market, where it is combined with Financial Derivatives—but it is significantly underestimated for NFCs and the Government. The missing amount is estimated to be about ZAR 600 billion on both asset and liabilities sides of these sectors balance sheets. Potential data sources to improve this estimation include data from Non-Financial Public Enterprises and Corporations (KBP4671, KBP4613), Financial Public Enterprises and Corporations (KBP4517, KBP4541), and Annual Financial Statistics for NFCs and Financial Corporations. Another method is to use FBSAA stock values weighted by input–output relationships, assuming proportionality between payables/receivables and trade flows.

Financial Derivatives are also difficult to capture across sectors; for NBFIs, they are consolidated with Other Payables in QB2 Capital Market, limiting the precision of sectoral allocation. Financial Assets held by NFCs also pose challenges—equities are assumed to be exclusively foreign, but this residual-

based estimate is unreliable. Government financial assets, including payables, loans, debt securities, and insurance pension schemes, appear to be undervalued or missing in some cases. A further discrepancy arises from the absence of notes and coins, which may contribute to imbalances in the liability side of the SARB's balance sheet.

Loans present multiple inconsistencies: underestimation of loan assets held by NFCs, underestimation of SARB loan liabilities, and overestimation of loans from the RoW. Equities show valuation and sectoral allocation issues, with likely overestimation of NFC-issued equities and underestimation of NFC-held equities. The issuer of equities held by NFCs is often not clearly identified, leading to potential classification errors.

These deficiencies highlight areas where improved data sources and methodology could enhance the accuracy of financial stock estimates and ensuring a more precise representation of South Africa's financial interconnections. The main challenges encountered and limitations in the data sources can be summarized as follows.

- Ambiguity in some descriptions and sector classifications, some financial instruments are labelled in a way that makes it unclear which specific sectors they correspond to, leading to potential misclassification and inconsistencies in sectoral attributions.
- Excessive sectoral consolidation, where several financial items are grouped under broad categories that lack sufficient granularity. For example, classifications such as '*Domestic Private Sector*,' '*Private Non-Banking Sector*', and '*Other Companies and Close Corporations*' make it difficult to precisely allocate financial positions across institutional sectors. This lack of sub-sector breakdowns complicates the mapping of financial interconnections and increases the risk of aggregation errors.
- Limited data on foreign currency-denominated financial stocks. Information on assets and liabilities denominated in foreign currencies is scarce, restricting the ability to assess exposure to exchange rate fluctuations and international financial risks accurately.

These limitations introduce challenges in achieving a fully detailed and sectorally disaggregated W2W framework, emphasizing the need for improved financial reporting standards and more granular sectoral classifications in national financial accounts.

3 Analysis

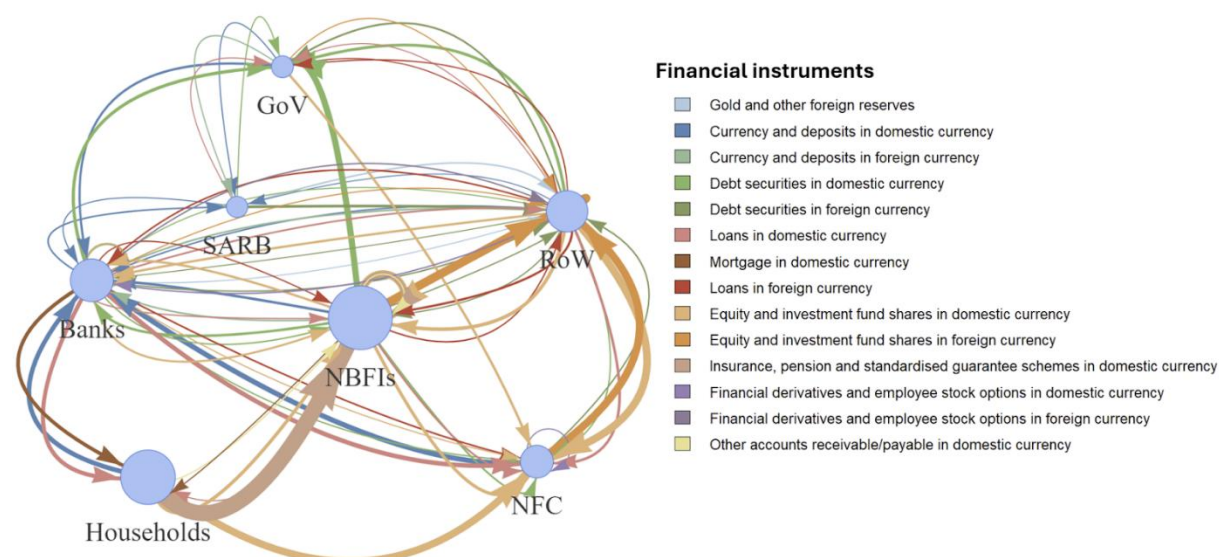
This section first provides an overview of the macro financial network of South Africa in 2021, our latest data point, mapping the financial structure of the economy. It then describes how these relationships have evolved over the past decade.

3.1 The 2021's financial structure of the South African economy

Figure 2 shows the from-whom-to-whom network (relationships) across seven sectors and all major instrument categories for 2021. Each node is a sector (node size $\propto$ that sector's total financial assets). Each directed link is a financial claim from one sector on another (link thickness $\propto$ claim value), with instrument types distinguished by colour. For example, a dark-blue link from Households to Banks

denotes household deposits held at banks (an asset for households and a liability for banks). Table 3 reports the values of bilateral exposures as a percent of 2021 GDP (R6.2 trillion), enabling comparison of position magnitudes relative to the size of the economy.

Figure 2: South Africa's from-whom-to-whom financial relationships across financial instruments (2021)



Source: see section 3, own calculations.

Table 3: South Africa's from-whom-to-whom financial relationships across financial instruments (2021) in a table format expressed as % of GDP at the current price

Year: 2021; Unit: % of GDP		Holder sectors						
Instrument	Issuer sector	Banks	SARB	NFC	NBFIs	Government	Households	RoW
Gold and other foreign	RoW	0%	4%					
Currency and deposits in domestic currency	Banks	3%	1%	28%	11%	8%	25%	3%
	SARB	4%				1%		0%
Currency and deposits in foreign currency	RoW	5%						
	Banks				4%			
	SARB					1%		
Debt securities in domestic currency	NFC	2%			5%			2%
	Banks	9%			11%			0%
	NBFIs	3%			3%			
	Government	15%	1%		36%			13%
Debt securities in foreign currency	RoW	2%	11%	3%	2%			
	Banks							0%
	NBFIs							2%
	Government							5%
Loans in domestic currency	NFC	24%			6%			11%
	Banks	1%	0%					
	NBFIs	2%			3%			
	Households	22%			0%			
	RoW	5%						
	Government		0%					0%
Mortgage in domestic	Households	18%			1%			

Loans in foreign currency	NFC	5%						
	NBFIs	1%						8%
	RoW				3%	0%		
	Banks							3%
	Government							2%
Equity and investment fund shares in domestic currency	NFC	1%			15%	10%	44%	46%
	Banks	1%			9%		0%	9%
	NBFIs	7%			47%		16%	17%
	SARB						0%	
Equity and investment fund shares in foreign	RoW	0%		46%	54%	0%	0%	
Insurance, pension and standardized guarantee schemes in domestic	NBFIs				29%		105%	
Financial derivatives and employee stock options in domestic currency	NFC			1%				
	NBFIs				1%			
	Banks							2%
	RoW	2%						
Other accounts	NBFIs				3%		2%	

Source: see section 3, own calculations.

