



FirstRand

Impact of Basel Regulations on Monetary Policy:

SARB Roundtable

June 2019

Agenda

1. Background
2. Relevant regulatory changes
 - LCR, NSFR and Capital
3. What was the expected impact?
4. Impact of Basel regulations on banks' balance sheets
 - A shift in sources and costs of funding
 - Reallocation of resources
 - Some (un)intended consequences?
5. Conclusion



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Financial sector themes

Regulatory factors

- Confluence of SAM & Basel III
- Broader savings reform
 - Retirement reform
 - Retail distribution
 - *TER & cost of delivery*
 - *“Rise of the robo advisor”*
- Interactions between regulations
- The unregulated and unaccountable
- Shadow banking

Market conditions

- Liquidity – funding, primary, secondary, financing, etc.
- Market demand for safe-haven liquid assets – currently fulfilled by banks
- Market pricing, failure to differentiate and price risk
- International market backdrop

Economic factors

- Constraints on SA Inc’s financial resources
- Financing requirement of SA Inc.
- Increase national savings – a national priority and financial stability imperative
- Intense competition for savings
- Search for efficiency
- Unstable political economy
- Financial stability of SOEs

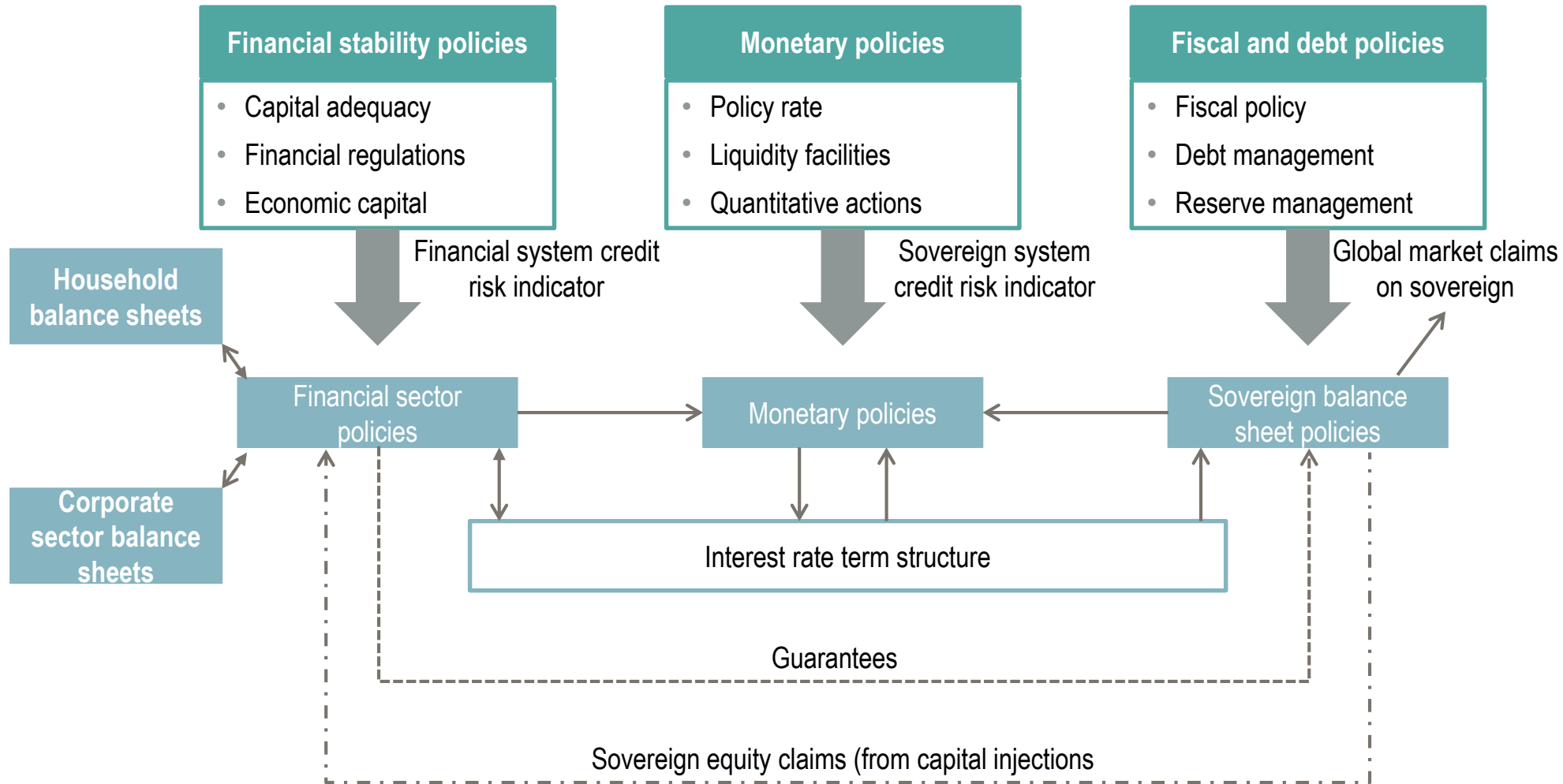
Market developments

- Infrastructure, market infrastructure and, minimum standard of operational capability of market participant is increasing
- ETP, CCP and TR
- Cross-border
- Fintech



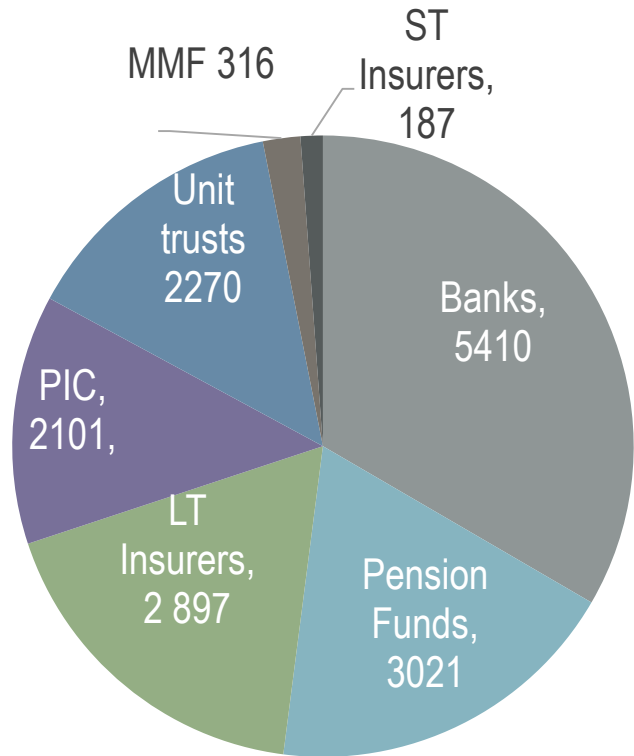
Complex interactions between the financial system and economic policies

Understanding how economic and financial sector policies interact



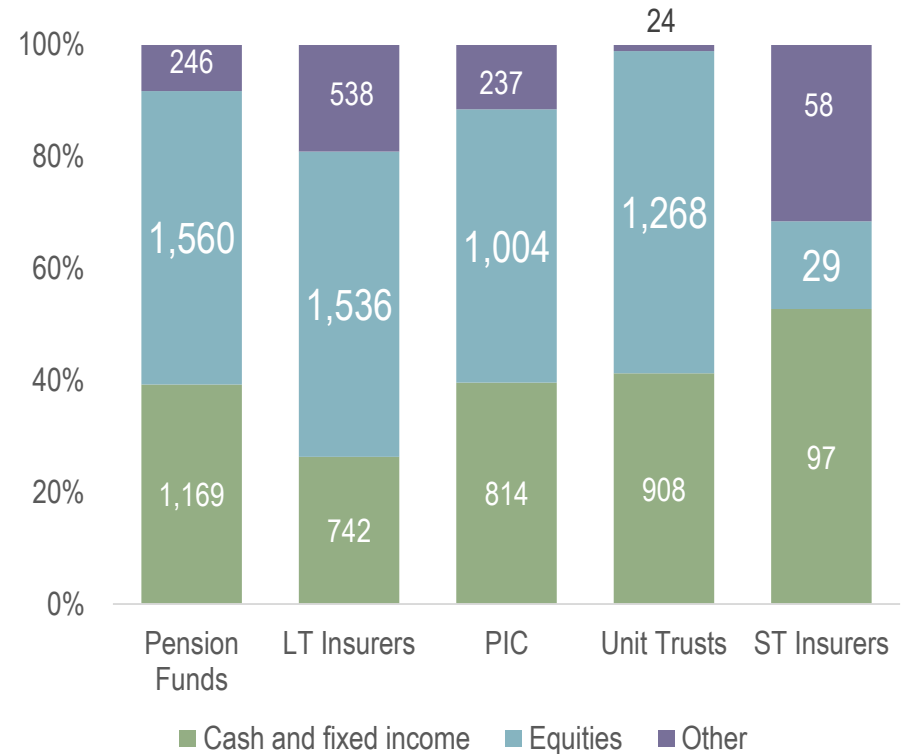
Asset allocation of different institutions

Non-bank financial institutions AUM September 2018



**Non bank FI - AUM >R10tn
SA banking industry >R5tn**

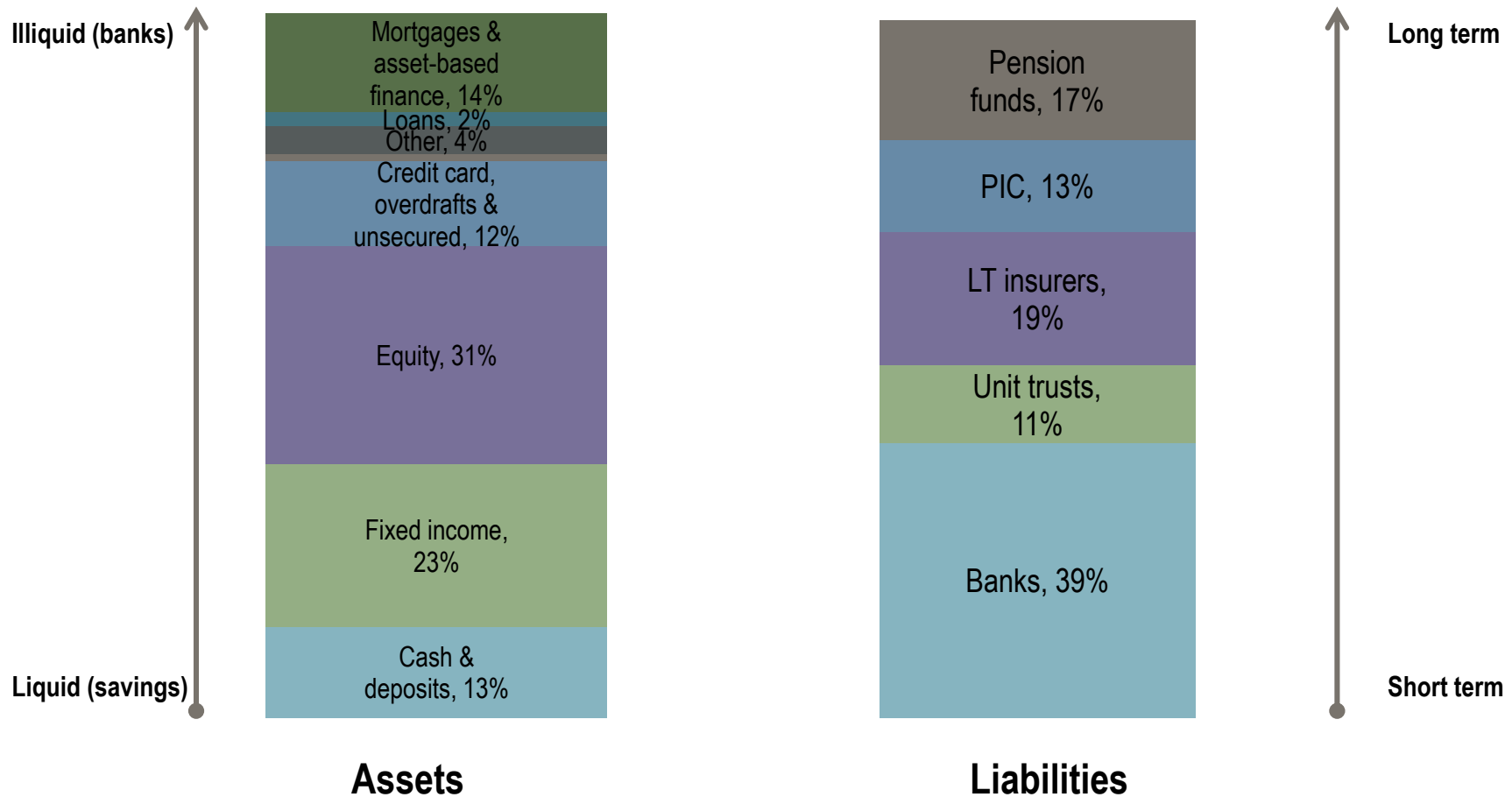
Non-bank financial institutions AUM by asset allocation September 2018



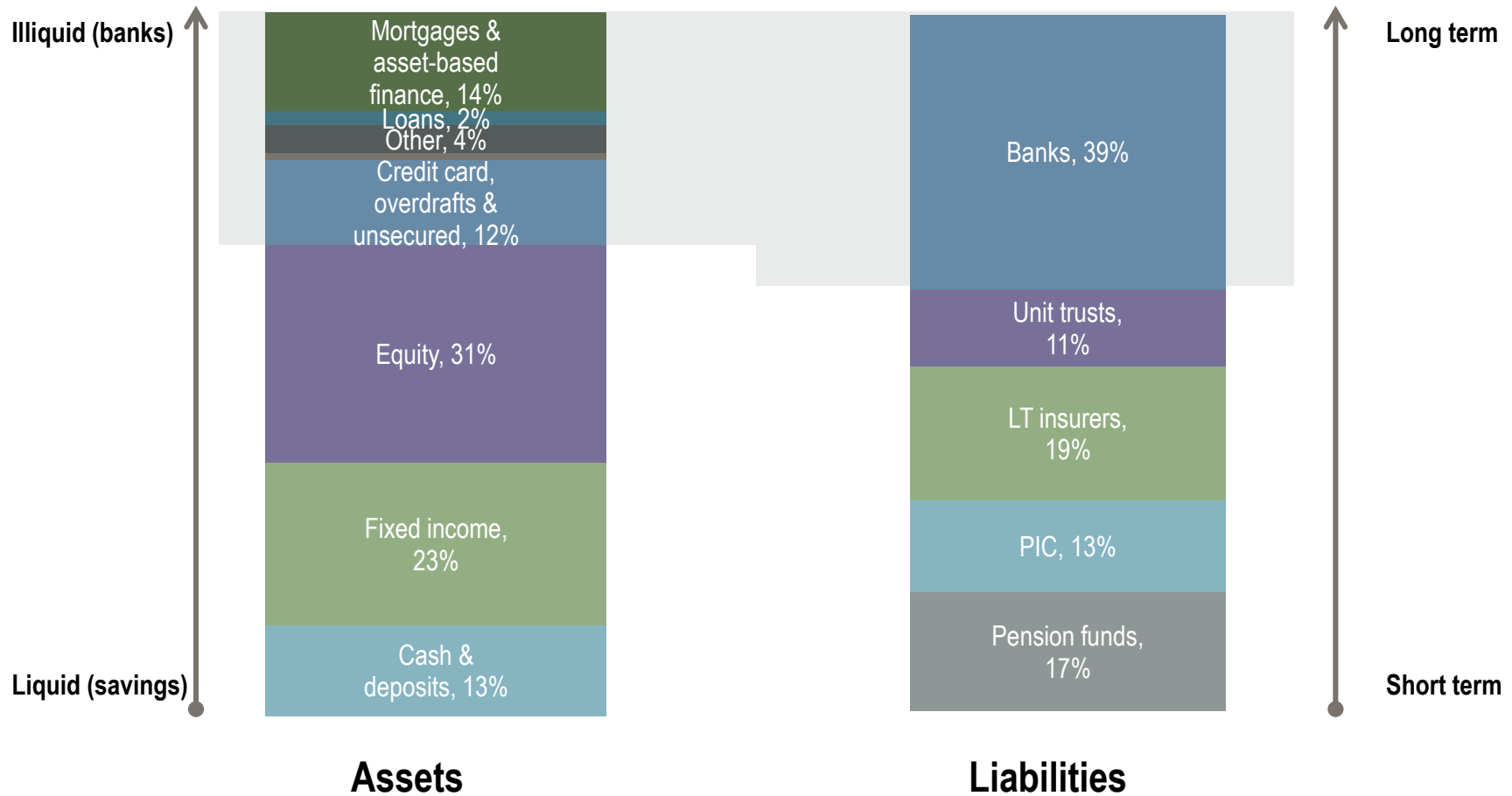
FI asset allocation may not always be optimal after consideration of other constraints



SA Inc. : Liquidity profile of assets and liabilities



Liquidity mismatches are concentrated

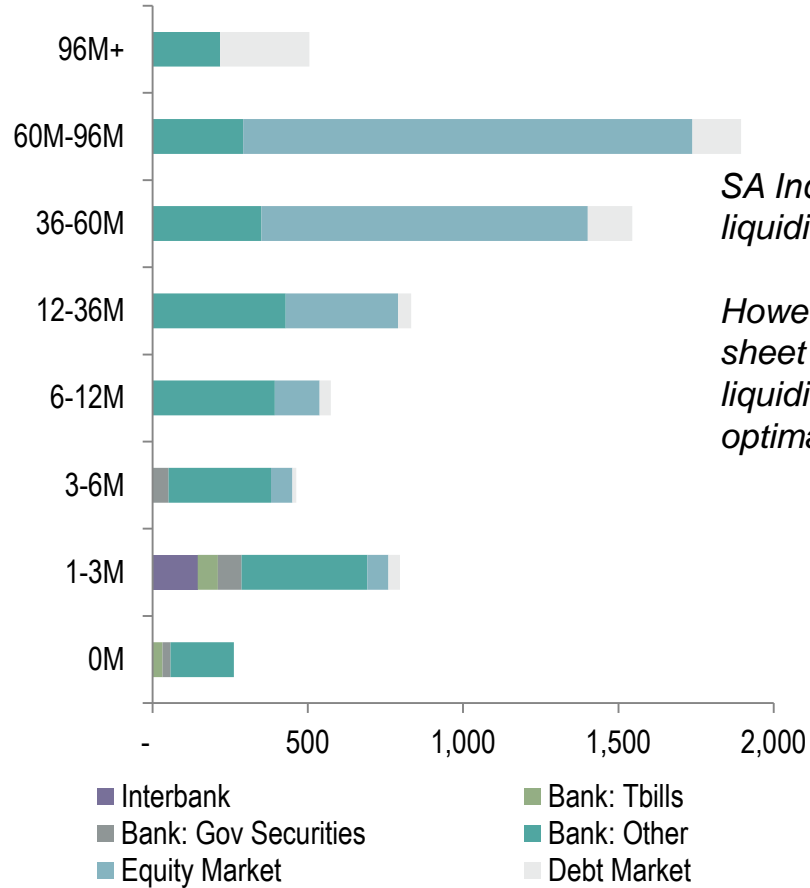


Liquidity mismatch is concentrated in the banking sector



SA liquidity gap

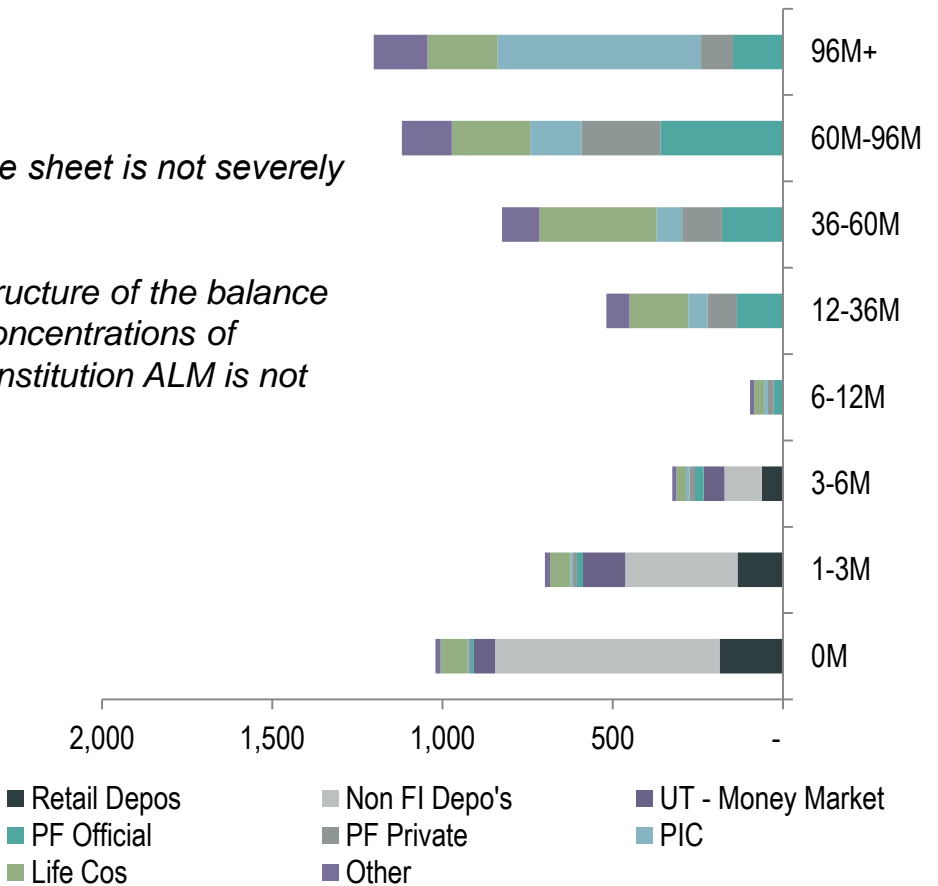
Financial assets



SA Inc.'s balance sheet is not severely liquidity gapped.