The 2021 W2W network shows an interconnected financial system with several dominant links. NBFIs are the largest sector by balance-sheet size, reflecting extensive assets managed by pension funds, insurers, and other investment vehicles. In 2021 NBFIs held ~R14.8 trillion (≈240% of GDP) in financial assets, mainly equities and debt securities, indicating much of NBFIs funds are channelled into corporate stocks and bonds. On the liabilities side, NBFIs are characterized largely by insurance and pension schemes (the obligations to policyholders and pension contributors), totalling ~R15.4 trillion (≈250% of GDP). This underscores the central role of pension funds and insurance companies within the NBFI sector, as repositories of long-term household savings.

Households are the second-largest sector by asset holdings, holding ~R11.9 trillion (≈190% of GDP) in financial assets in 2021. Banks follow with ~R8.5 trillion (≈140% of GDP), and the RoW holds claims on South African assets of ~R7.6 trillion (≈120% of GDP). NFCs hold fewer financial assets, ~R4.7 trillion (≈70% of GDP), as they primarily hold physical assets and a limited range of financial instruments (e.g., deposits, equities). On the liability side, NFCs are major borrowers, with total liabilities ~172% of GDP in 2021 (as will be detailed, comprising equity and debt owed to various sectors). Government liabilities total ~R4.4 trillion (≈71% of GDP), mostly debt securities.

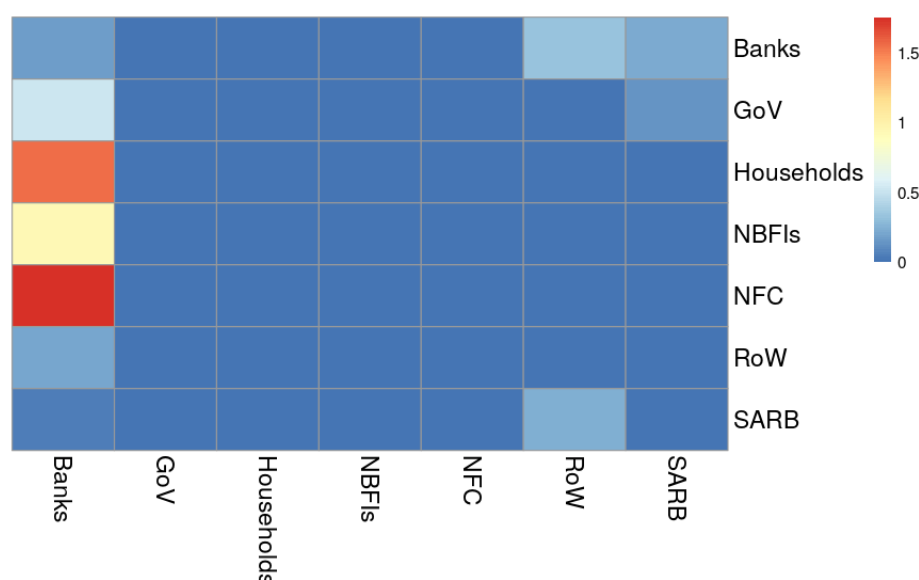
In terms of financial instruments, the three largest categories in 2021 were: (1) Equity and investment fund shares denominated in domestic currency (~R13.7 trillion), (2) Insurance/pension entitlements (IPS) in domestic currency (~R8.3 trillion), and (3) Equity and investment fund shares in foreign currency (~R6.2 trillion). Equities are especially prominent in the relationships between Households and NFCs (households own corporate stock) and between NBFIs, NFCs, and the RoW. Government bonds constitute another substantial portion of claims and are widely held across domestic sectors (especially by NBFIs and banks) and by foreign investors. Bank loans are an important instrument connecting banks with households and corporates as borrowers.

To distil the complexity of Figure 2 and highlight the main financial linkages of the South African economy, we group the multitude of instrument-specific networks into three broader sub-networks based on instrument characteristics: Liquidity instruments, Debt instruments, and Ownership instruments. Liquidity instruments (short-term, money-like assets) include bank deposits and reserves; debt instruments (fixed-income claims) include loans, bonds (debt securities), and other payables;

ownership instruments (long-term claims representing ownership or contingent ownership) include equity, investment fund shares, insurance and pension claims, and financial derivatives. This group claims into categories that have a close economic function, even if it sacrifices some granularity. We present these sub-networks in the form of heatmaps, that, in terms of graph theory ([Cook et al., 2016](#)) are their adjacency matrices and that show the intensity of exposure from each holder (rows) to each issuer (columns) for the category in question.

South Africa's liquidity network is highly concentrated in the banking sector, which serve as the primary depository for most other sectors' liquid assets. In the liquidity heatmap, the Banks column shows large values across NFCs, Households, NBFIs, Government, and the RoW, reflecting substantial deposits. This illustrates the sector's pivotal role as custodian of liquidity – virtually all sectors rely on banks for value storage and payment services. The other component of the liquidity network is reserves: domestic banks hold reserves at the SARB, while the SARB holds foreign reserves (claims on the RoW). In the heatmap, these appear as large values in the SARB column (reserves provided to banks and government) and in the RoW column (foreign reserves held by the SARB).

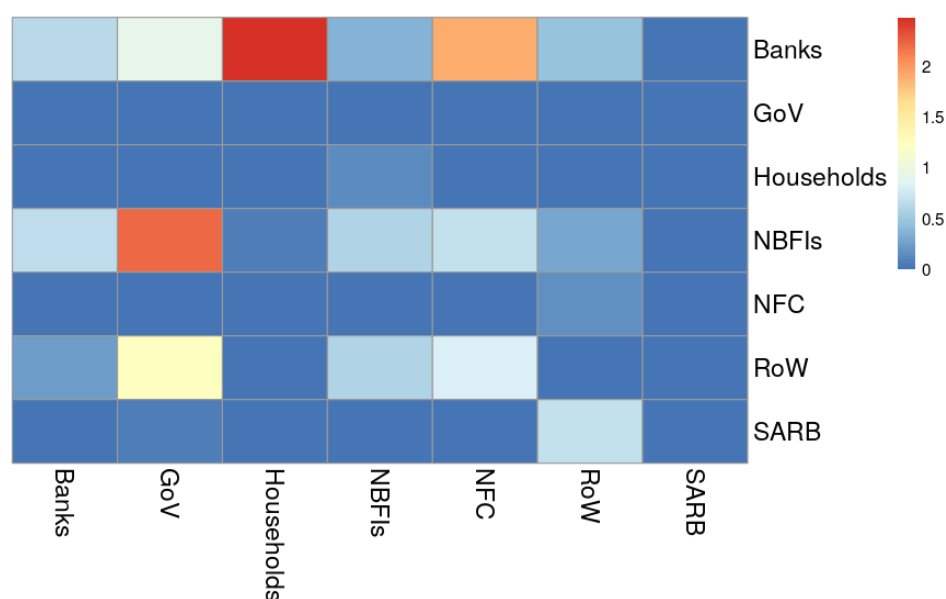
Figure 3: Heatmap of the liquidity-related instruments network



Source: see section 3, own calculations (in trillion).

In the debt network, a different pattern of intermediation emerges where banks remain central but in a different role. Instead of issuers of liabilities, they act as providers of loans (i.e. as holders of debt assets). In the heatmap, the Banks row shows significant exposures to Households and NFCs, reflecting mortgages, personal loans, and corporate lending. Government is a major debt issuer: the Government column is large in the Banks and NBFIs rows, indicating both sectors hold substantial government debt securities. Finally, it is interesting to note that the SARB owns debt securities from the RoW as part of its foreign reserves stock. This interplay demonstrates how debt instruments support both private and public sector financing in South Africa, with multiple institutional channels contributing to the overall debt landscape.

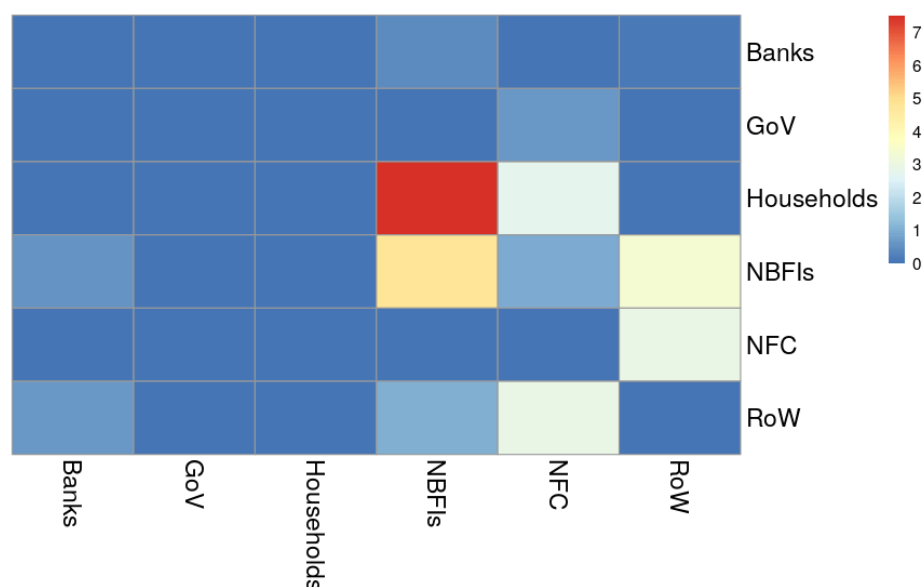
Figure 4: Heatmap of the debt-related instruments network



Source: see section 3, own calculations (unit: trillion).

The ownership network captures equity and other long-term claims. NBFIs stand out both as major holders and issuers. They hold large equity stakes in other sectors, including equities issued by NFCs and the RoW, while also issuing claims in the form of pension entitlements and fund shares held by households as savings. NFCs stand out as issuers of equity, held by households, banks, NBFIs, and the RoW, while also holding foreign-issued equity themselves. Finally, we observe public ownership of some enterprises within the NFC sector indicated by the cell connecting the row of the government and the column of NFCs.

Figure 5: Heatmap of the ownership-related instruments network



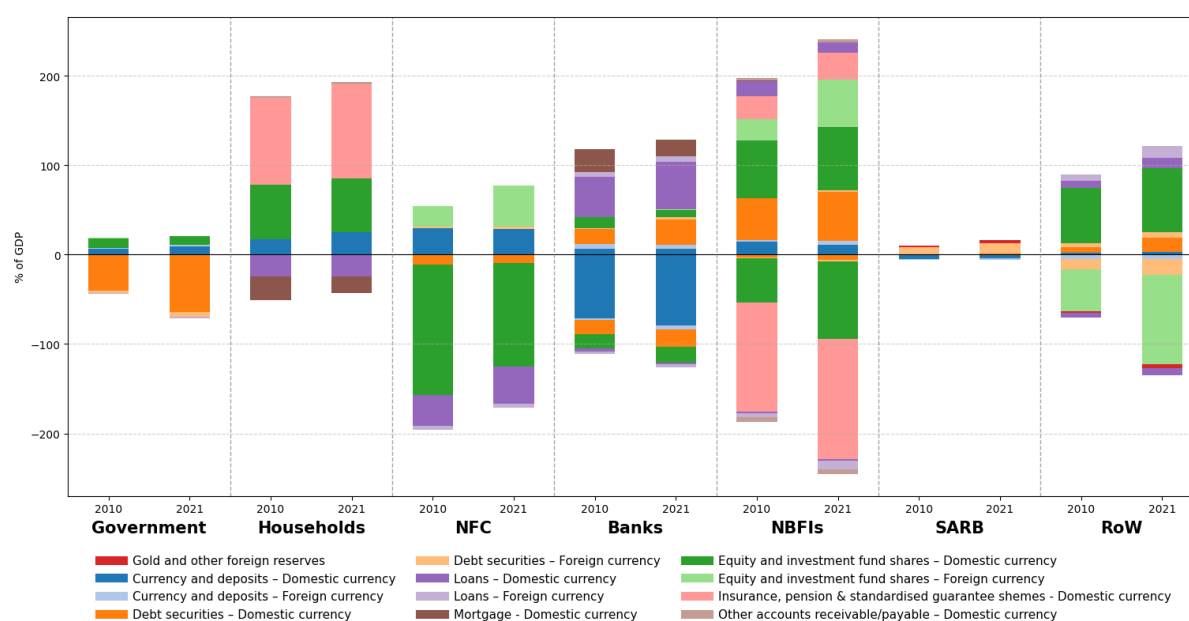
Source: see section 3, own calculations (unit: trillion).