However, the structure of the balance sheet creates concentrations of liquidity risk by institution ALM is not optimal.

Supply side



Source: SARB, FirstRand

South Africa's funding sources

Net capital formation and financing thereof (Rbn)

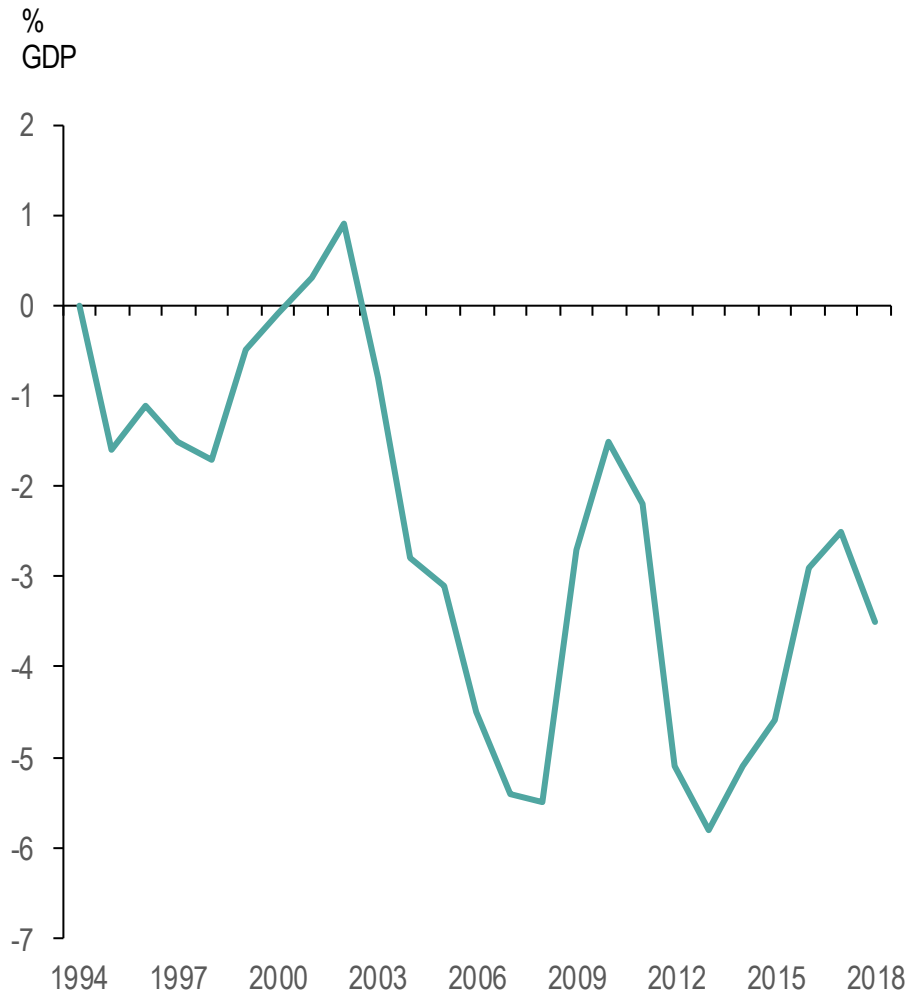


Sources: SARB, FirstRand

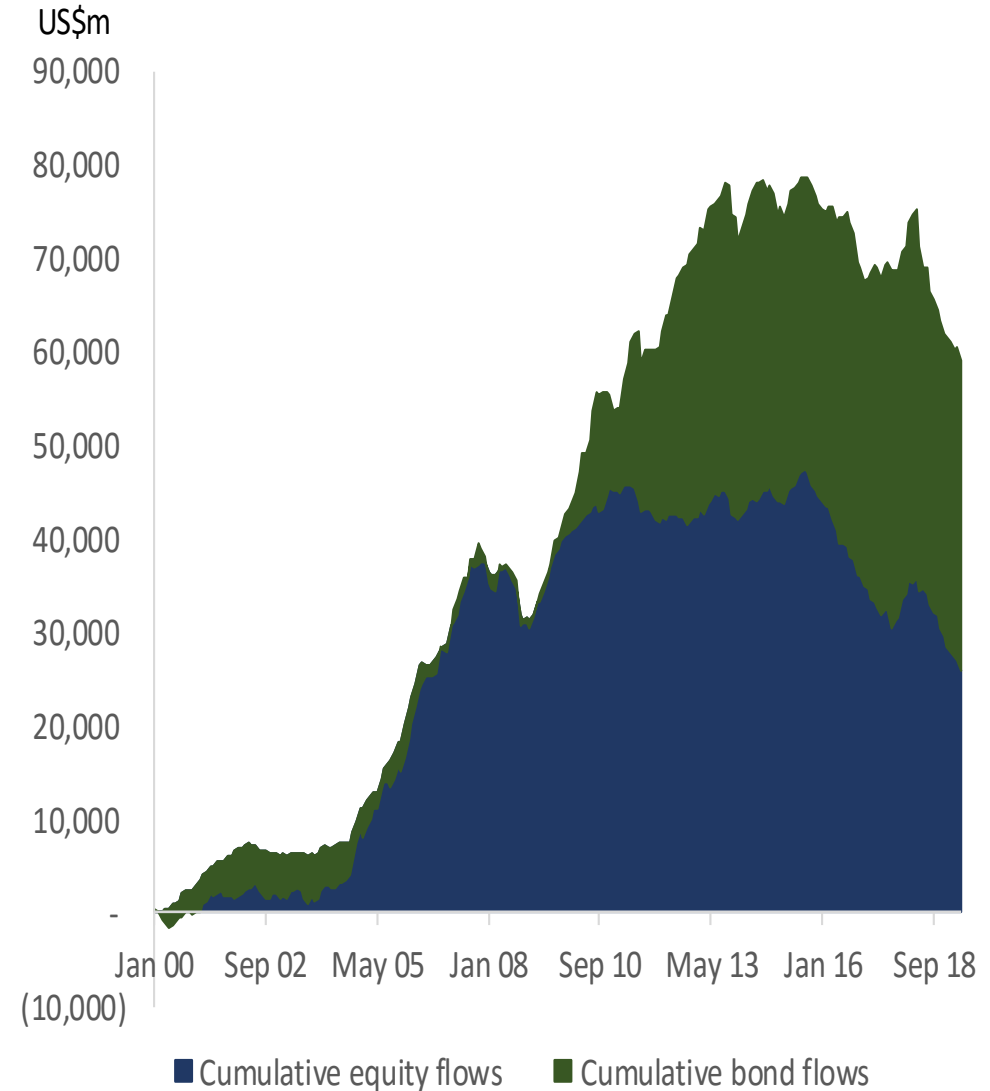


Domestic savings remain constrained; foreign flows under pressure

Current account deficit to GDP (%)



Foreign portfolio flows into SA (net)



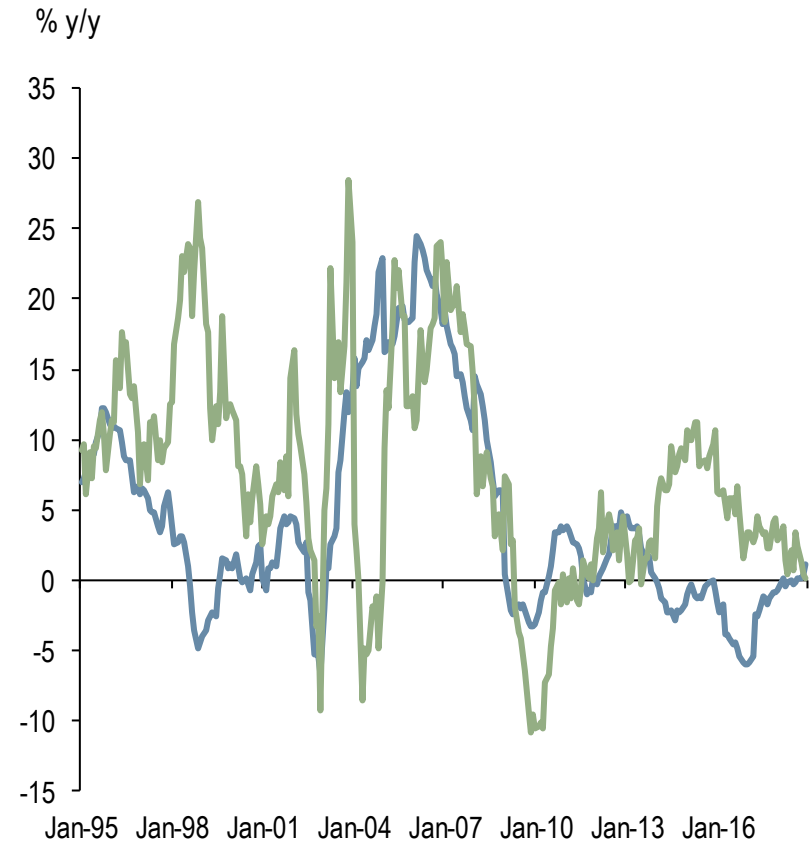
Macro affordability and regulation weighs on credit extension

Private sector credit growth



— Credit extended to households (% y/y)
 — Credit extended to corporates (% y/y)

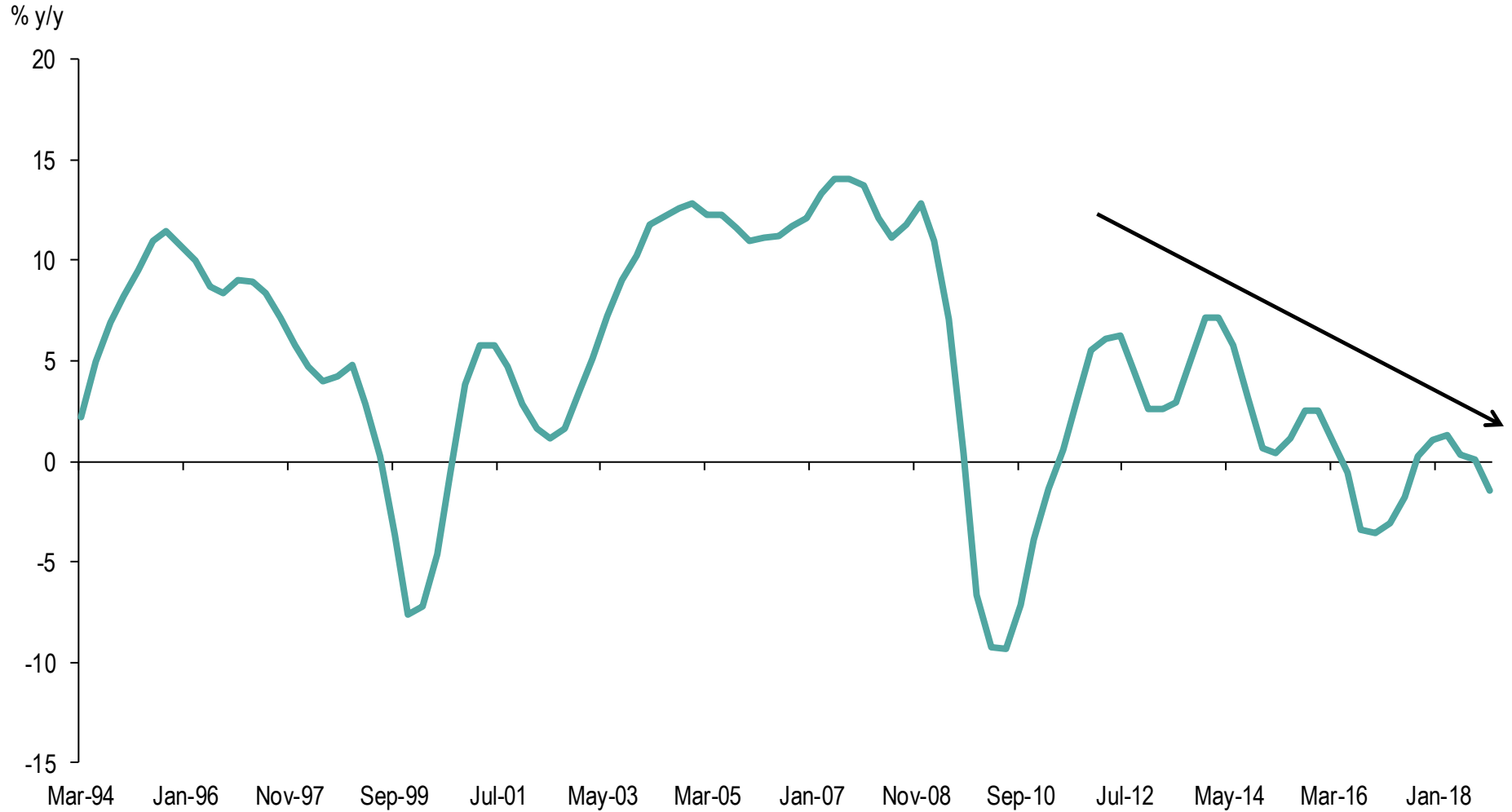
Real private sector credit growth



— Real credit extended to households (% y/y)
 — Real credit extended to corporates (% y/y)

Less funds available for investment spending

Investment spending growth



Relevant regulatory changes



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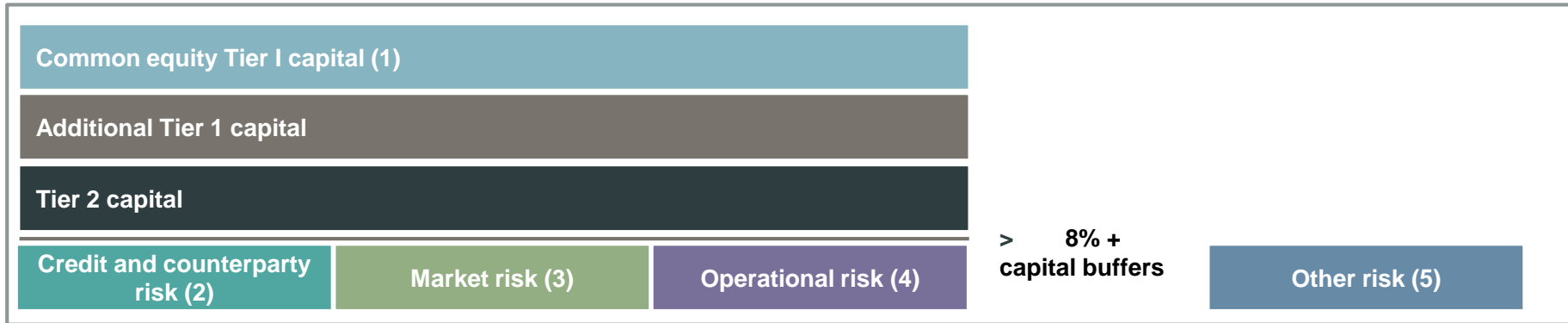
Basel III and IV: International banking regulations

Comprehensive set of regulatory reforms to make banks “safer”

- Intention:
 - To promote stability in the banking sector which will lead stability in financial system
 - Reduce damage to the economy by banks that take on excess risk



Basel IV in a nutshell



Capital floors 1

- RWA (using internal model approaches) floored by a percentage of RWA as determined through the standardized approaches.
- The capital floors will eventually be 72.5% based on the new standardized approach
- Introduction in 2022 via a phase-in over five years:
 - 2022: 50.0% 2025: 65.0%
 - 2023: 55.0% 2026: 70.0%
 - 2024: 60.0% 2027: 72.5%

Market risk (finalized in 2016) 3

- Revised boundary of the trading book and stricter approval of internal models
- Sensitivities-based approach as new standardized approach, which also serves as a floor for the internal model approach
- Internal model approach with expected shortfall based on stressed calibration as key metric, and considering product-specific liquidity horizon

Credit risk 2

- Revised standardized approach including broadly revised risk weights and additional due diligence requirements
- Constraints on the use of internal models (for some credit portfolios) and introduction of parameter input floors for the IRB approach
- Ban on use of internal models-based approach and introduction of a standardized approach for CVA
- New rules for securitization RWA and simple, transparent and comparable (STC) securitizations (already finalized in 2016)
- New standardized approach for the calculation of EAD for derivative exposure (already finalized in 2016)

Operational risk (OpRisk) 4

- Replacement of existing approaches by a new standardized approach
- Fundamental assumption that operational risk is related to size
- Use of the 'unadjusted business indicator' as a measure of operational risk exposure combined with collection and analysis of historical loss data



Guidance note 6 of 2018

- Proposed implementation dates for Basel regulatory reforms

Regulatory reform	Proposed implementation date
Capital requirements for equity investments in funds	1 October 2019
Capital requirements for bank exposures to central counterparties	1 October 2019
Standardized approach for measuring counterparty credit risk exposures	1 October 2019
Revisions to security framework	1 April 2020
Total loss-absorbing capacity holdings	1 April 2020
Large exposures framework	1 April 2020
Interest rate risk in the banking book	1 June 2021
Interest rate risk in the banking book: disclosure requirements	1 January 2022
Minimum capital requirements for market risk	1 January 2022
Revised standardized approach for credit risk framework	1 January 2022
Revised internal ratings-based approach framework	1 January 2022
Revised credit valuation adjustment framework	1 January 2022
Revised operational risk framework	1 January 2022
Leverage ratio – revised exposure definition	1 January 2022
Output floor	1 January 2022: 50.0% 1 January 2023: 55.0% 1 January 2024: 60.0% 1 January 2025: 65.0% 1 January 2026: 70.0% 1 January 2027: 72.5%



Relevant regulatory changes

LCR

NSFR

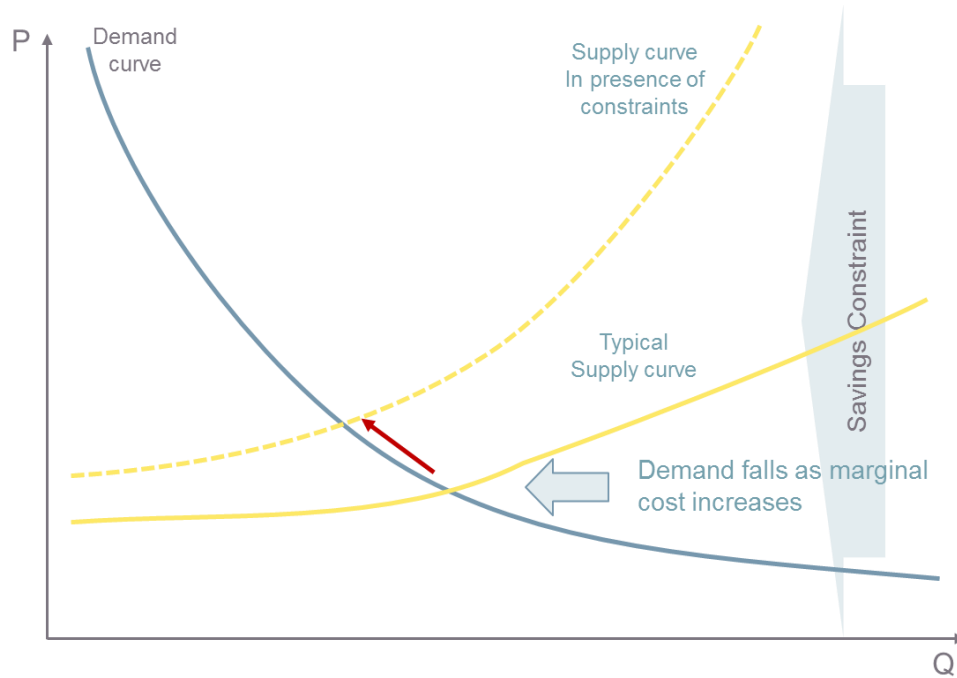
Capital



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Two structural factors that constrain the efficient allocation of SA resources

1. The presence of supply/savings constraints, with operational inefficiencies



2. Presence of concentration risk making it difficult to diversify specific risk combined with perceived information asymmetries

$$E[R_i] = R_f + \beta_i(E[R_m] - E[R_f]) + E[\epsilon_i]$$

Expected return	Risk free	Amount of risk	Price of risk	Idiosyncratic risk factor
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Correlation problem, so unexpected loss in highly negatively skewed

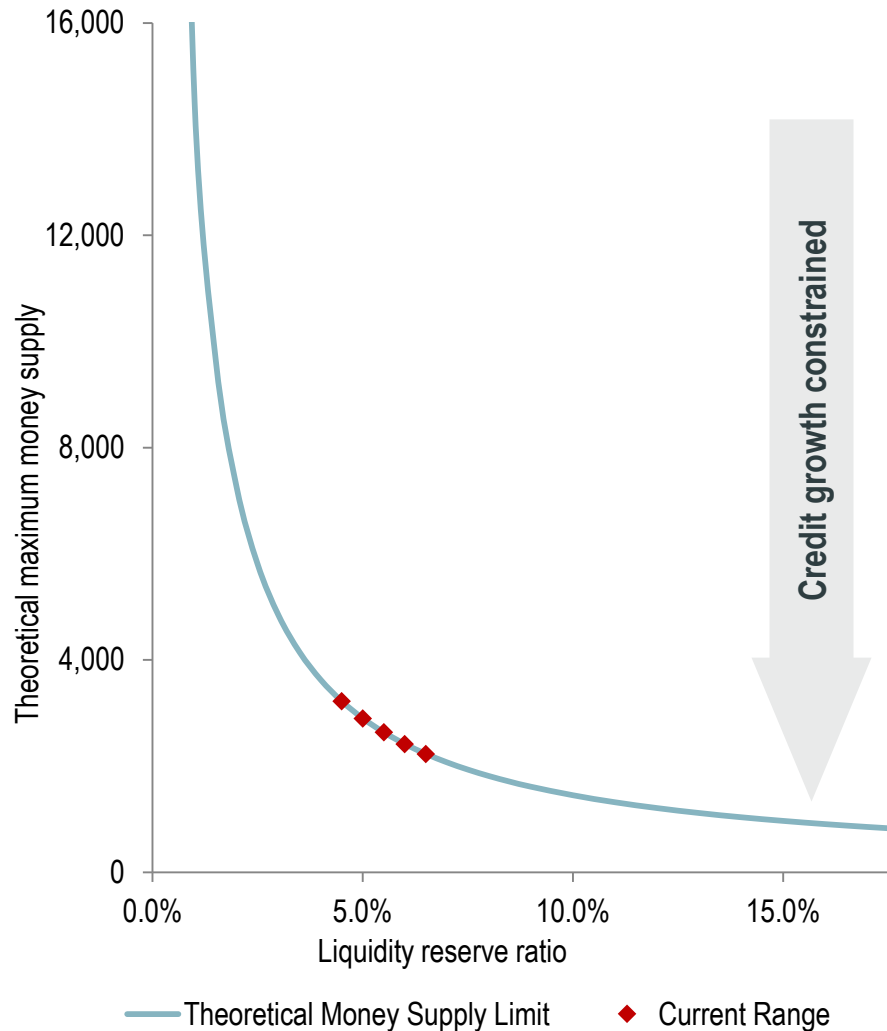
You cannot get a well-diversified debt securities portfolio in SA

This impacts efficient resource allocation

Source: Adapted from the "Credit Spread Puzzle", BIS Quarterly Review, Q4, 2013.



LCR acts as a monetary policy tool

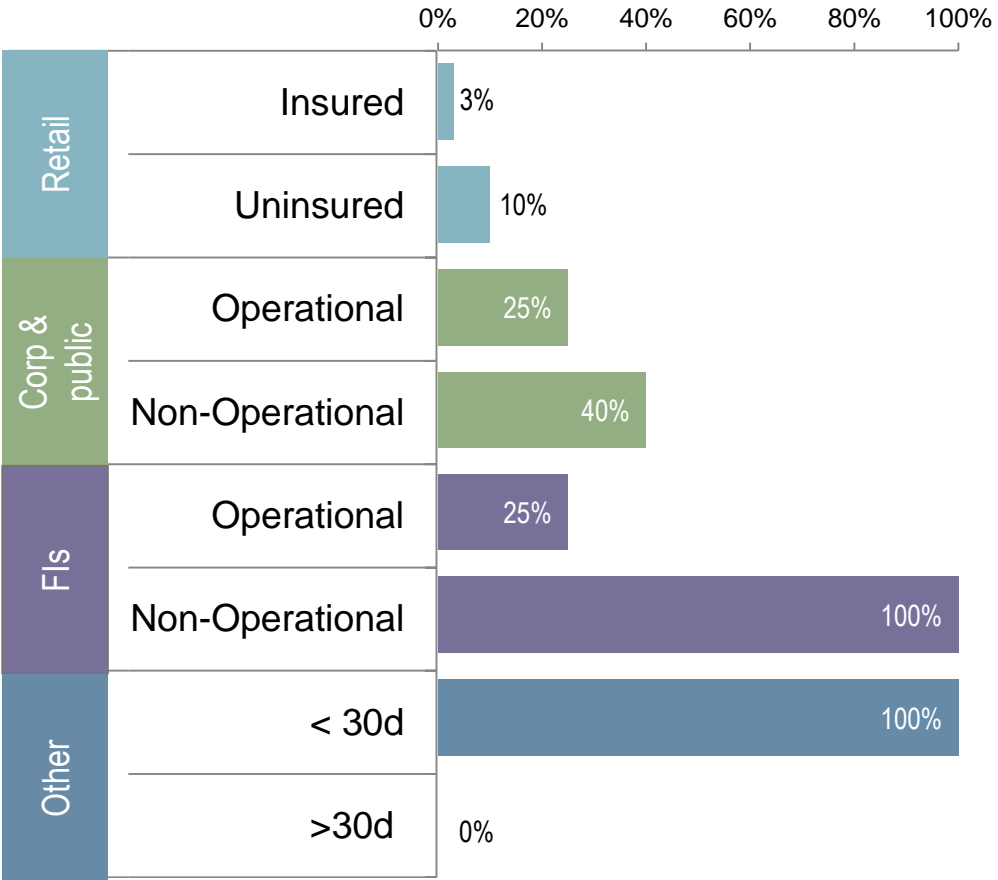


- + As maturity transformation increases (liquidity mismatch)
- + Increase liquidity reserves
- Constrains private credit extension
- *Purchase of government securities leads to public sector credit instead...*
- Change to the transmission mechanism
- Multiplier can only grow in a specific way
- Term savings are required
- Limits the potential intervention by central banks when money multiplier collapses in stress

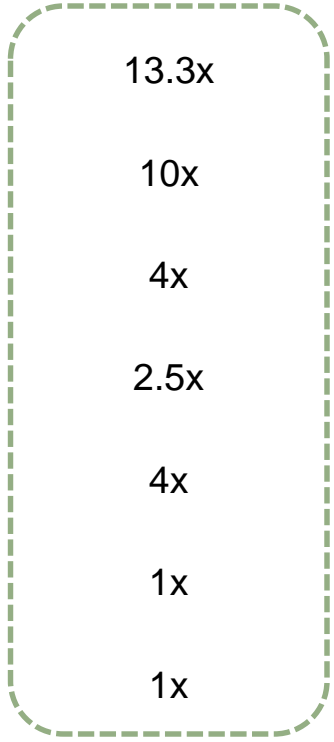


Liquidity reserves impact the credit creation process

% of funding in HQLA



Money multiplier



Increasing the reserve requirement reduces the multiplier effect

Multiplier can only expand in a specific way - term savings is required or credit extension via capital markets/shadow banking



Guidance notice 4/2018 regarding LCR

- The SARB will phase out the CLF over a period of three years. Over the phase-out period, the size of the facility will be limited as follows:

Period	Cap as % of HQLA requirement
1 Dec '18 – 30 Nov '19	40%
1 Dec '19 – 30 Nov '20	30%
1 Dec '20 – 30 Nov '21	20%
1 Dec '21 - onwards	No longer provided

- In the event that market conditions change, the SARB may re-evaluate the phasing-out

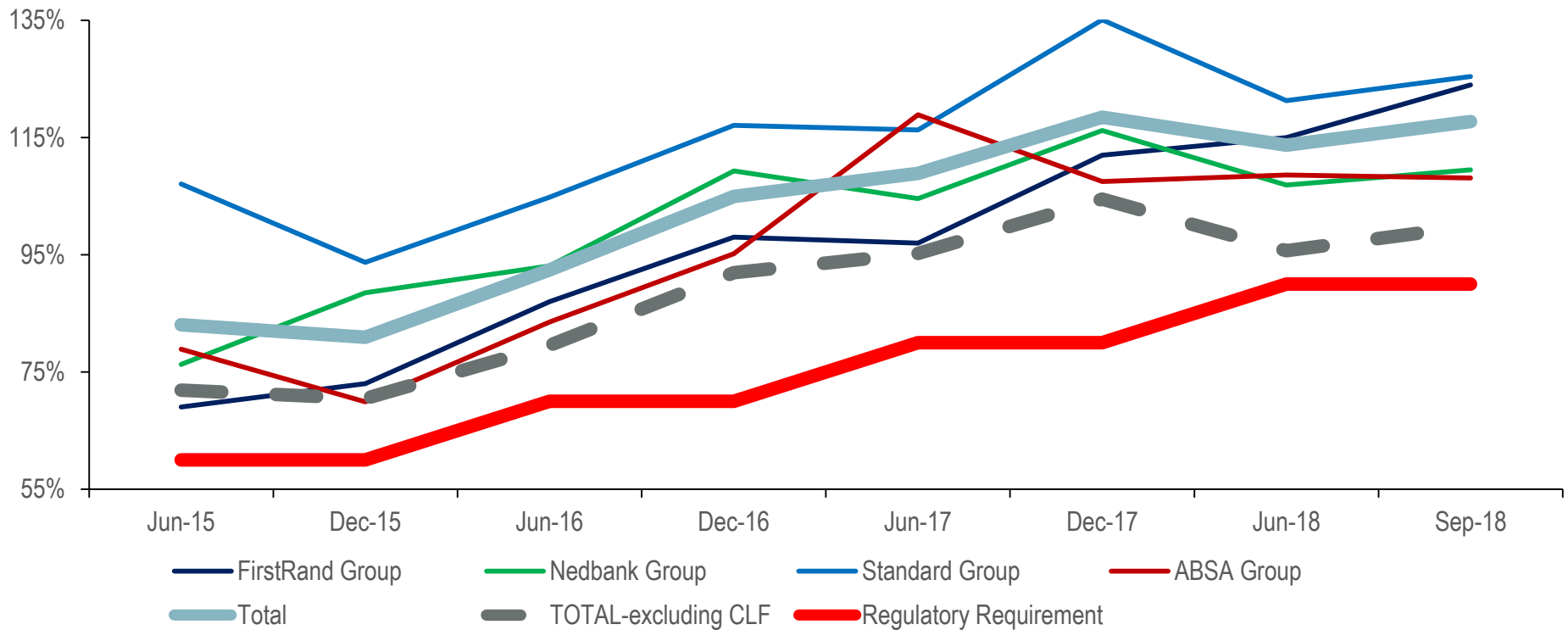
Significant structural difference are observed in LCR per deposit institution



Evolution of LCR in South Africa by various banks

Over the last three years, the industry as a whole has increased its LCR from the low 80% levels to a little under 120% in September 2018, in line with the prudential transition to the steady state requirement of 100%. Over that period, the CLF contributed between 10% and 20% of the industry's quarterly average LCR

SA Inc. LCR



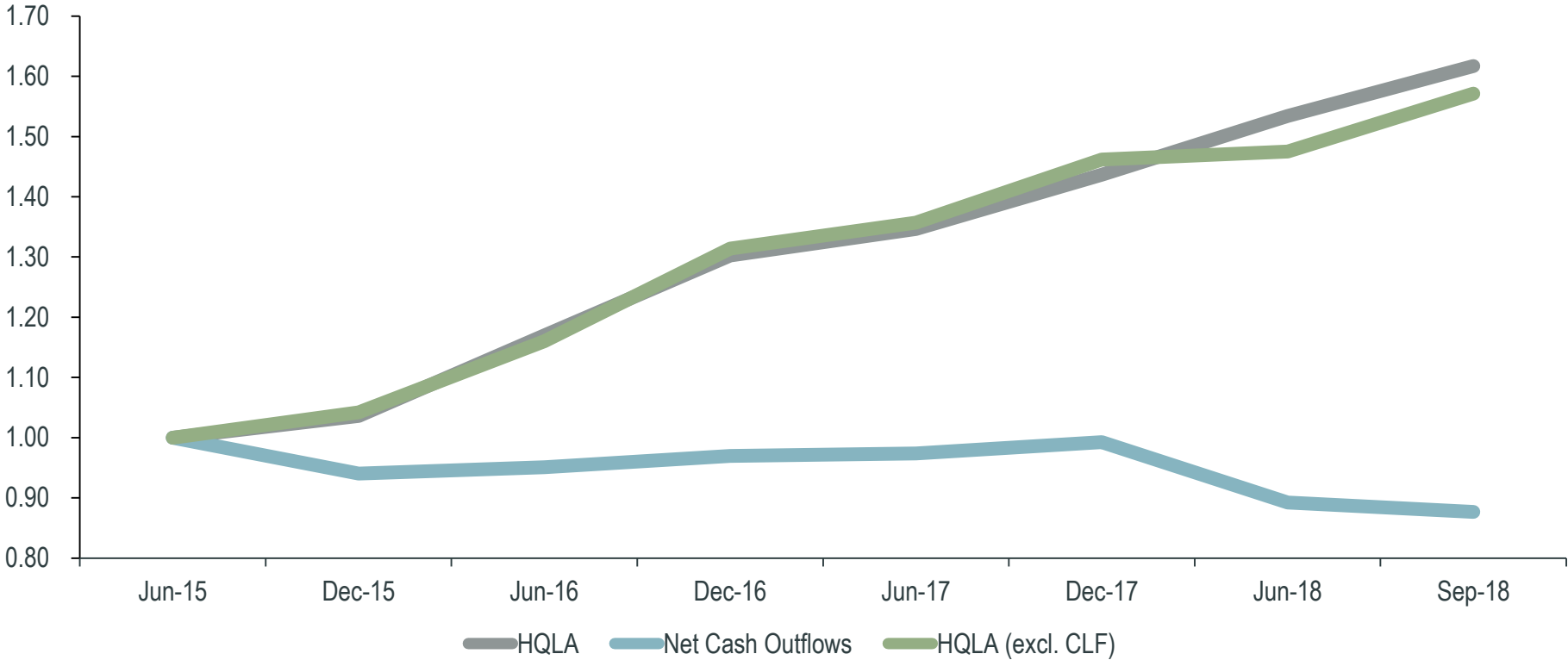
Although this suggests that compliance is possible without the CLF, in our experience, the standard deviation of the daily LCR is circa $\pm 25\%$ that of the quarterly average



Analysing the drivers of LCR compliance of SA Inc.

Over the last four years, the increase in SA Inc.'s LCR has been primarily driven by an increase in HQLA as there is little opportunity for the industry to optimise NCOF due to the limited availability of discretionary savings in the country. This increase in HQLA has been achieved through increases in both the CLF and other assets in similar proportions

Indexed contribution of the growth in LCR for SA Inc.