In summary, South Africa's 2021 W2W financial relationships reveal a highly interconnected system with distinct yet interdependent institutional roles. The analysis highlights domestic and international linkages, key financial intermediaries, and sectoral interdependencies, providing a foundation for assessing macro-financial risks, policy interventions, and the system's resilience to economic and environmental challenges.

3.2 Changes in the financial structure of the South African economy over the last decade

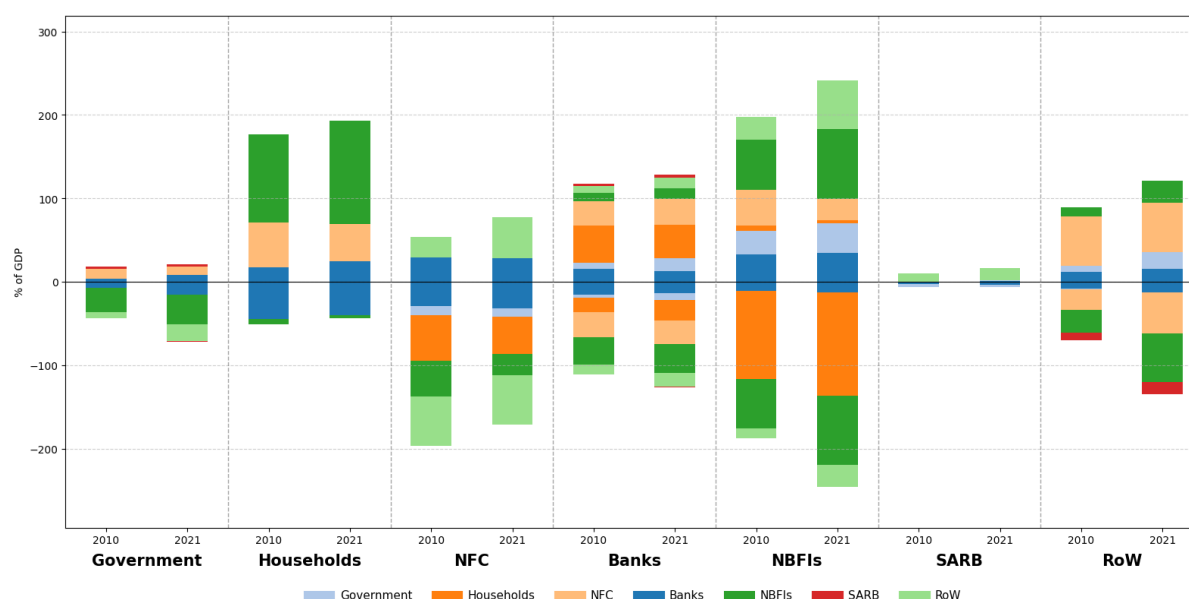
Total assets in the South African economy rose from R20.6 trillion in 2010 to R49.9 trillion in 2021, increasing from 6,7 times the GDP to 8,0 times of GDP. Figure 6 and Figure 7 show changes in the value and composition of sectoral assets and liabilities (as shares of GDP): Figure 6 highlights the shifts in financial instruments, while Figure 7 shows changes in counterpart sectors. Most balance sheets grew faster than GDP, except government assets and SARB liabilities (constant as a share of GDP), and household and NFC liabilities (which declined). Sectoral balance-sheet composition of financial instruments remained broadly stable, with some notable shifts discussed below.

Figure 6: Assets and liabilities: Financial instruments per institutional sector



Source: see section 3, own calculations.

Figure 7: Assets and liabilities: Financial counterparts per institutional sector

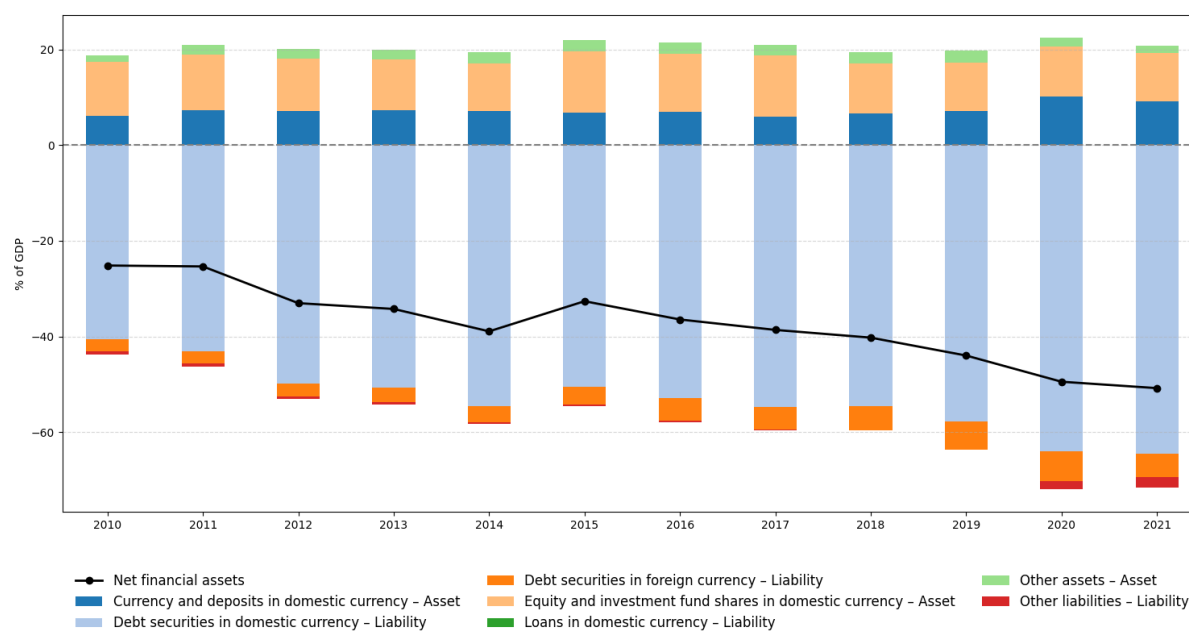


Source: see section 3, own calculations.

3.2.1 Government

Government-issued debt securities form a core component of South Africa's financial system, making up a large share of liabilities (and assets for other sectors). This role has grown from 44% of GDP in 2010 to 72% in 2021 (Figure 8).

Figure 8: Government assets and liabilities: Financial instruments



Source: see section 3, own calculations.