Over this period, there has been little corporate and SOE issuances which suggests much of the (non-CLF) HQLA growth can be attributed to government securities

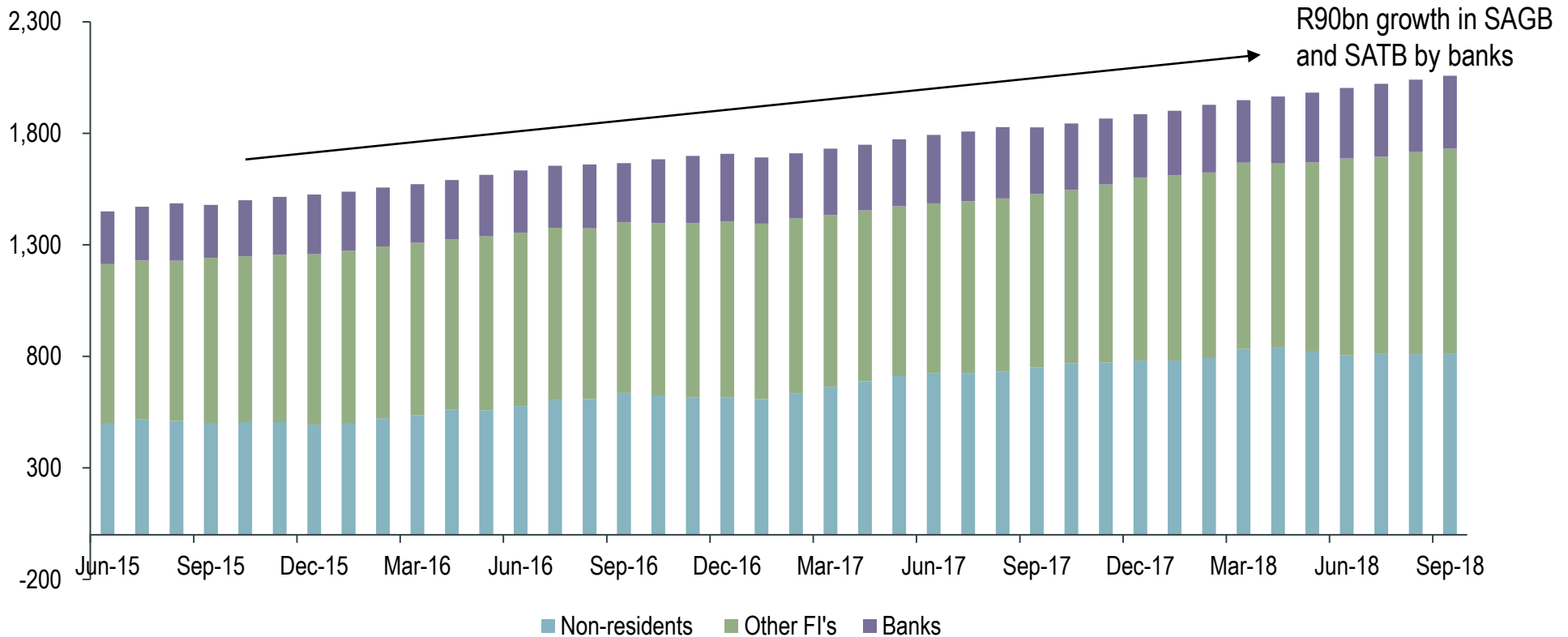
Source: Quarterly Pillar 3 disclosures



Local bank holdings of SAGBs and SATBs

SAGB and SATB issuances have increased by 42% (R1.45trn to R2.0trn) over the last four years. Local banks have increased their holdings of SA government securities by 38% (from R237bn to R327bn) in the same period

Government bond and T-bill ownership in SA (Rbn)



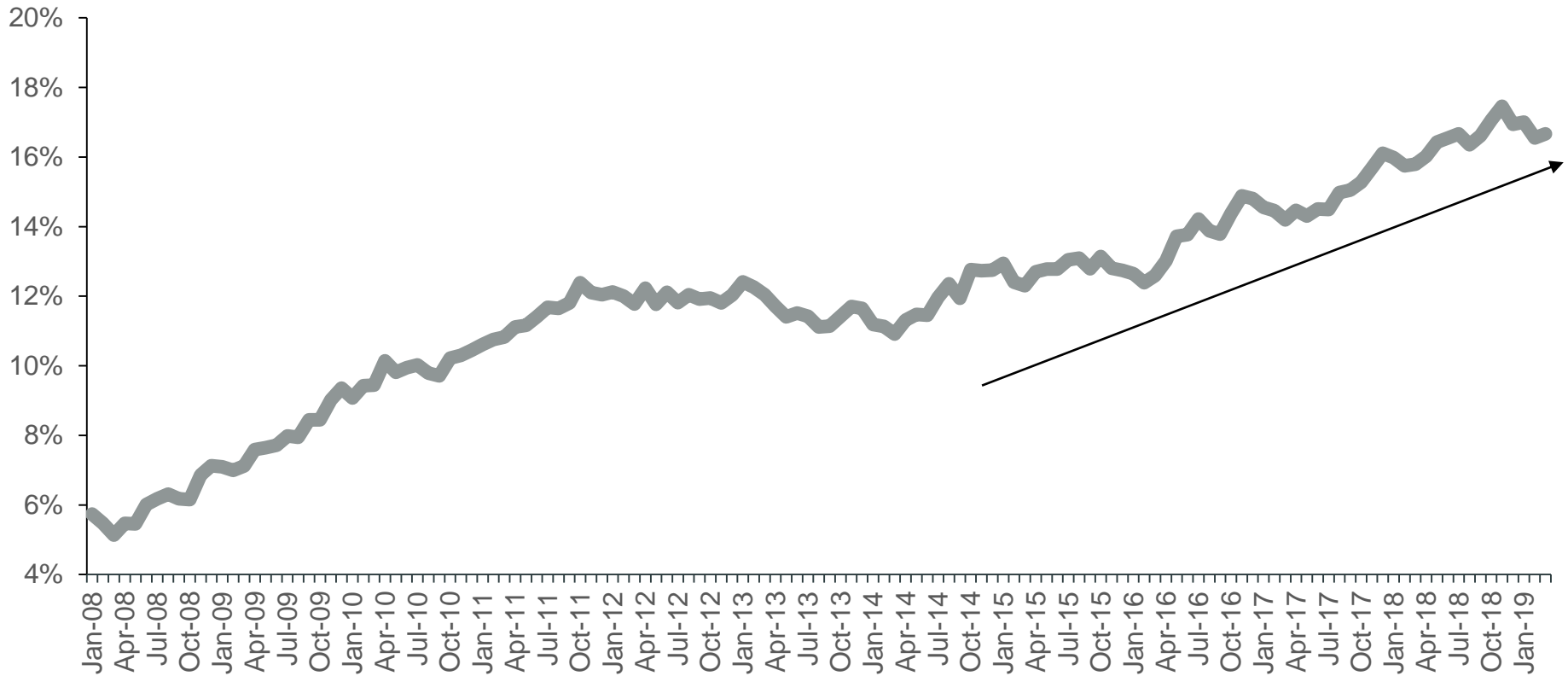
If the current CLF levels of R140bn are to be replaced in the next three years to maintain current LCR levels, issuance growth in SA will need to be maintained (at least)



Local bank liquid assets as % of interest-bearing assets

SAGB and SATB issuances have increased by 42% (R1.45trn to R2.0trn) over the last four years. Local banks have increased their holdings of SA government securities by 38% (from R237bn to R327bn) in the same period

Liquid assets



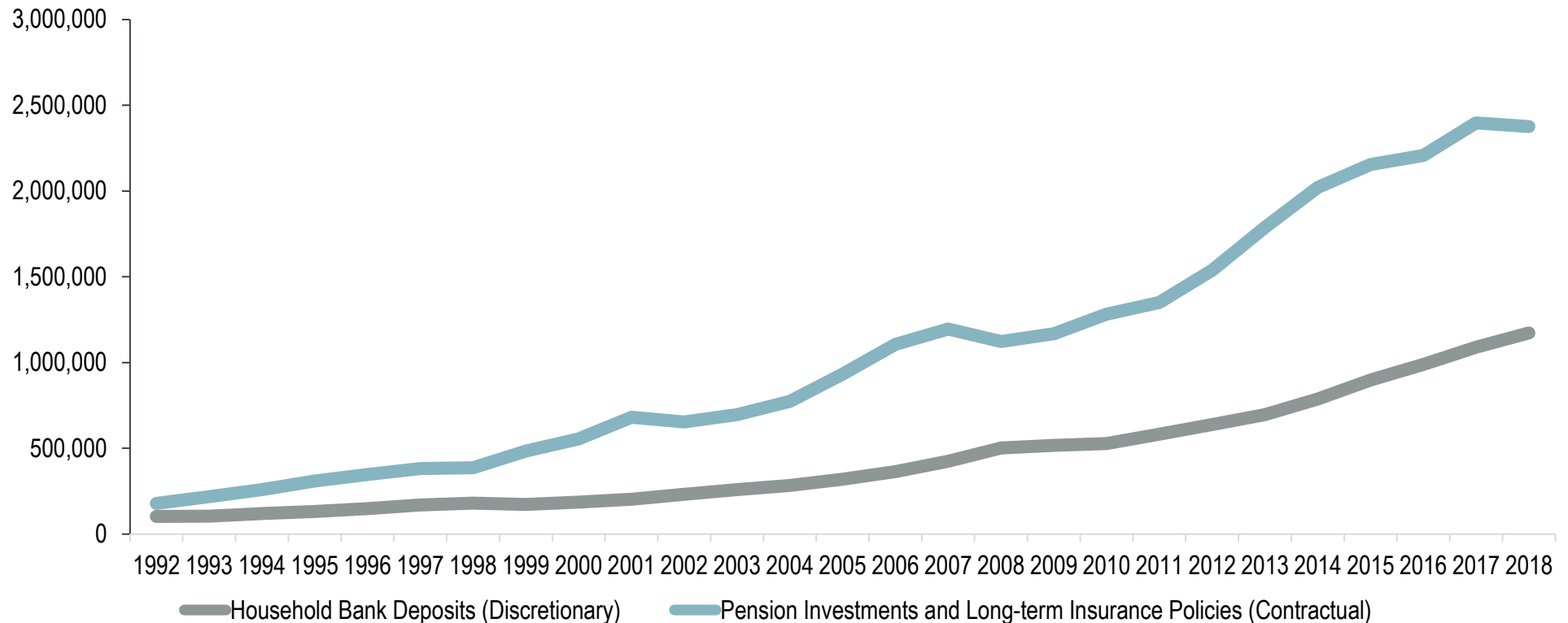
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Domestic savings pool has impact on LCR compliance

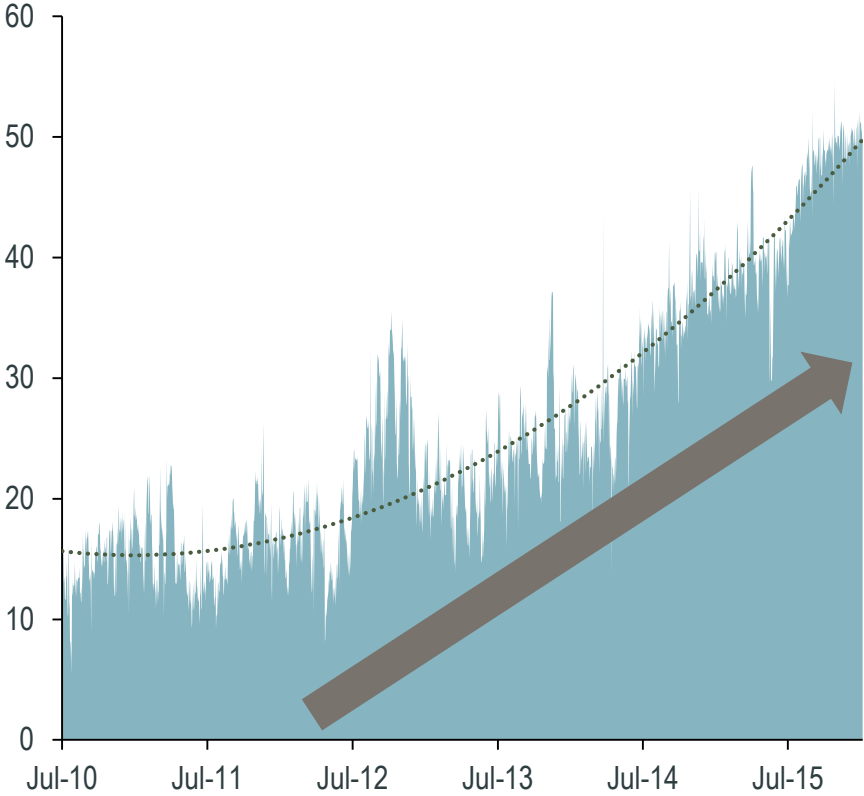
Basel III liquidity regulations give preferential treatment to bank retail deposits. However, South Africa's retail savings have a structural weighting towards pension funds and insurers compared to bank deposits. In turn, the pension funds and insurers invest these deposits with asset managers. Hence, banks access most savings of household sector via volatile wholesale funding

Household discretionary savings vs. contractual savings (Rm)

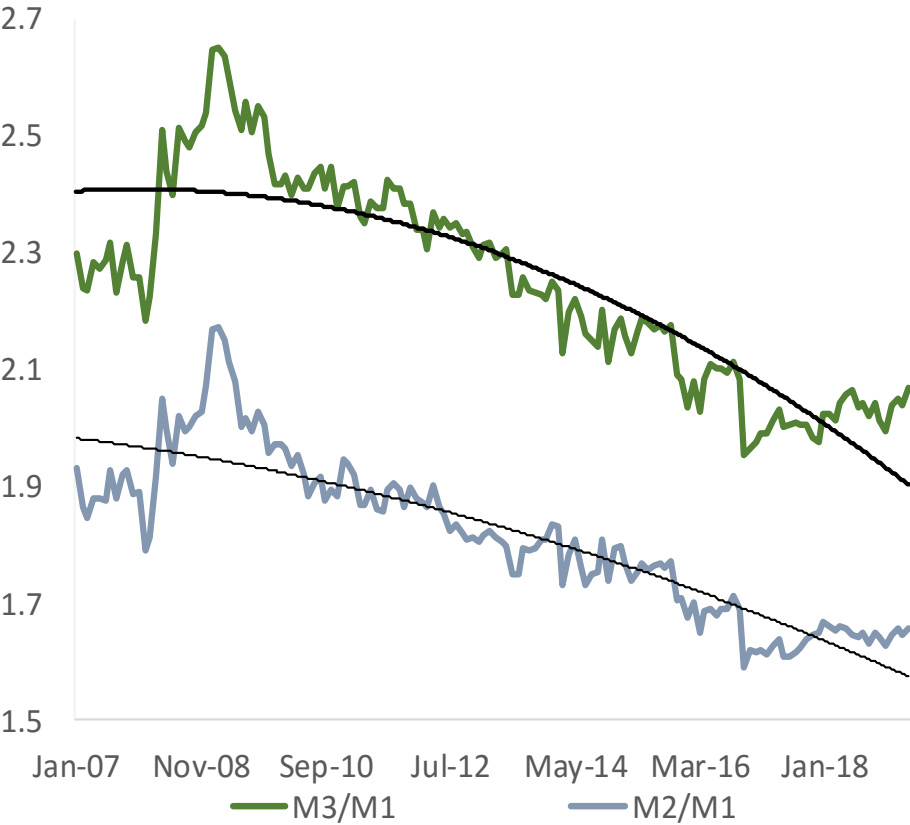


Shortage, liquidity reserves and money creation

SARB-administered shortage



SA ratio of M3 and M2 to M1



Regulation, savings, monetary policy and mechanical implementation of monetary policy stance compounds to tighten liquidity conditions

Source: SARB, Bloomberg, FirstRand



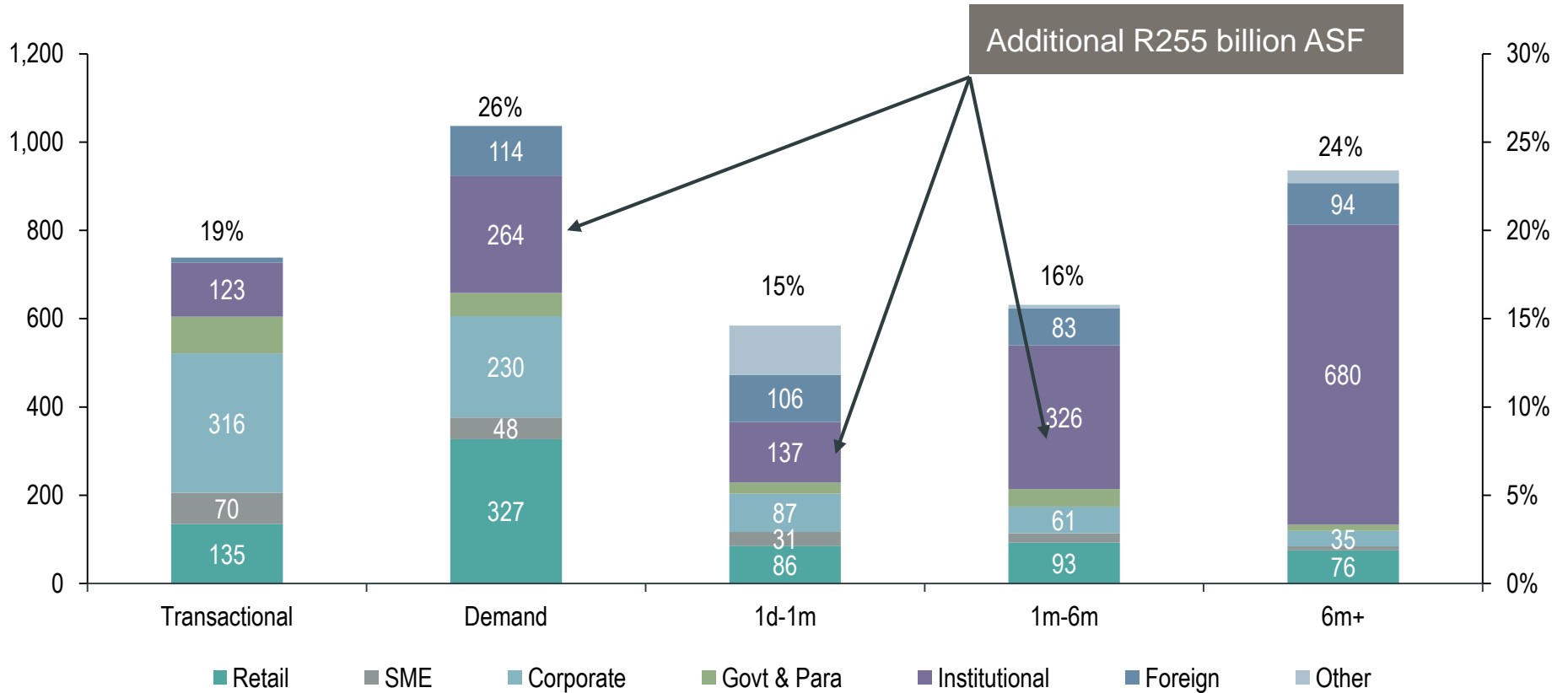
NSFR update

- In proposed directive published 18 November 2015 (Ref:15/8), the SARB announced amendments to the NSFR
- Summary key SARB proposal
 - Affirmed the 5% RSF for off-balance sheet contingent funding obligations
 - Deviation from BIS Basel III
 - As per Basel III funding from financial institutions
 - Where remaining maturity < 6m, receives a 0% ASF
 - SARB has proposed applying a 35% ASF
- SARB indicated that the BIS calibration does not reflect the actual stability of this funding source for SA
 - SARB considered actual local conditions, determining that regulatory and economic barriers that prevent liquidity from flowing out of the domestic economy

Significant outcome in regulatory reform agenda



Recalibration of NSFR impacts R700bn+ in balances for the sector

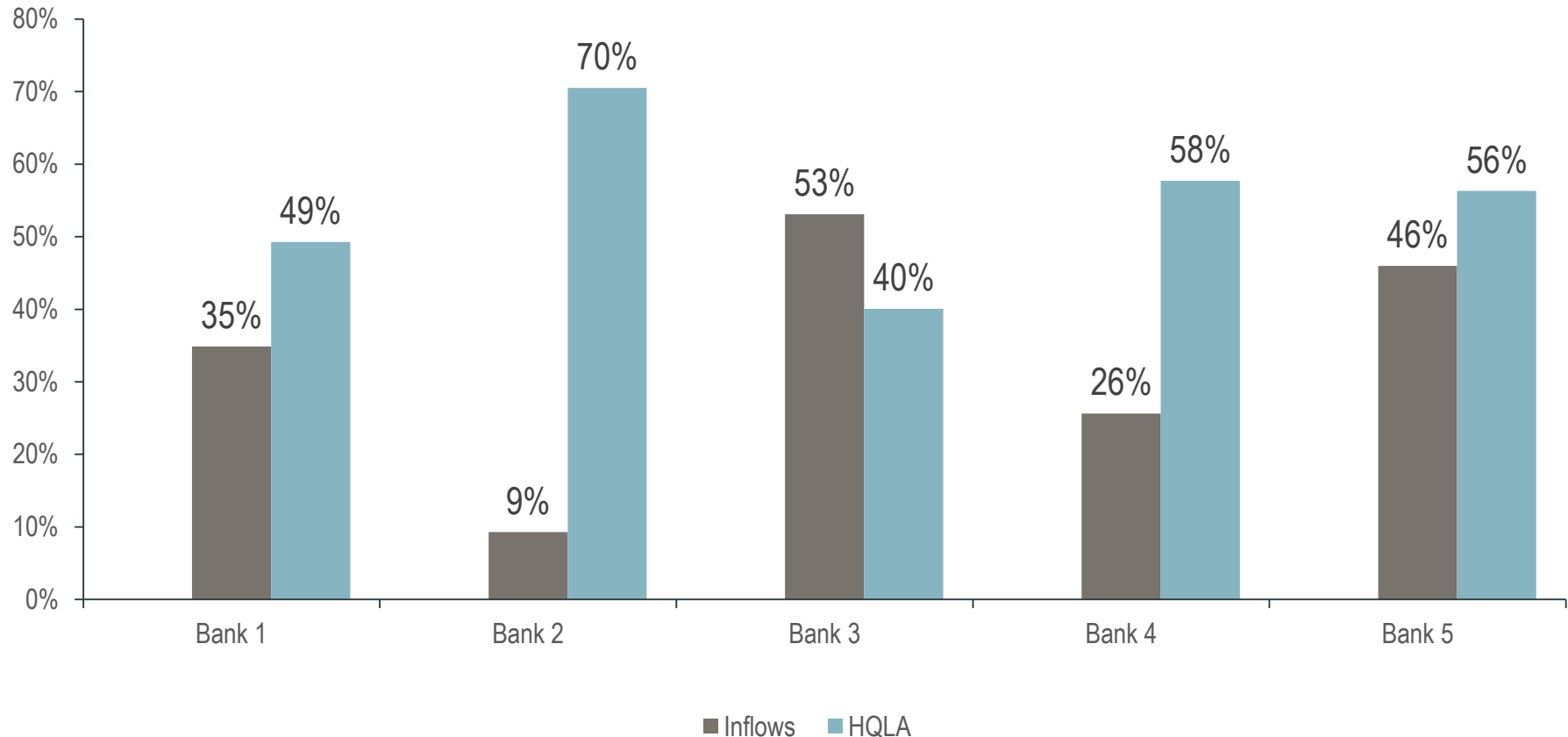


Largely addresses NSFR shortfall of the SA banking sector – the bank estimates that FRB exceeds the NSFR minimum requirements under this calibration



Comparing how banks mitigate their risk of outflows

Inflows and HQLA % of outflows



Significant structural differences are observed in NCOF
(inflows and outflows)



Basel IV – revision to capital approaches

Credit risk	<ul style="list-style-type: none"> • Revision of the standardised approach of credit risk • Revision of the internal ratings-based approach
Operational risk	<ul style="list-style-type: none"> • Redesigned standardised approach • Abolition of all alternative approaches
CVA risk	<ul style="list-style-type: none"> • Revision of standardised approach • Introduction of basic approach • Abolition of the internal model approach
Market risk	<ul style="list-style-type: none"> • Revision of the standardised approach • Revision of the internal model approach
Output floor	<ul style="list-style-type: none"> • Phase-in over five years, starting 50% in 2022 to fully-loaded 72.5% in 2027 • Calculated on the basis of institute-related RWA in accordance with standardised approaches
Leverage ratio	<ul style="list-style-type: none"> • Add-on for global systemically important institutions • Revision of framework



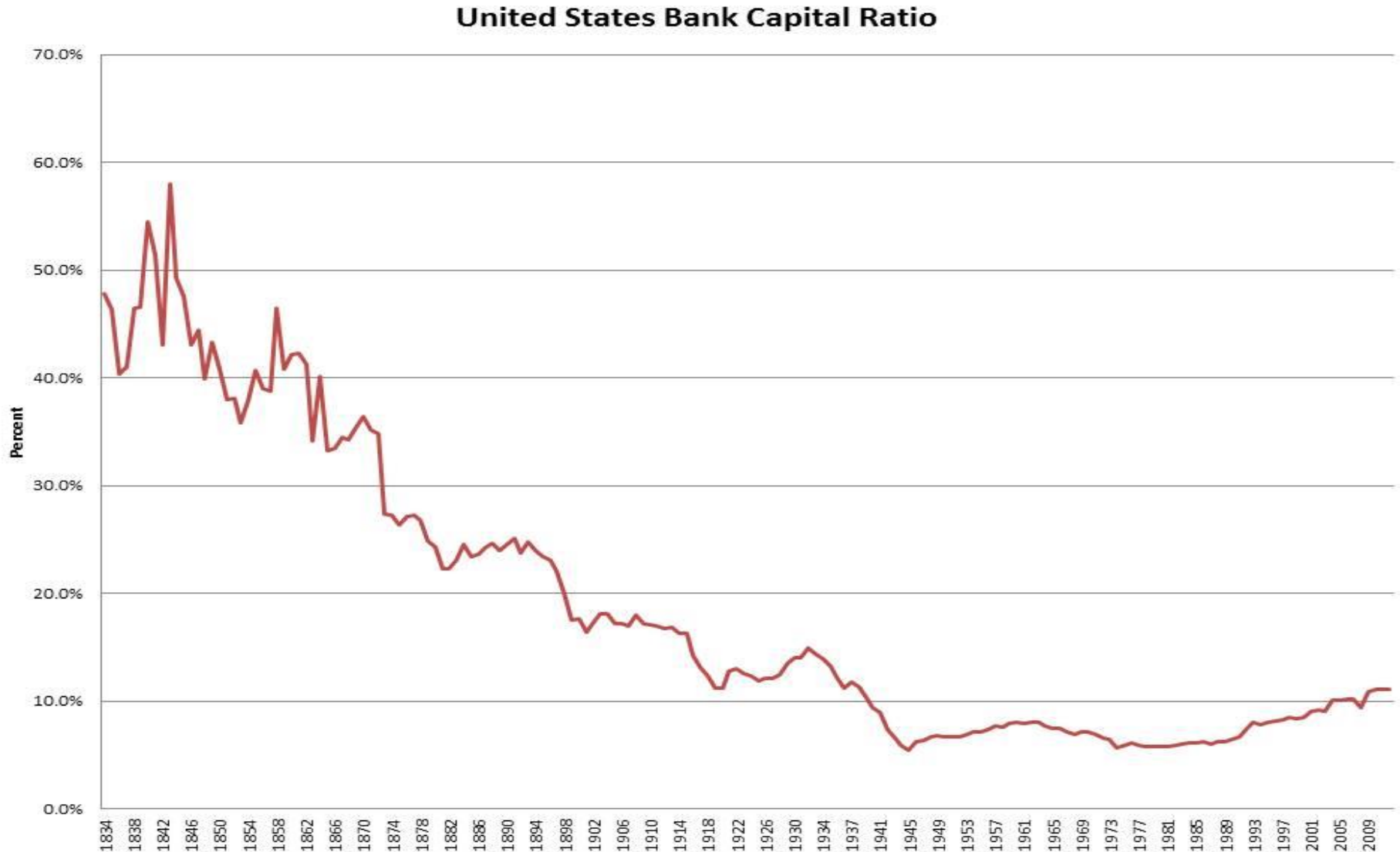
High level summary of changes

Capital floor

- Set at 72.5%
- Banks using internal models must hold at least 72.5% of the capital calculated under the standardised approach
- Capital floor set at an entity level, rather than a risk-type level
 - Capital allocation within the entity needs to be revisited
- Standardised approaches
 - More risk sensitive across all risk and asset classes
 - No advanced approach for operational risk
 - Credit risk standard approach risk weights are reduced for key sectors, e.g. real estate
 - FRTB (market risk) – no changes announced
- All changes are scheduled for one 'big bang' implementation on 1 January 2022, with the capital floor transitioned from this date



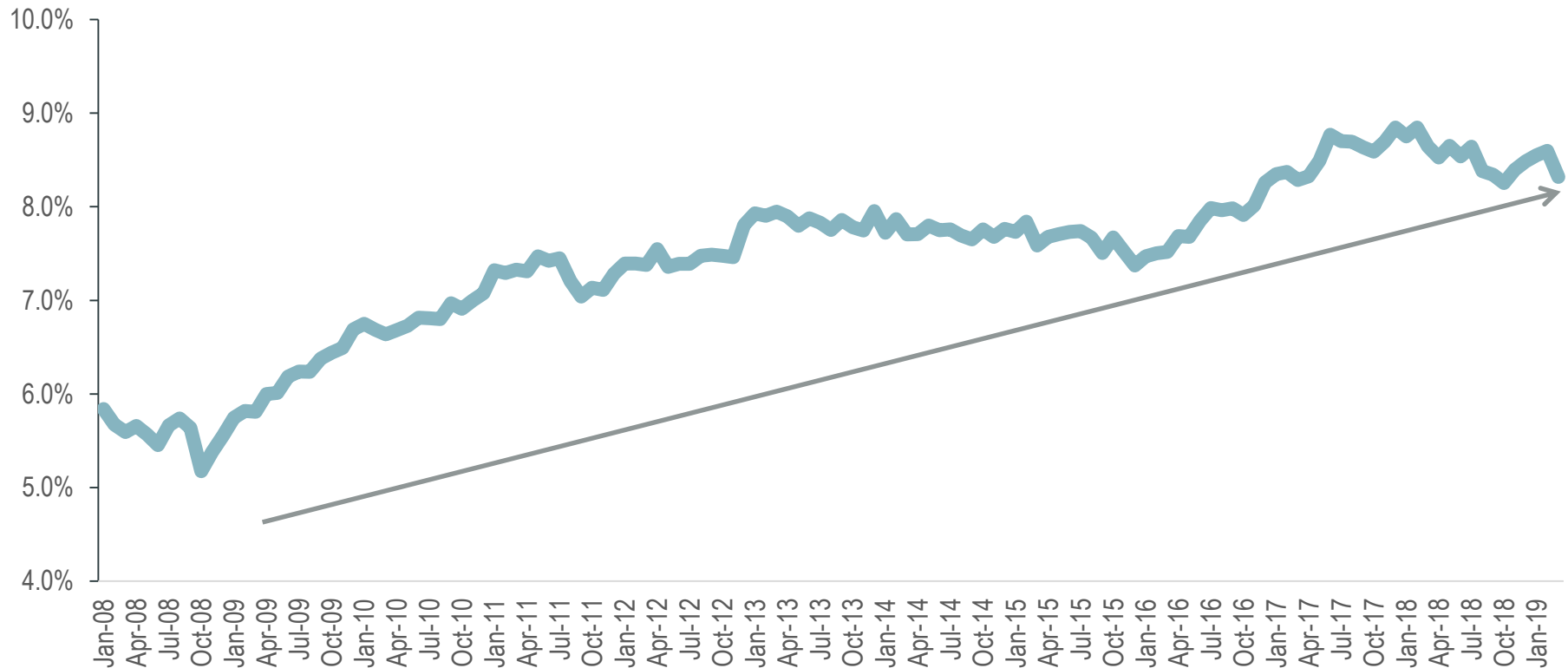
Capital ratio for US bank industry over time



Improved capital underpin for SA industry

SAGB and SATB issuances have increased by 42% (R1.45trn to R2.0trn) over the last four years. Local banks have increased their holdings of SA government securities by 38% (from R237bn to R327bn) in the same period

Capital



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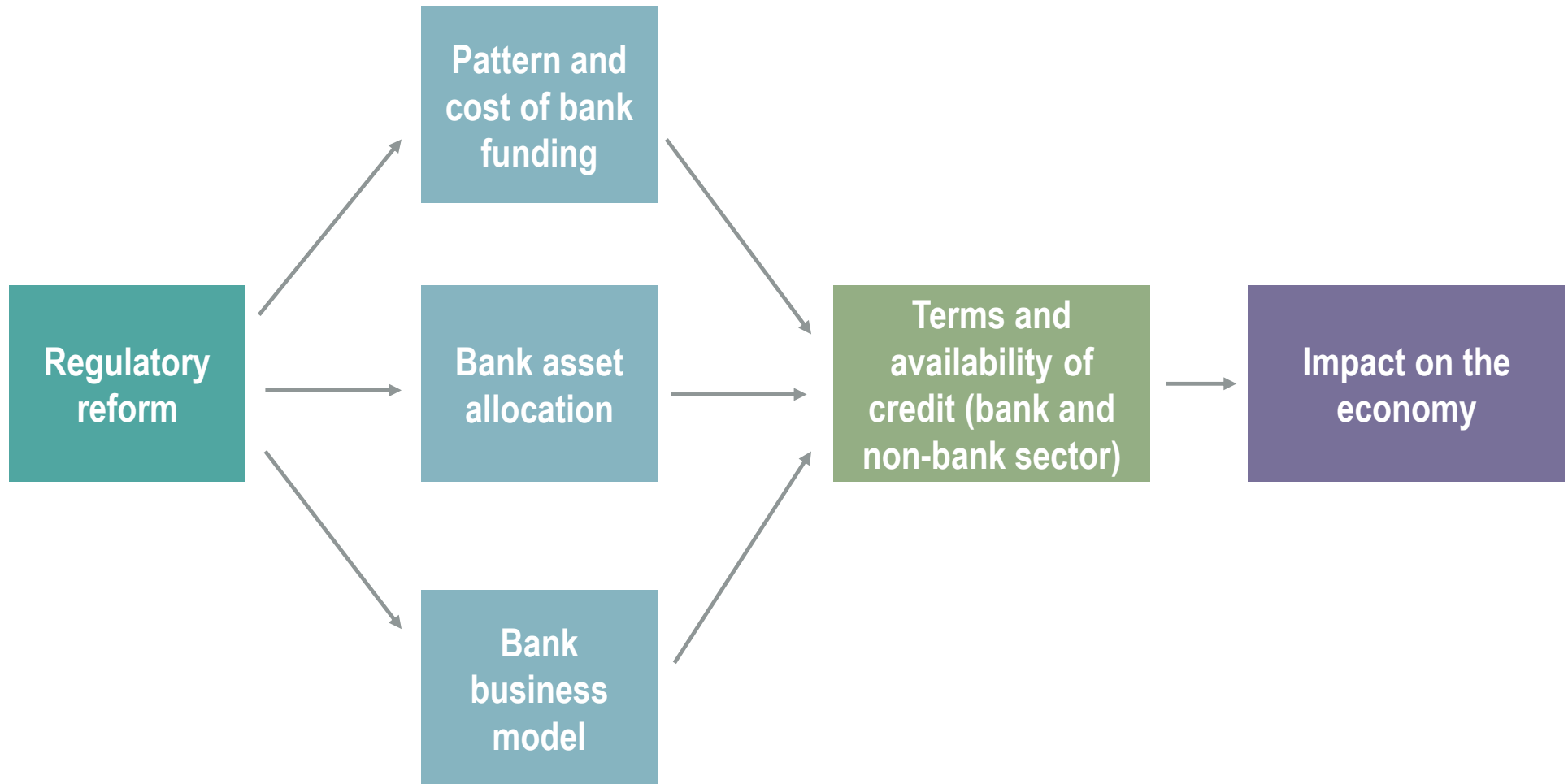


What was the expected impact



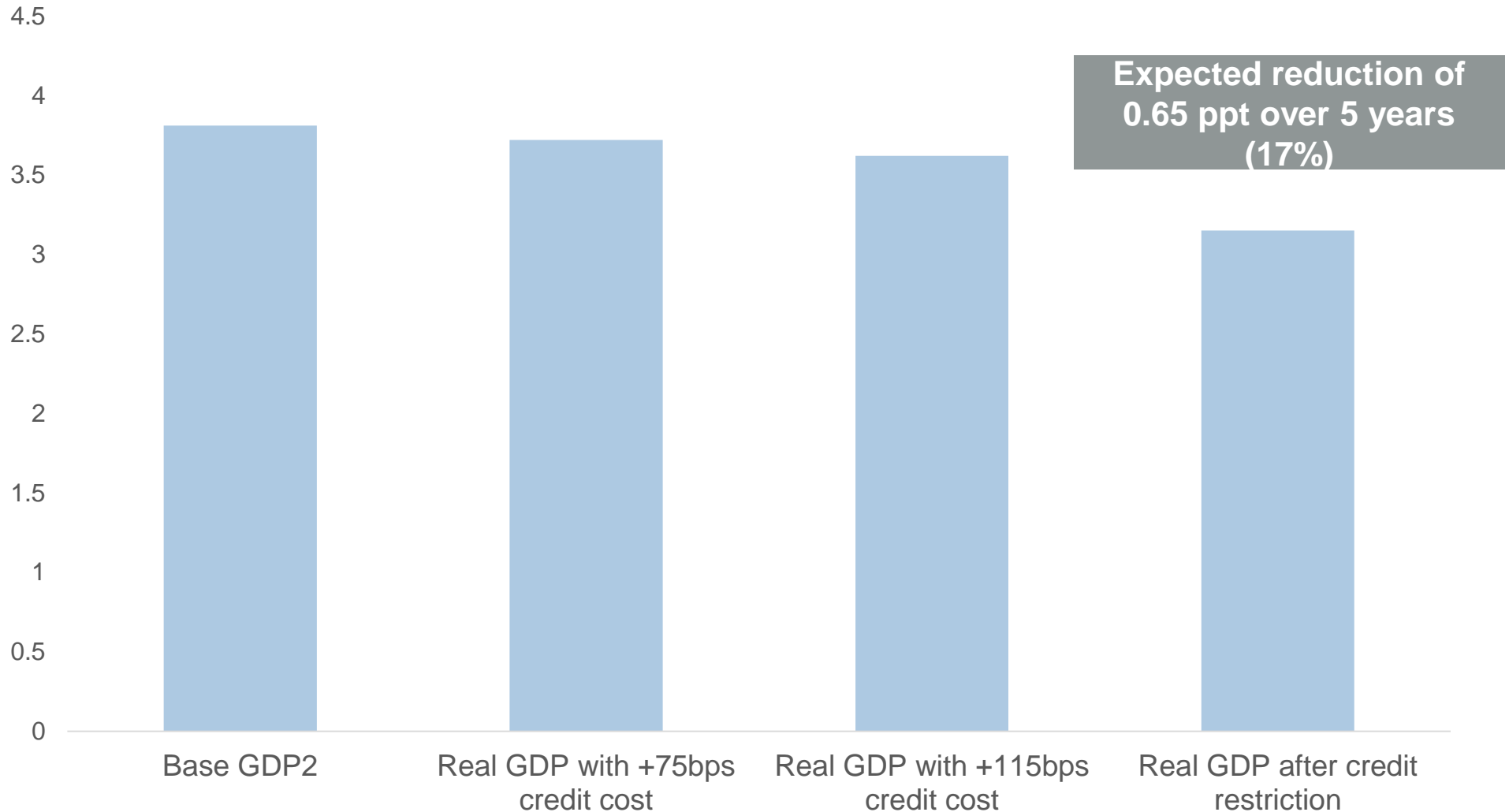
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Stylised model to express the expected impact on the economy