Domestic financial institutions dominate holdings of government debt securities: in 2021, banks held 22% of government debt (14% of GDP), reflecting their role in absorbing safe assets to meet liquidity rules (Loewald et al., 2020), while NBFIs were the largest holders with 58% (36% of GDP), underscoring their role as long-term investors such as pension fund, savings and investments. Households had no direct exposure, relying instead on indirect exposure via pension funds and other NBFIs.

Foreign investors held 26% of government debt securities (18% of GDP), reflecting integration into global financial markets and reliance on external funding sources. Only 8% of government debt (5% of GDP) was denominated in foreign currency despite the importance of foreign investors, limiting but not eliminating exchange-rate risk.

On the asset side, government held financial assets including deposits at domestic banks (8% of GDP) and the SARB (1%), plus equities in state-owned firms (10% of GDP). These holdings demonstrate the government's limited yet strategic involvement in the domestic financial system and remain a relatively constant share of GDP over time.

3.2.2 Households

Households act as both savers and borrowers within the economy. On the asset side, households held a significant portion of their wealth in liquid forms, where bank deposits at commercial banks rose from <20% to 25% of GDP between 2010–2021, with a sharp 2020 increase reflecting COVID-19 precautionary savings.

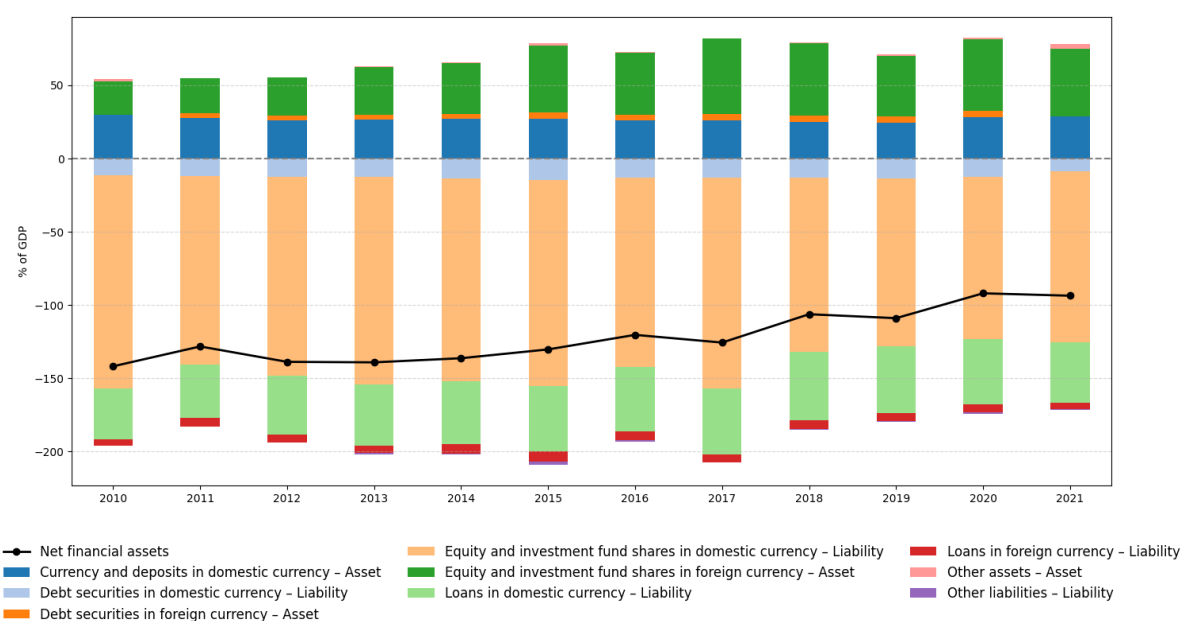
The primary household saving instrument is IPS, managed by NBFIs, rising from 97% of GDP in 2010 to 105% in 2021, showing their centrality in household savings. Households also owned equities issued predominantly by NFCs equities (44% of GDP) and NBFIs equities (16%) in 2021. Regulatory restrictions on foreign asset holdings for households (such as foreign capital and single discretionary allowances - Exchange Control Circular No. 6/2023, as well as currency conversion and reporting requirement - Currency and Exchanges guidelines for business entities, 2024) limited their direct participation in international financial markets, explaining the domestic focus of their financial portfolios. Over time, we can see an equity holding remaining at a relatively constant share of GDP at around 60%.

On the liability side, loans from commercial banks dominate. Mortgage debt declined (26% to 19% of GDP), while unsecured loans rose (19% to 22% of GDP), reflecting pressure on disposable incomes and weaker housing demand (Mokoena & Setshedi, 2024). Overall, household liabilities declined slightly (45% to 41% of GDP). Importantly, wealthier households tend to be net savers, while lower-income households borrow more (Daniels & Khan, 2019).

3.2.3 Non-financial corporations

In 2021, South African NFCs had a diverse financial structure, with a notable decline in liabilities (Figure 10). Equity fell from 145% of GDP in 2010 to 116% in 2021, reflecting stock market fluctuations, buybacks, and limited new issuance relative to GDP growth. This indicates corporate growth did not rely on proportional equity funding.

Figure 9: Non-financial corporations assets and liabilities: Financial instruments



Source: see section 3, own calculations

Despite the decline, equity remained the dominant liability, over two-thirds of NFC liabilities (70% of GDP). Households held the largest share (38% of NFC equity, 44% of GDP), followed by NBFIs (13%, 15% of GDP), government (9%, 10% of GDP), and foreign investors (40%, 46% of GDP), highlighting strong global integration.

Debt was also significant, especially loans (46% of GDP in 2021), rising from 39% in 2010 to 52% in 2015, then stabilizing before declining in 2020–21. Banks were the main lenders (29% of GDP), followed by foreign investors (11%) and NBFIs (6%). Debt securities were smaller (9% of GDP total), mostly held by NBFIs (5%), with banks and foreign investors each at 2%.

On the asset side, NFCs' holdings grew faster than GDP, particularly equities in foreign entities, which doubled since 2010 to 46% of GDP in 2021. They also held stable deposits in domestic banks (28% of GDP, from 29% in 2010), showing reliance on liquid assets for operations and contingency. Their portfolios also included debt securities and derivatives. Around R600 billion (13% of GDP in 2021) of 'other payables' are missing from both assets and liabilities.

Overall, NFCs balance domestic and foreign exposures, equity and debt financing, and strategic asset allocation. The trend is clear: liabilities fell relative to GDP, while financial assets increased, underscoring NFCs' dual role as both borrowers and savers, and their integration into global markets.