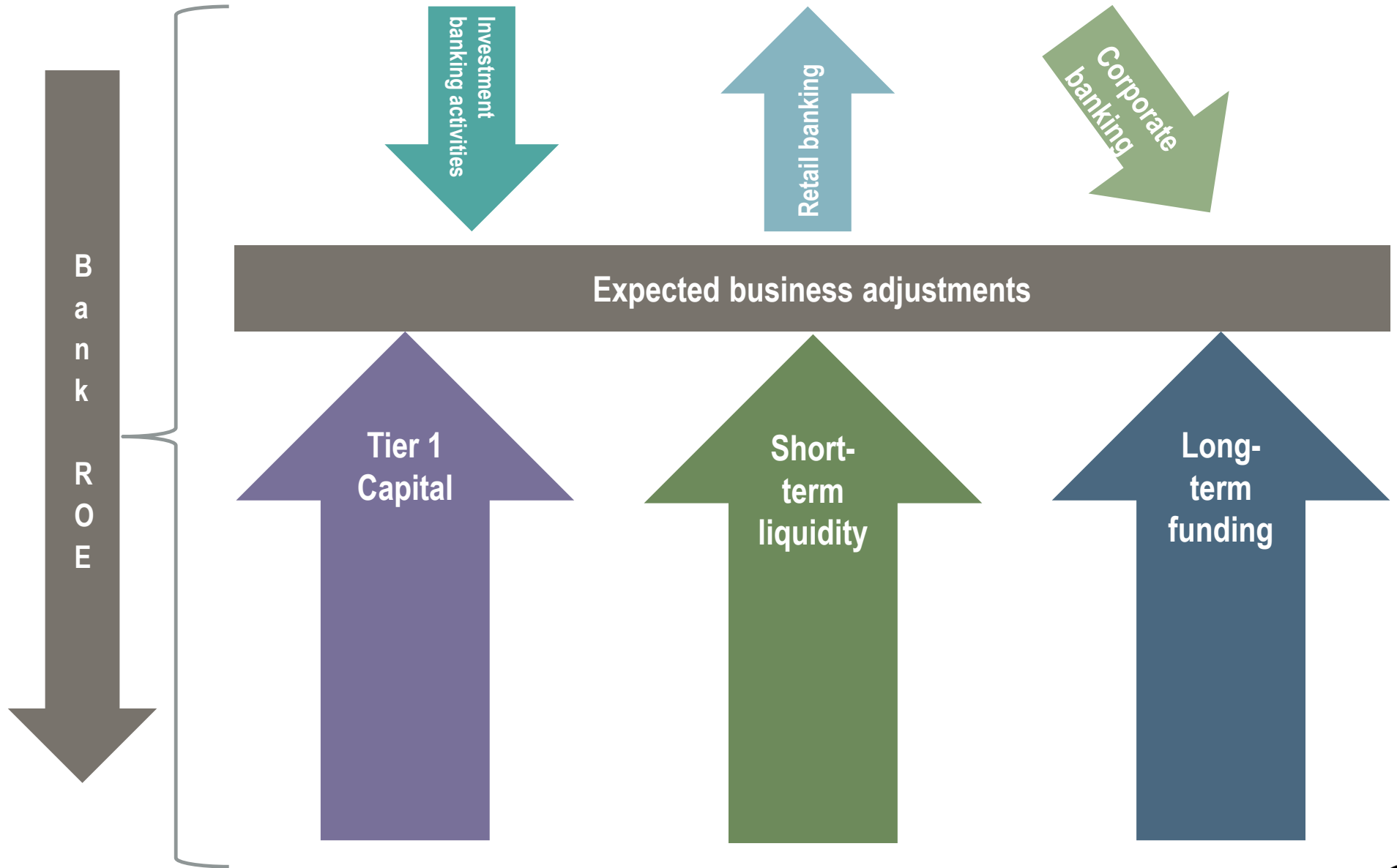


Expected impact on the economy: BER assessment, April 2012

Real GDP growth under different credit cost and availability scenarios: Annualised GDP forecast: 2010 - 2018



Expectations of Basel III for banks at the onset of implementation



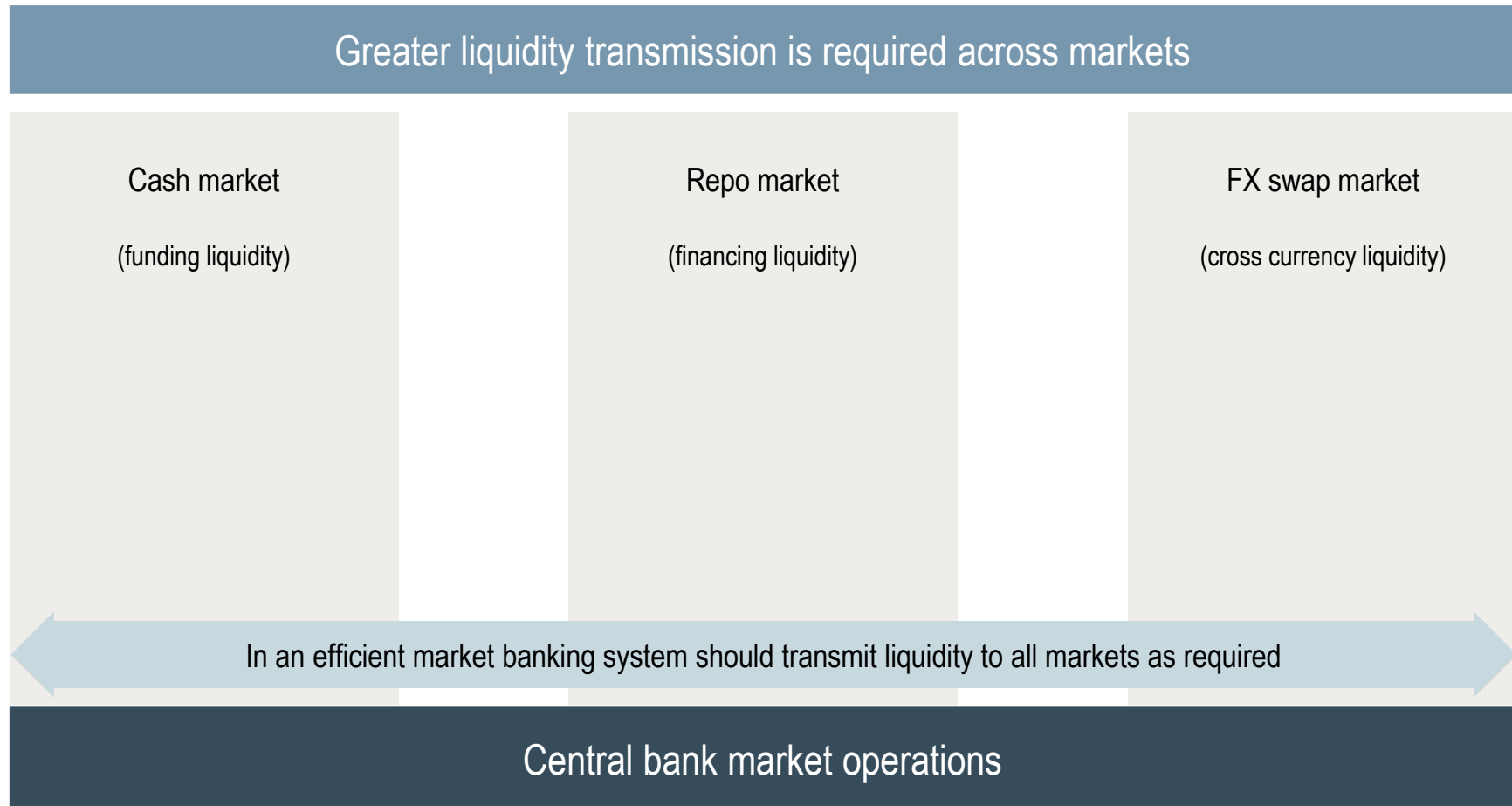
Impact of Basel regulations on banks' balance sheets:

A shift in sources and costs of funding



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Pillars of market liquidity – suggest all markets are constrained

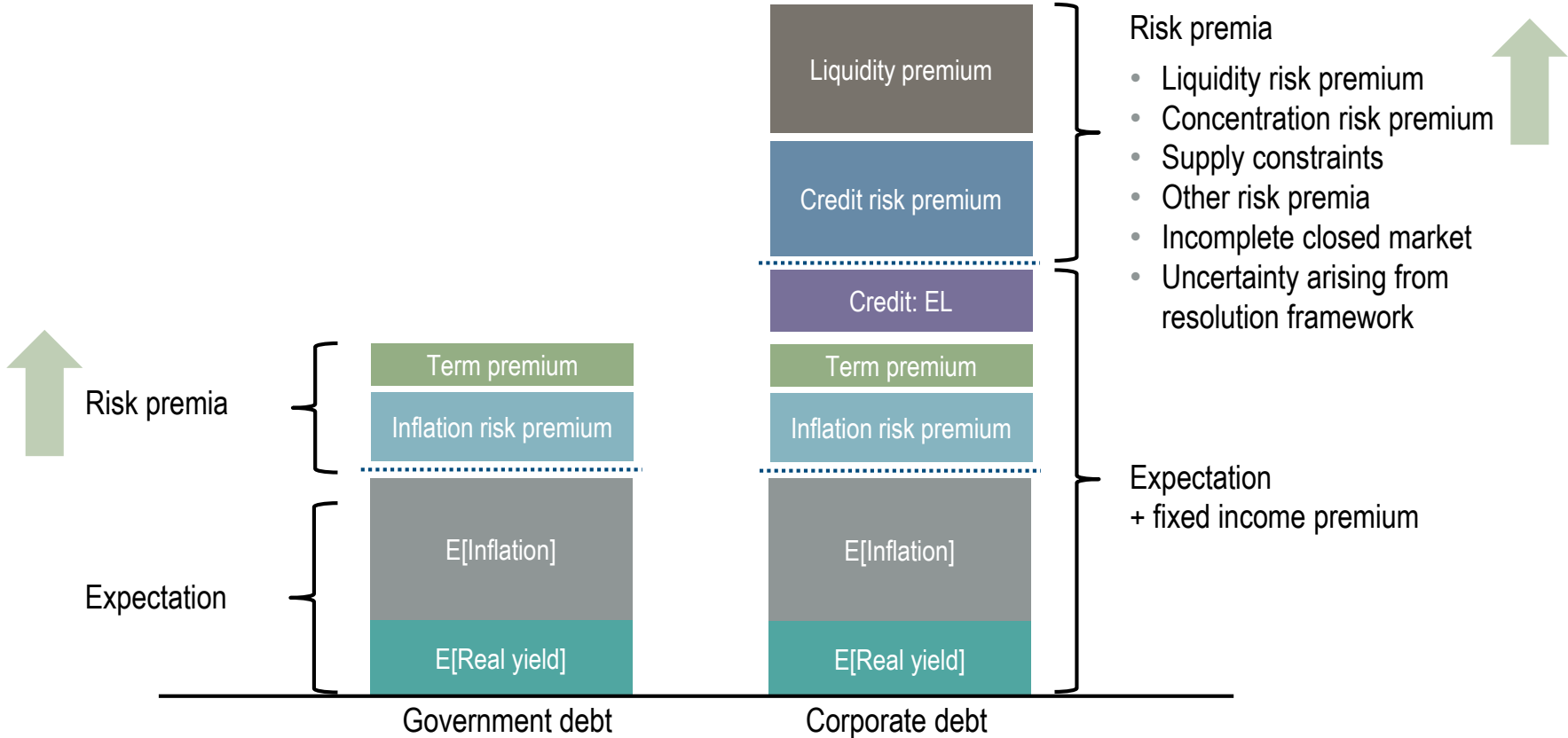


Charles Goodhart of the BIS Advisory Committee, BOE and LSE explains:

“Ultimately, Central Banking is about providing liquidity and liquidity provision is an essential and central component of financial stability.”



Components of fixed income risk premia

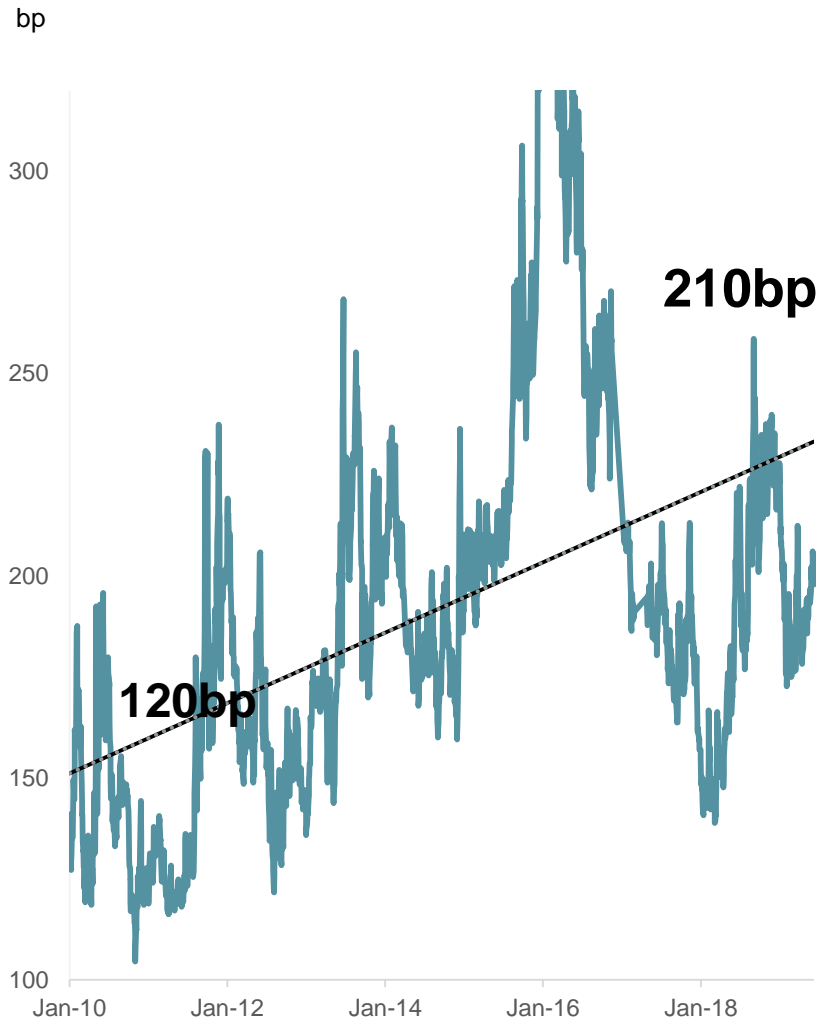


Depending on the nature of the risk premium, the market action to restore equilibrium would be very different