3.2.4 Banks and non-banks financial institutions

Together, banks and NBFIs form the backbone of South Africa's financial system: banks provide liquidity and credit intermediation, while NBFIs channel long-term savings to domestic and international markets (SARB, 2015). Their interdependence highlights the system's depth and complexity. Banks occupy a central role, serving as liquidity providers and financial intermediaries. Their assets stayed broadly stable relative to GDP, with spikes in 2015 and 2020 followed by

reversals. Liabilities grew slightly faster, from 116% of GDP in 2010 to 128% in 2021, driven mainly by post-COVID growth in domestic deposits.

On the **asset** side, banks extended loans equal to 29% of GDP to NFCs, 40% to households, and 5% to foreign borrowers in 2021, with 5% of GDP in NFC loans denominated in foreign currencies, exposing banks to foreign exchange risks. Banks also held 8% of GDP in government debt securities, 9% in other banks' debt, 3% in NBFIs, and smaller shares in foreign debt (2% of GDP) and equities (<1% of GDP). On the **liability** side, deposits dominate: 25% of GDP from households, 28% from NFCs, 11% from NBFIs, and 8% from government. Banks also owed 11% of GDP in debt securities (mostly to NBFIs) and 9% in equity, evenly split between NBFIs and foreign investors.

NBFIs primarily manage long-term savings and investments.² Their balance sheets expanded faster than GDP, with assets rising from 198% of GDP in 2010 to 242% in 2021, and liabilities from 193% to 248%. On the **liability** side, IPS were the largest component (105% of GDP in 2021), reflecting the dominance of pension funds. Equities grew fastest, from 50% of GDP in 2010 to 87% in 2021. NBFIs also issued debt securities (largely held by banks and other NBFIs) and borrowed 8% of GDP from foreign investors.

On the asset side, NBFIs increased domestic equity holdings from 65% to 70% of GDP between 2010 and 2021. By 2021, they held 47% of GDP in NBFIs equities, 15% in NFCs, and 9% in banks, reducing exposure to NFCs and expanding intra-sector holdings. Their foreign equity exposure surged to 54% of GDP, underscoring global diversification. Regulation 28 of the Pension Funds Act (National Treasury, 2022) now caps offshore exposure at 45% and sets limits across asset classes: 75% in equities, 25% in property, 15% in private equity, 10% in commodities, 10% in hedge funds, and 2.5% in excluded assets. It also allows up to 45% of retirement savings in infrastructure.

In debt markets, NBFIs were the largest holders of government securities (36% of GDP, or 51% of total liabilities in 2021, up from 29% in 2010). They also held 11% of GDP in bank-issued debt, 5% in NFC debt, and deposits in banks equal to 11% of GDP.

3.2.5 South Africa Reserve Bank

Although smaller in nominal size, the South African Reserve Bank (SARB) is pivotal to the financial system through monetary policy, liquidity provision, and foreign reserve management. Its balance sheet reflects both engagement in domestic markets and the management of international reserves.

On the asset side, SARB's reserves consist of gold, Special Drawing Rights (SDRs), foreign currencies, and foreign-issued debt securities. These rose sharply relative to GDP during COVID-19 (2020–21), underscoring its role in managing external liquidity risks, safeguarding financial stability. Domestically, during the COVID period, the SARB provided short-term liquidity to banks via advances equal to 1% of GDP. This measure effectively functioned as South Africa's home-grown form of

² It should be noted that the NBFIs category in our dataset is aggregated and does not differentiate between mainstream institutions (pension and insurance funds) and so-called 'shadow banks,' which include a wide range of investment funds (MAFs, FIFs, MMFs, hedge funds), finance companies, securitization vehicles, REITs, stokvels, and other intermediaries. While our dataset cannot 'see' this distinction, it is important context for interpreting the role of NBFIs in South Africa's financialization.

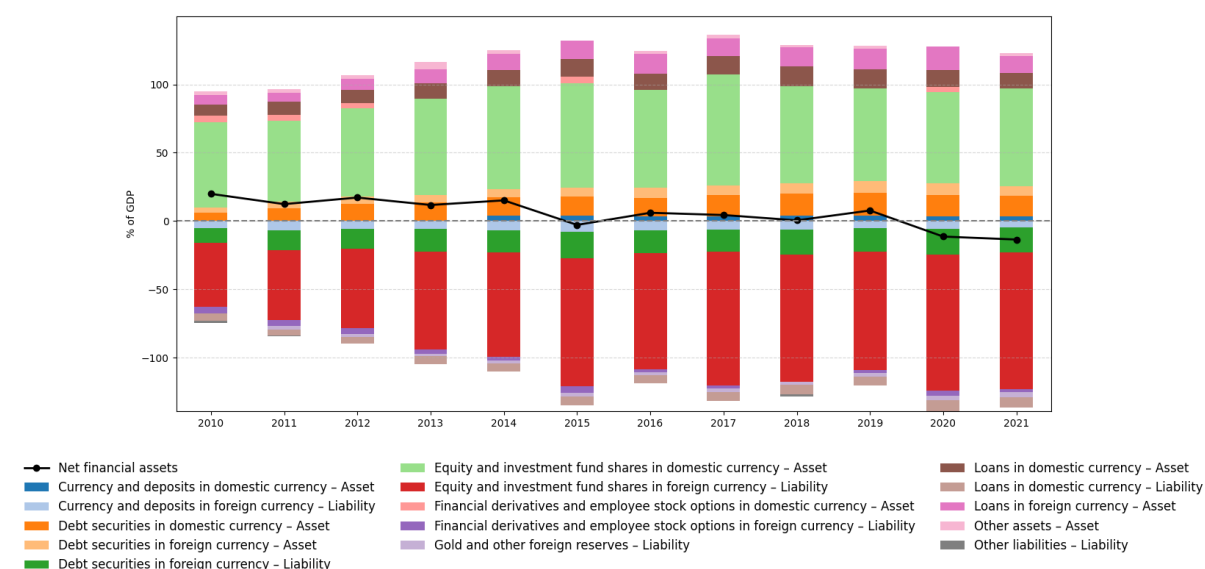
quantitative easing, albeit minimal in scale and implemented only once. On the liability side, SARB owed domestic-currency deposits from commercial banks, declining slightly from 5% of GDP in 2010 to 4% in 2021. These deposits are critical for the functioning of the payment system and serve as the primary channel for implementing monetary policy. The trend for foreign currency deposits sees an increase from 2010 until 2016, and then a reversed trend until 2021.

3.2.6 Rest of the World

South Africa's cross-border financial relationships show its increasing integration into global markets, with strong interactions between domestic sectors and foreign investors on both the asset and liability sides. Both rose relative to GDP, but liabilities (South African investments abroad) grew faster than assets, indicating that domestic entities invested more abroad than foreigners invested in South Africa.

Between 2010 and 2021, RoW assets as a share of GDP rose steadily (Figure 10). The largest share was equities and investment fund shares in domestic currency, which increased from 62% of GDP in 2010 to 71% in 2021, though inflows stagnated after 2016. In 2021, foreign investors held 46% of GDP in NFC equities, 17% in NBFIs equities, and 9% in bank equities. Debt securities in domestic currency were the second-largest category, growing from 6% to 15% of GDP. Demand was supported by high yields, financial stability, portfolio diversification, and South Africa's standing as a leading emerging market. Foreign holdings of government debt reached 18% of GDP (26% of total government debt securities) in 2021. Investors also held 11% of GDP in loans to NFCs and 2% in NFC-issued debt securities. FX-denominated liabilities remained moderate: in 2021, NBFIs owed 8% of GDP in foreign-currency loans and banks 3%.

Figure 10: RoW assets and liabilities: Financial instruments



Source: see section 3, own calculations.

On the asset side, South African sectors held substantial foreign-issued assets, mainly equities. NBFIs were the largest holders, with foreign equities rising from 24% of GDP in 2010 to 54% in 2021, reflecting outward investment strategies and the recycling of domestic savings. NFCs also expanded their holdings from 23% to 46% of GDP over the same period, underscoring the outward orientation of

their portfolios. The trend shows rapid growth between 2010 and 2015, followed by relative stability thereafter.

Banks and non-financial institutions held sizeable foreign-currency deposits, 5% of GDP in foreign banks and 4% in domestic banks. Banks also held 10% of GDP in other foreign-currency assets: 2% in debt securities, 2% in financial derivatives, and loans extended in foreign currency to non-financial corporations (5%) and to non-bank financial institutions (1%). The South African Reserve Bank held foreign-issued instruments equal to 14.8% of GDP—including gold, reserves, and debt securities—reflecting its role in reserve management.

Overall, despite only moderate exposure to foreign-currency assets, South Africa's 2021 cross-border balance sheets demonstrate deep global integration. The country functions both as a recipient of foreign investment and as an outward investor, underscoring the interdependence between its financial system and international markets.

4 Discussion: some emerging trends

This section highlights key trends from the W2W analysis. South Africa's financial system shifted materially, reflecting financial deepening and financialization, rising public debt, and volatile foreign integration. These shifts have implications for macroeconomic stability, financial-sector behaviour, and the country's capacity to finance long-term priorities, including the green transition.

4.1 Financial deepening

Over the past decade, South Africa experienced substantial financial deepening, understood here as the expansion of financial assets and liabilities across all institutional sectors relative to GDP. The total value of financial assets rose from 675% of GDP in 2010 to 803% in 2021. This expansion was broad-based but particularly sharp among NBFIs, whose assets grew from 198% to 242% of GDP, and whose liabilities (mainly pension entitlements) rose from 193% to 248% of GDP. Similarly, the Rest of the World's (RoW) financial claims on South Africa increased: South African liabilities to foreigners grew from 98% to 123% of GDP, while RoW liabilities rose from 74% to 137% of GDP.

While financial deepening is often associated with a more developed and capable financial system, its effects depend on context. In South Africa, the expansion of balance sheets has coincided with persistent—and in some cases widening—wealth gaps, with little evidence that deeper markets have translated into greater inclusion (Biyase & Chisadza, 2023). A notable feature of this deepening is stronger inter-sectoral financial linkages: government borrowing increasingly ties it to NBFIs and foreign investors, while household savings are intermediated through NBFIs, exposing them indirectly to global markets. These linkages enhance risk-sharing but also heighten systemic vulnerability. The challenge is to ensure that the growth of financial assets supports productive, real-economy investment rather than reinforcing speculative circuits.

4.2 Financialization

It seems important to distinguish between *financial deepening*—the expansion of balance sheets across the economy—and *financialization*—the growing dominance of financial motives and placements over productive investment. A clear trend in South Africa is the financialization of non-financial corporates (NFCs) – see Karwowski (2017) for instance. Despite overall balance-sheet expansion, NFCs did not increase debt or equity issuance in line with GDP—their liabilities-to-GDP ratio fell from 196% to 172%. At the same time, their financial asset holdings—especially foreign equities—rose sharply, from 23% to 46% of GDP. This indicates that firms increasingly prioritized financial placements over capital formation, a shift reinforced by subdued external financing demand: bank credit to NFCs peaked mid-decade before declining, and bond issuance remained muted. Instead, firms relied on retained earnings to invest in financial markets, often offshore. While this may have boosted firm-level returns, it contributed little to domestic fixed-capital formation, including the urgent investments needed in energy, water, and digital infrastructure.

This decoupling of financial accumulation from real investment is a hallmark of financialization (Ashman et al. 2013). Capital circulates at high velocity within financial markets—enabled by shorter-duration investments and fee-driven incentives (Aubin, 2021)—without equivalent growth in underlying productive capacity. Returns to shareholders are prioritized over long-term investment and job creation (Epstein, 2005).

NBFIs could have been key in South Africa's financialization. Their balance sheets expanded far faster than those of banks over 2010–2021, reaching 242% of GDP on the asset side and 248% on the liability side, dominated by pension and insurance schemes. While this makes them the primary custodians of household savings, their portfolios have increasingly shifted toward tradable securities and foreign equities (54% of GDP in 2021, up from 24% in 2010), alongside large holdings of government bonds (36% of GDP) and bank-issued debt. These allocations reflect structural incentives—reinforced by the 1998 removal of caps on asset-management fees—that favour short-term, high-velocity financial flows over long-duration domestic investment. The result is a paradox: despite managing assets worth several multiples of GDP, NBFIs channel less than 10% of their R6.7 trillion into the real economy, and even less into infrastructure, leaving critical investment needs in energy, water, and digital systems unmet.

From a macro-prudential standpoint, financialization thus compounds the risks of deepening. Firms with large financial holdings are vulnerable to market volatility, while underinvestment in physical assets erodes future productive capacity. Policymakers may need to design incentives to redirect corporate earnings and institutional savings toward domestic, long-term investment, ensuring that financial deepening translates into development rather than speculation.

4.3 Rising public debt

Government debt emerged as a critical trend over the decade, with the debt-to-GDP ratio rising sharply from 43% in 2010 to 70% by 2021, placing South Africa in a higher-debt regime. This increase, despite intermittent fiscal consolidation, reflects persistent structural deficits and economic pressures, including low growth and support to state-owned enterprises.

From a financial structure perspective, a key positive is that domestic institutions absorbed most of this debt. NBFIs now hold the bulk of government bonds, with banks and foreign investors holding the rest. This provides a relatively stable investor base; pension funds are long-term holders but also means a large share of national savings is tied up in public financing. If debt continues rising, investor capacity or appetite could be strained, placing upward pressure on yields.