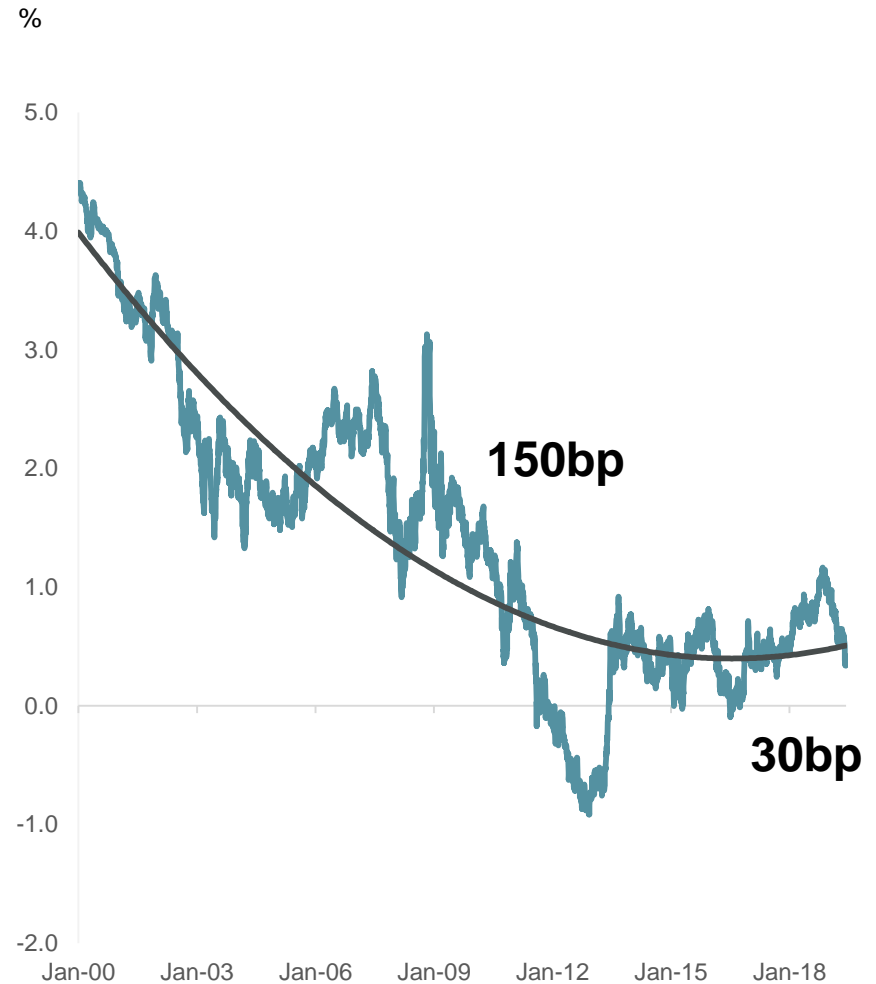


SA sovereign risk ads to required real yield; offset by falling global yields

South Africa 5-year CDS



US 5-year real yield

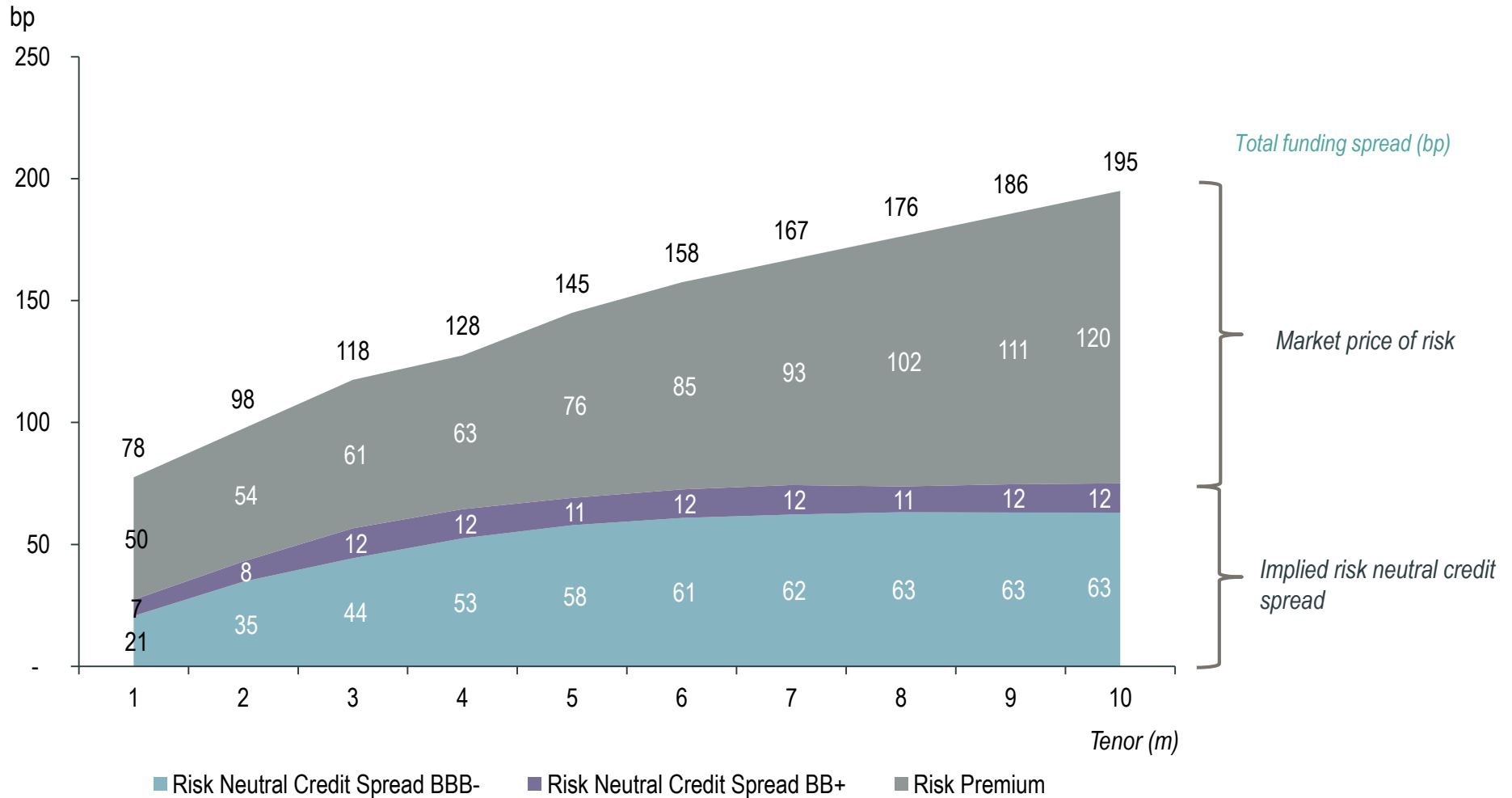


Persistent focus on inflation target contained lift in nominal risk-free yields

South Africa 5-year breakeven inflation rate



Application of the Moody's KMV G-Core model to determine credit spread



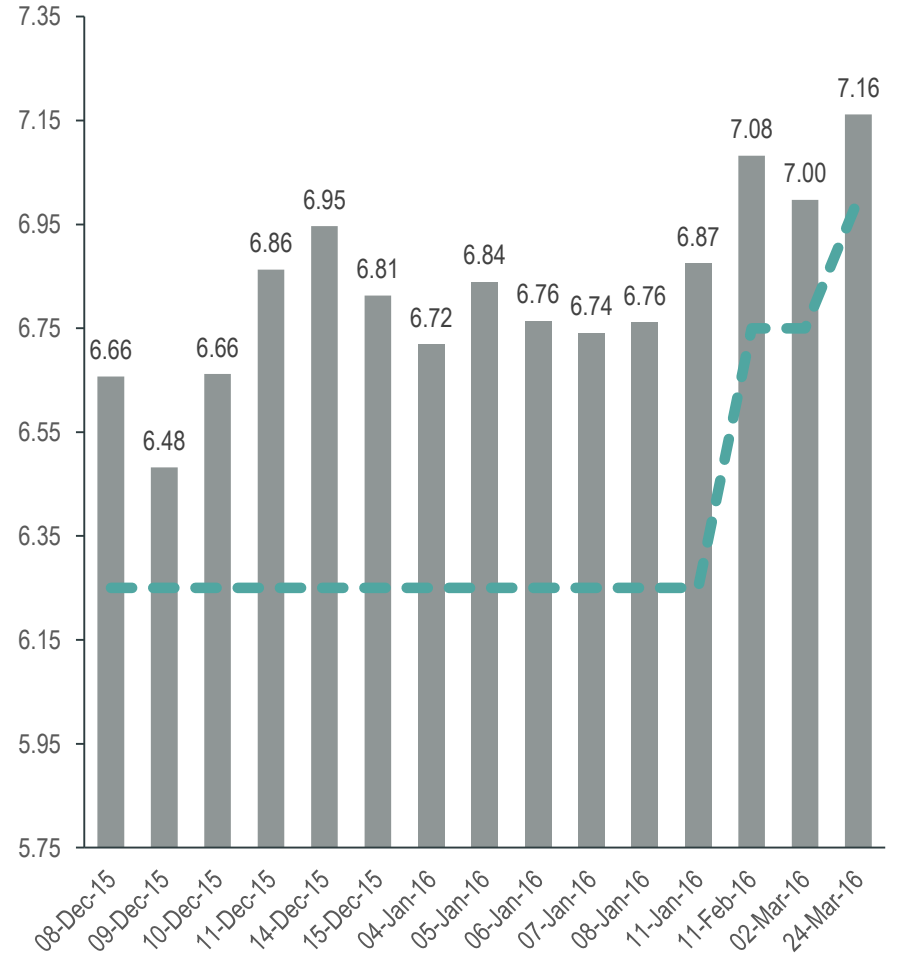
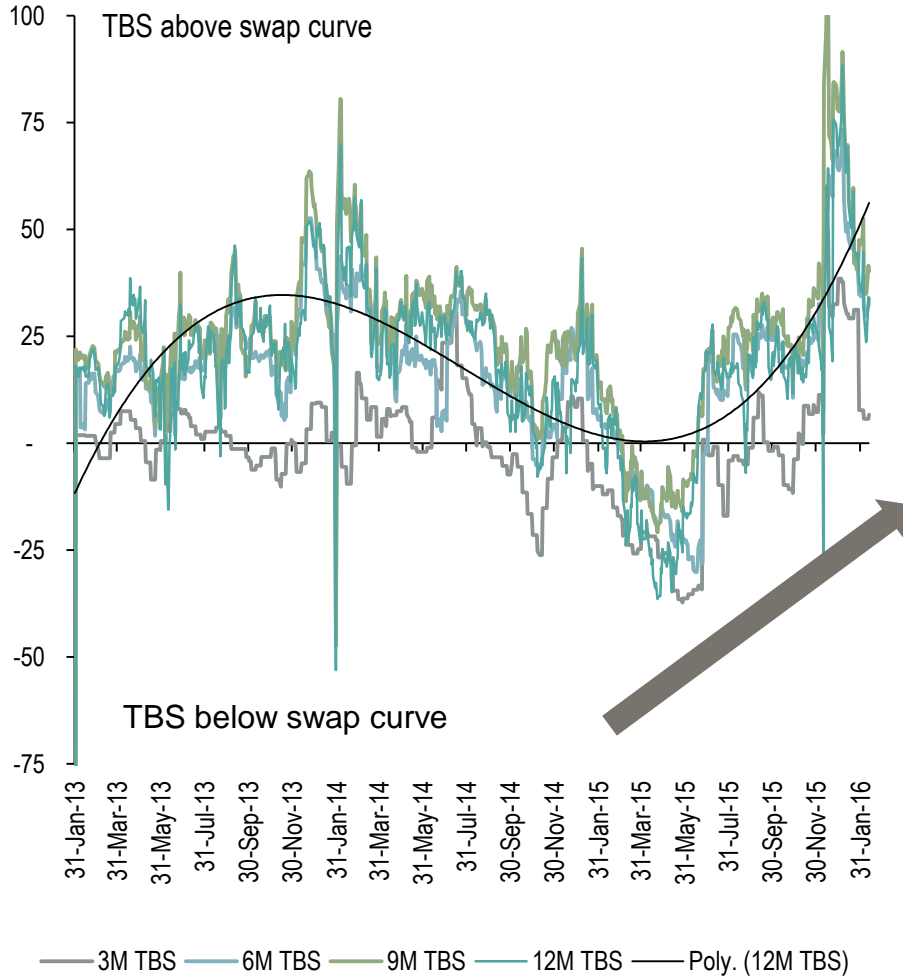
Decomposing the credit spread term structure shows component attributable to "risk premium"



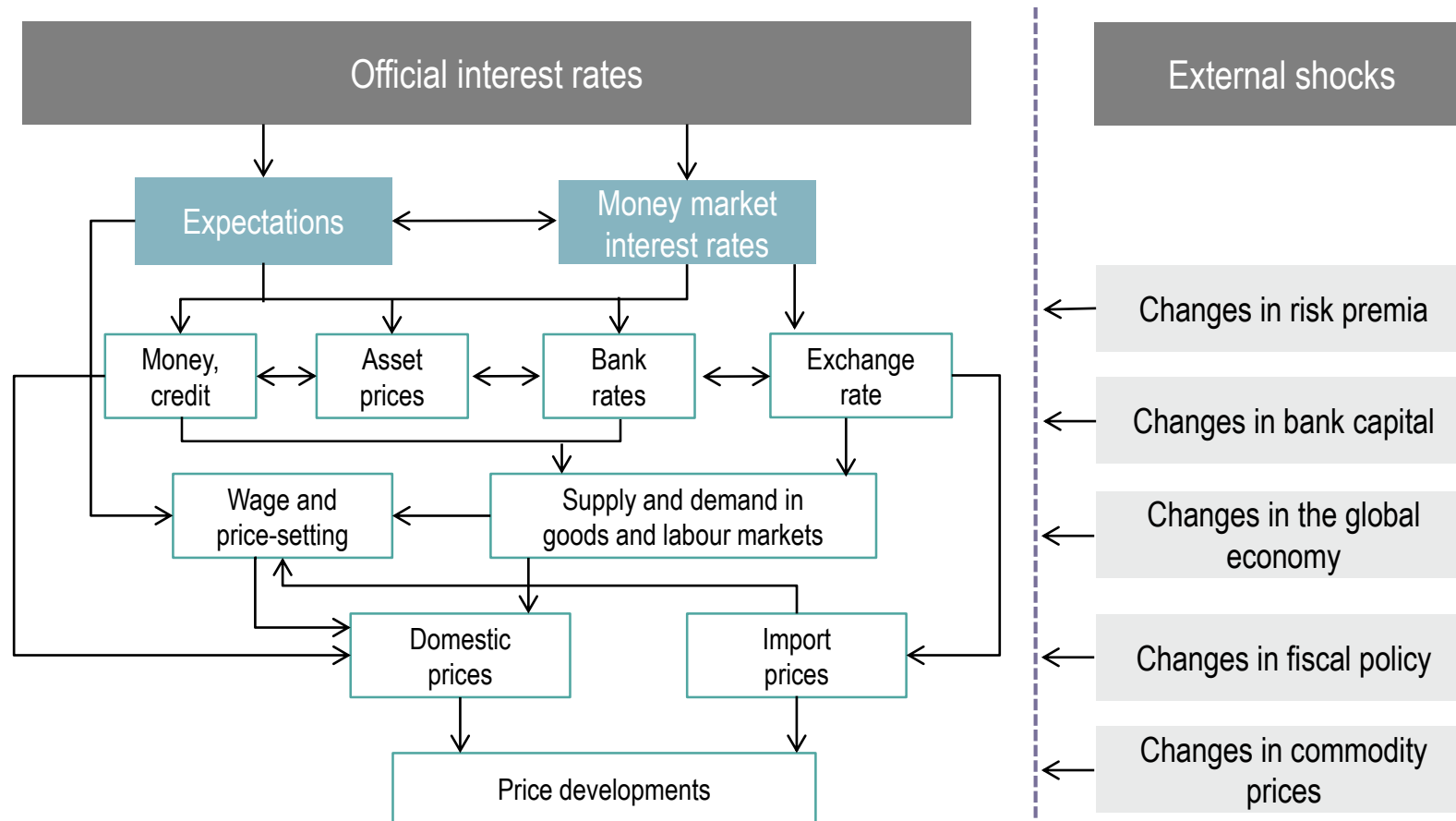
Liquidity & repo financing markets reflect some inefficiencies

TB swap spreads “TED” spread

Average traded repo rate in government collateral (%)



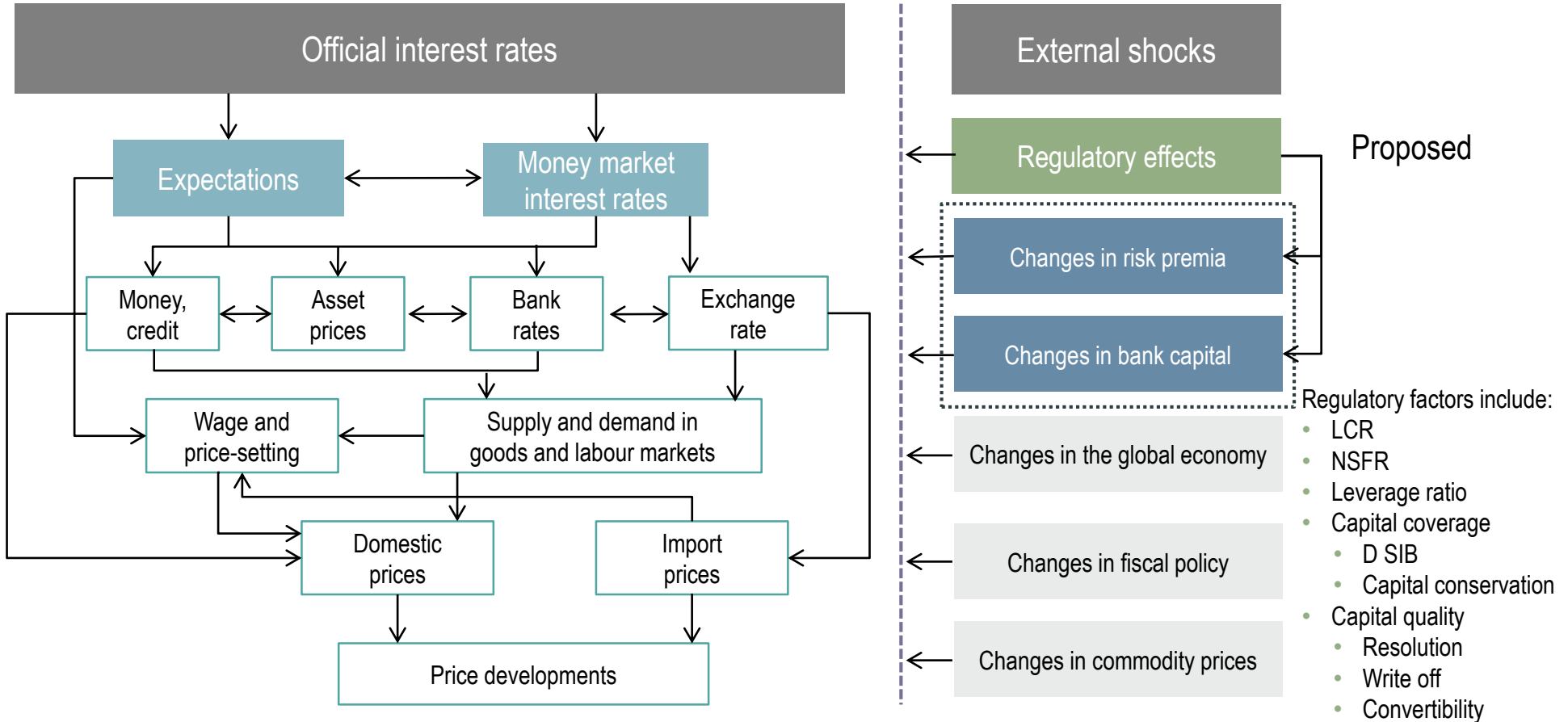
Many channels acting on the price of money



Textbook monetary policy transmission map;
new regulatory regime impacts the credit channel



Many channels acting on the price of money



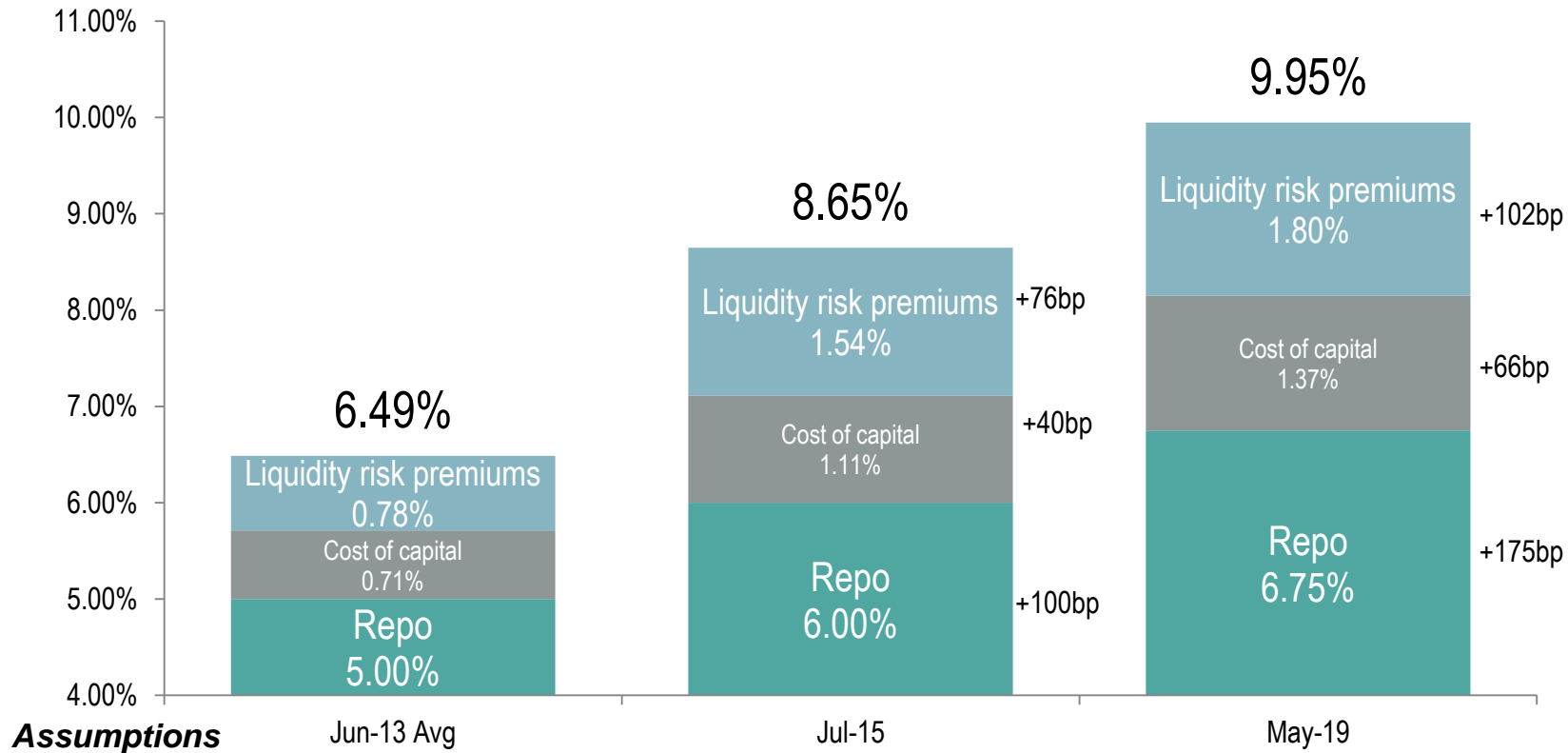
Post-GFC regulatory effects have been powerful, impacting price, availability and risk appetite; significant observable effects on credit transmission channel