A further concern is the growing foreign currency exposure of public debt. Although still modest at around 5% of GDP (8% of total debt), this share has doubled from a decade earlier. While government has rightly kept external debt contained, even limited increases warrant caution, given the exchange rate risk. The ‘original sin’ literature and its redux (De Paula et al., 2024) highlight how loss of investor confidence can trigger currency depreciation and raise debt-servicing costs. South Africa is not facing an external debt crisis, but the risk environment demands prudence. As Loewald et al. (2020) argue, rising public debt and deficits elevate sovereign risk premia and reduce policy space. Our findings confirm that careful debt management is essential to avoid broader macroeconomic spillovers, such as higher borrowing costs across the economy.

4.4 Fluctuations in foreign investments

South Africa’s integration with global capital markets was reflected in volatile foreign asset and liability positions. Foreign investor participation fluctuated: South African financial assets held abroad rose from 79% to 150% of GDP by 2021, while foreign holdings of South African equities increased from 62% to 71% of GDP between 2010 and 2021, before tapering off post-2016. These shifts were influenced by both global (e.g. commodity cycles, quantitative easing) and domestic factors (e.g. policy uncertainty, credit ratings).

On the asset side, South African entities, especially NBFIs and some NFCs, significantly increased their foreign portfolio holdings. This nearly doubling of foreign assets (from 79% to 150% of GDP) reflects a clear trend toward outward diversification. NBFIs’ foreign equity holdings rose from 24% to 54% of GDP, while the share of domestic equities in their portfolios declined from 32% to 29%. Foreign-currency-denominated equity holdings also jumped from 47% to 100% of GDP. These patterns suggest not just diversification but capital flight, driven by growing caution around domestic economic and corporate prospects. Supporting this, household assets in NFC equities declined, and NBFIs’ holdings halved from 27% to 15% of GDP.

While diversification can be beneficial, from a domestic development perspective, large-scale capital outflows are concerning. They imply that local savings finance investment abroad rather than at home, stunting domestic capital formation and, critically, limiting resources available for urgently needed investment in energy, water, and food systems to ensure climate resilience. There is scope for interventions that redirect part of the institutional capital pool toward domestic development (as infrastructure bonds or public-private investment vehicles), but much will depend on incentive structures. The 1998 removal of the cap on asset-management fees encouraged short-termism and higher deal velocity, reinforcing a bias toward financial placements rather than long-term investment in productive or climate-critical infrastructure.

In sum, the past decade brought major shifts in South Africa’s financial system: deepening asset positions, changing corporate finance behaviour, rising public debt, and growing global exposure. While these trends reflect greater financial sophistication, they also pose new risks. Policymakers

must ensure that deepening supports real investment, that financialization does not crowd out productive growth, and that external integration does not drain resources or amplify systemic vulnerabilities. Strengthened macroprudential oversight, a better balance between domestic and foreign investment, and effective capital allocation will be critical for financial stability and long-term development.

5 Conclusion

This paper provides an in-depth examination of South Africa's financial structure through the construction and analysis of a W2W financial stock dataset. By systematically mapping financial interconnections across seven institutional sectors and multiple financial instruments, the study offers new insights into the composition, structure, and evolution of the financial system. It identifies key macro-financial trends: financial deepening, shifting patterns of financialization, greater global financial integration, and rising foreign currency exposure in public debt.

A standout finding is the significant deepening of financial markets, with financial assets and liabilities expanding sharply relative to GDP. NBFIs played a central role in this expansion. At the same time, financialization intensified as NFCs moved away from traditional borrowing toward holding more equities and financial assets. The analysis also reveals a substantial increase in foreign investor exposure to South African instruments, along with rising foreign asset accumulation by domestic institutions. This suggests signs of capital flight. Meanwhile, the upward trajectory of public debt, including a growing share denominated in foreign currency, underscores the need for prudent debt management.

These findings carry important policy implications. First, the growing complexity of financial interlinkages calls for enhanced macro-financial risk monitoring. As NBFIs gain prominence, macroprudential regulation must extend beyond the banking sector to safeguard systemic stability. Second, South Africa's evolving external financial linkages require careful management of capital flows. The rise in foreign asset holdings and capital outflows indicates a need for stronger oversight to reduce exposure to external vulnerabilities. SARB's role in foreign exchange management remains essential for mitigating currency risk and maintaining market stability. Third, the trend toward financialization implies that domestic savings may not be channelled into productive investment. Policymakers should consider incentives such as infrastructure bonds, public-private investment funds, or credit enhancements that help redirect institutional capital into domestic development.

The transition to a low-carbon economy in particular is an area where large capital deployment is needed. Aligning regulatory incentives (as suggested by Loewald et al., 2020) to favour green investment – for example, adjusting risk weights or liquidity treatment for green assets – could help mobilize finance for sustainable development. This is especially urgent in South Africa, where achieving resilience in energy, water, and digital infrastructure requires trillions of rand in additional investment, as highlighted in recent DBSA and NPC assessments. Without redirecting institutional capital toward these sectors, the financing gap will persist, undermining the country's capacity to adapt to climate change and secure long-term growth.

The study has limitations. Constructing the W2W dataset required estimation due to data gaps, and sectoral aggregation may mask differences within sectors, such as between large and small banks or among households with varying wealth levels. Certain instruments, especially off-balance-sheet items

and derivatives, are only partially captured and may omit key channels of financial interconnection. Addressing these data gaps through more granular collection and improved reporting on complex instruments would strengthen future W2W analyses. Another important limitation is that our dataset does not differentiate between mainstream NBFIs (such as pension and insurance funds) and shadow banks (including investment funds, finance companies, securitization vehicles, and others). Future improvements in financial statistics should aim to disaggregate these categories to better capture their distinct roles and risks.

Several avenues for further research emerge. First, expanding W2W analysis to include transaction flows, rather than only financial stocks, would offer a more dynamic view of capital allocation and liquidity. This would help differentiate between actual flows and valuation effects. Second, linking W2W data to macroeconomic models such as stock-flow consistent or network-based approaches could provide deeper insight into feedback loops between finance and the real economy, particularly under stress. Third, comparative W2W studies involving other emerging economies would help contextualize South Africa's financial structure and identify both common and distinctive features.

In conclusion, detailed W2W data is a valuable tool for analysing macro-financial dynamics, identifying systemic risks, and informing policy. By clarifying who is funding whom through what type of instrument, it improves our understanding of financial stability, capital allocation, and the role of finance in shaping South Africa's economic trajectory. Ensuring that financial deepening supports real investment and economic resilience will be vital for sustainable development. Strengthening financial data systems and embedding W2W analysis into routine policy assessment should be key priorities going forward.

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