Source: <https://www.ecb.europa.eu/mopo/intro/transmission/html/index.en.html> and FirstRand edit



It all transmits to the price of credit

- Hypothetical example showing credit carrying cost has already increased 358bps since June 2013 before credit loss ratio



Risk free rate

- 2013: 7.5%
- 2015: 8.25%

Regulatory capital requirement

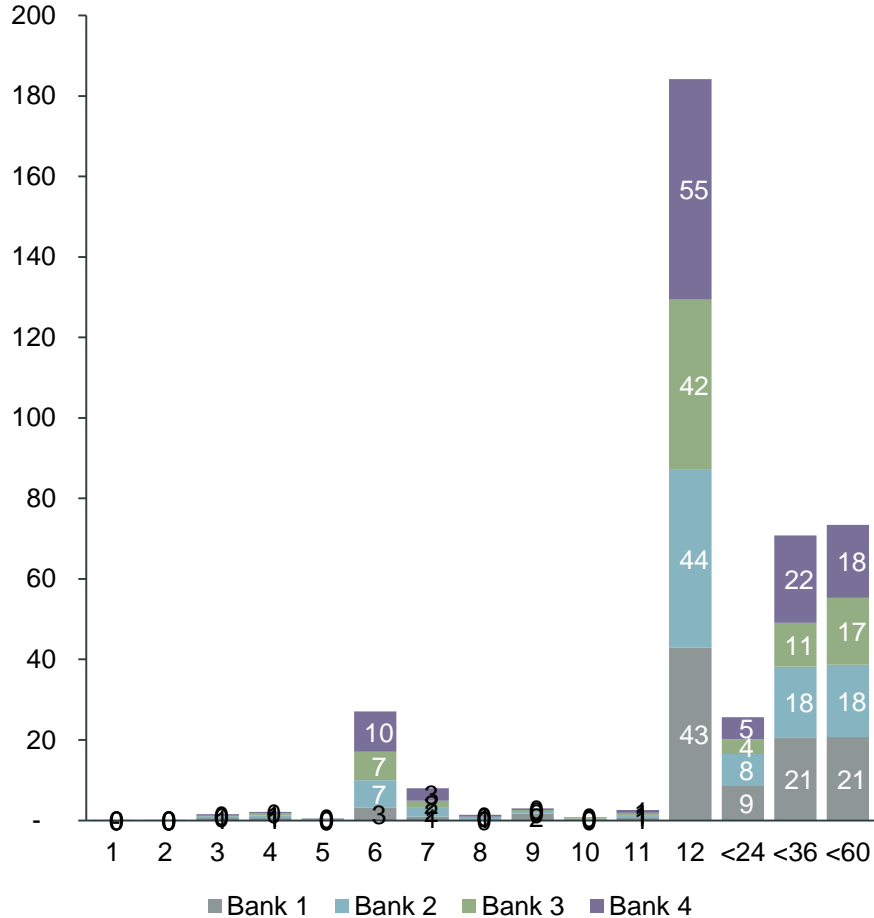
- 2013: 9.5%
- 2015: 14%

- Average bank RW: 60%
- Asset term 36-m

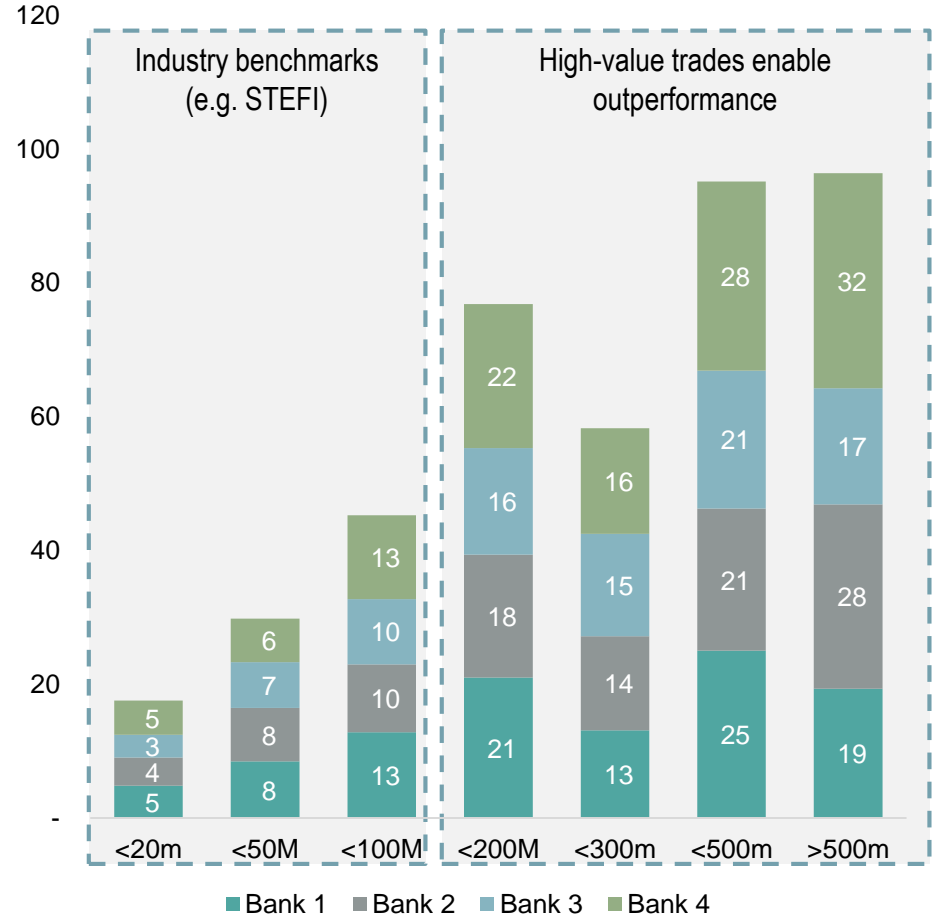


Money market trade statistics

NCD distribution by issued tenor (months)



NCD distribution by size of issuance (months)

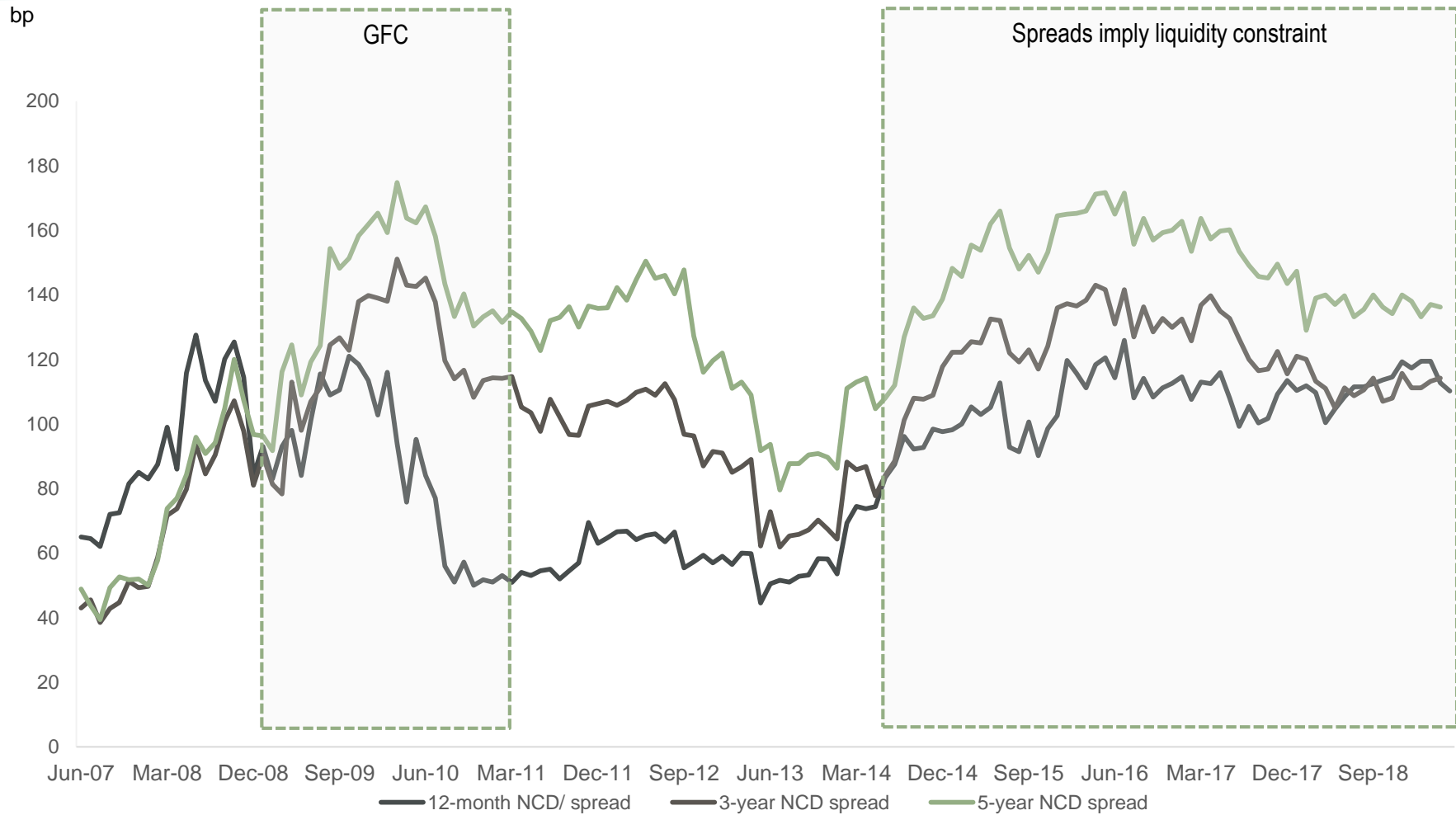


Market statistics infer that money market investors appear to run a rolling 12-m strategy



Noteworthy pricing pressure in funding markets

Mid bank funding spreads [mid bp]



Liquidity pricing at level seen in the crisis as consequence of misaligned market forces, economic conditions, regulation and market operations

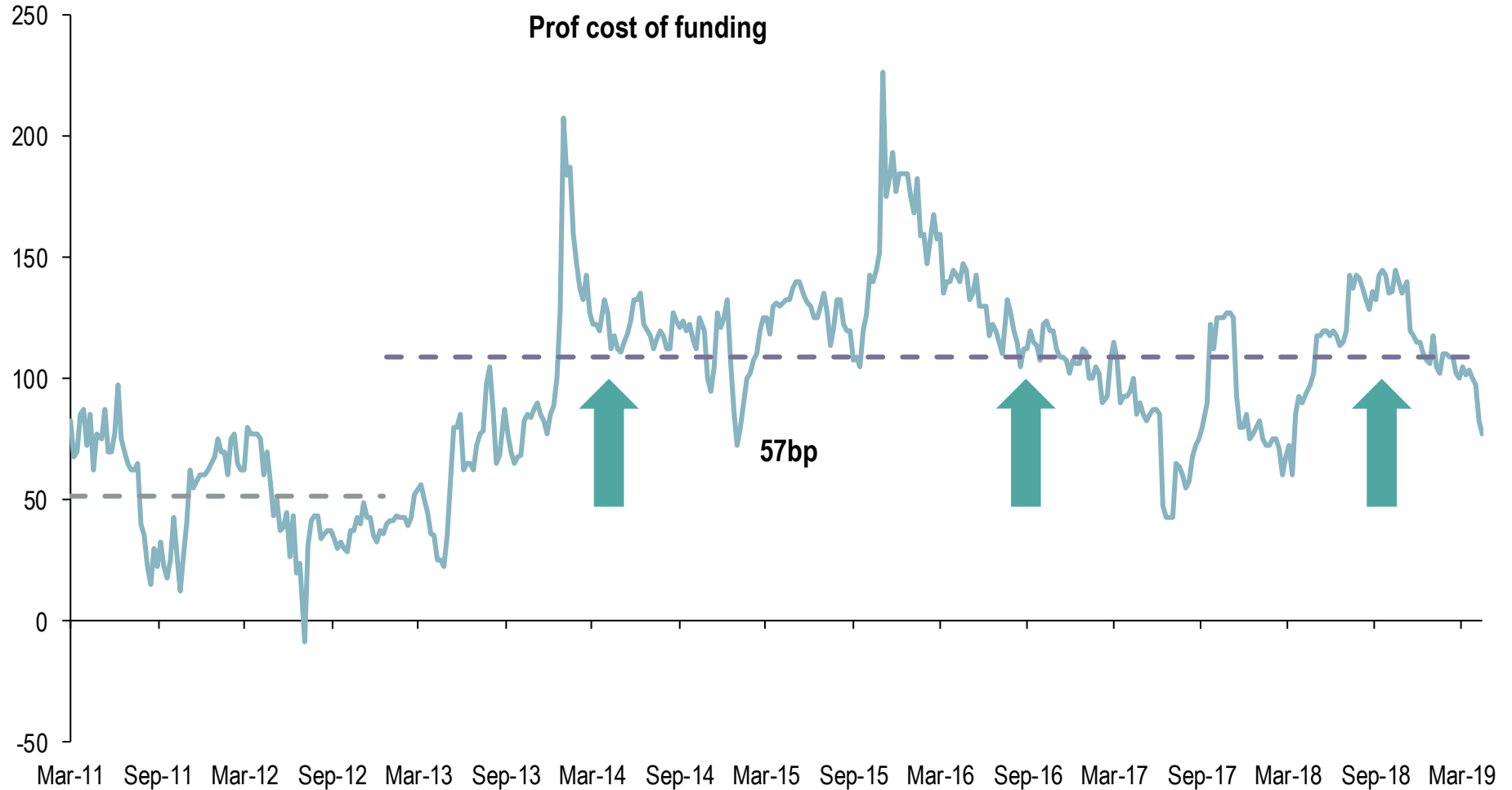
Source: Bloomberg <RMBP> and <OTC ZAR>



Impact on the banking sector's professional funding cost: paying more for term funding

Bank sector funding: Spread between 12-month NCD and 3-month NCD

Term spread (bp)
(12-m/3-m NCD)



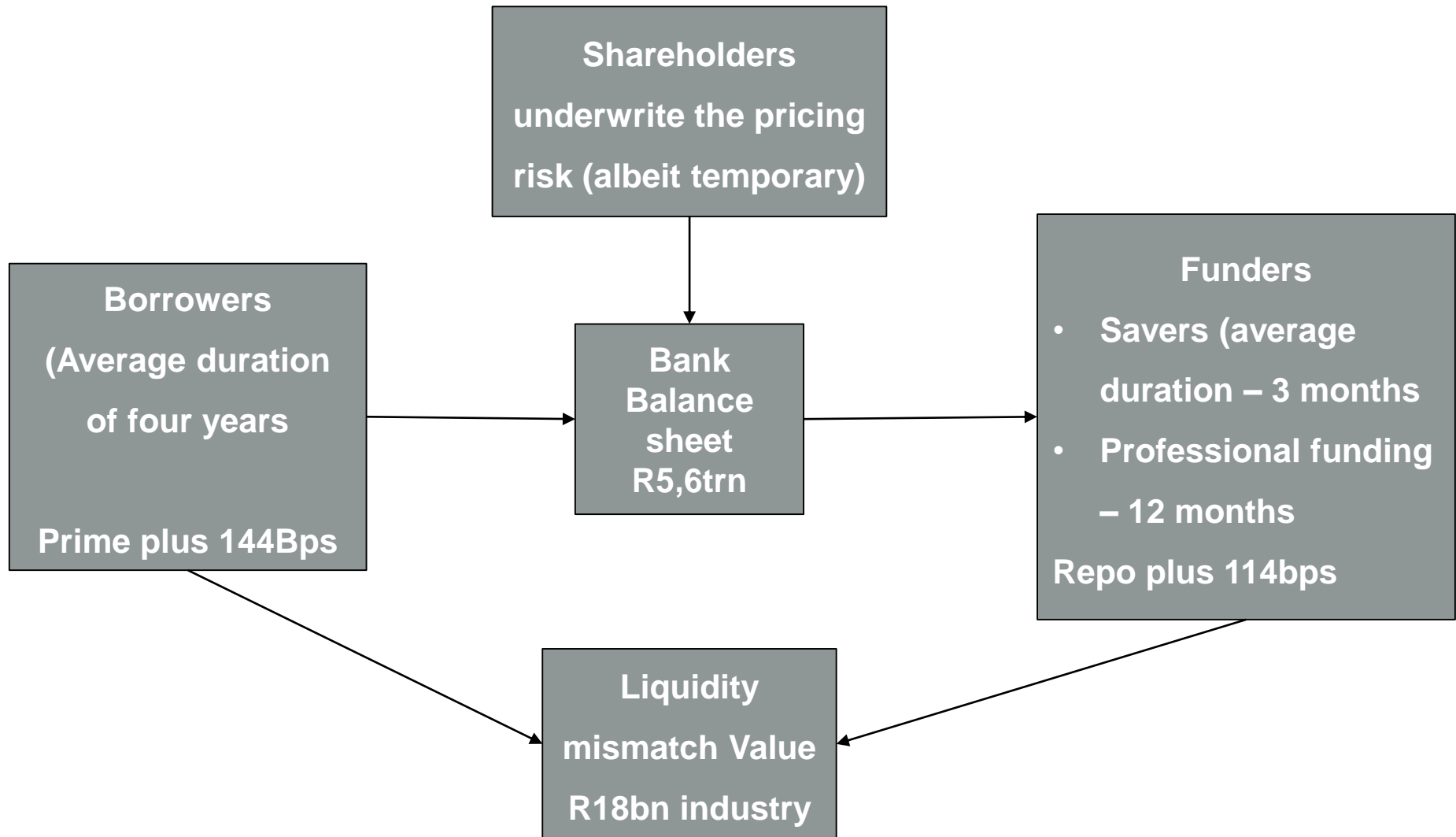
Impact of Basel regulations on banks' balance sheets

Reallocation of resources

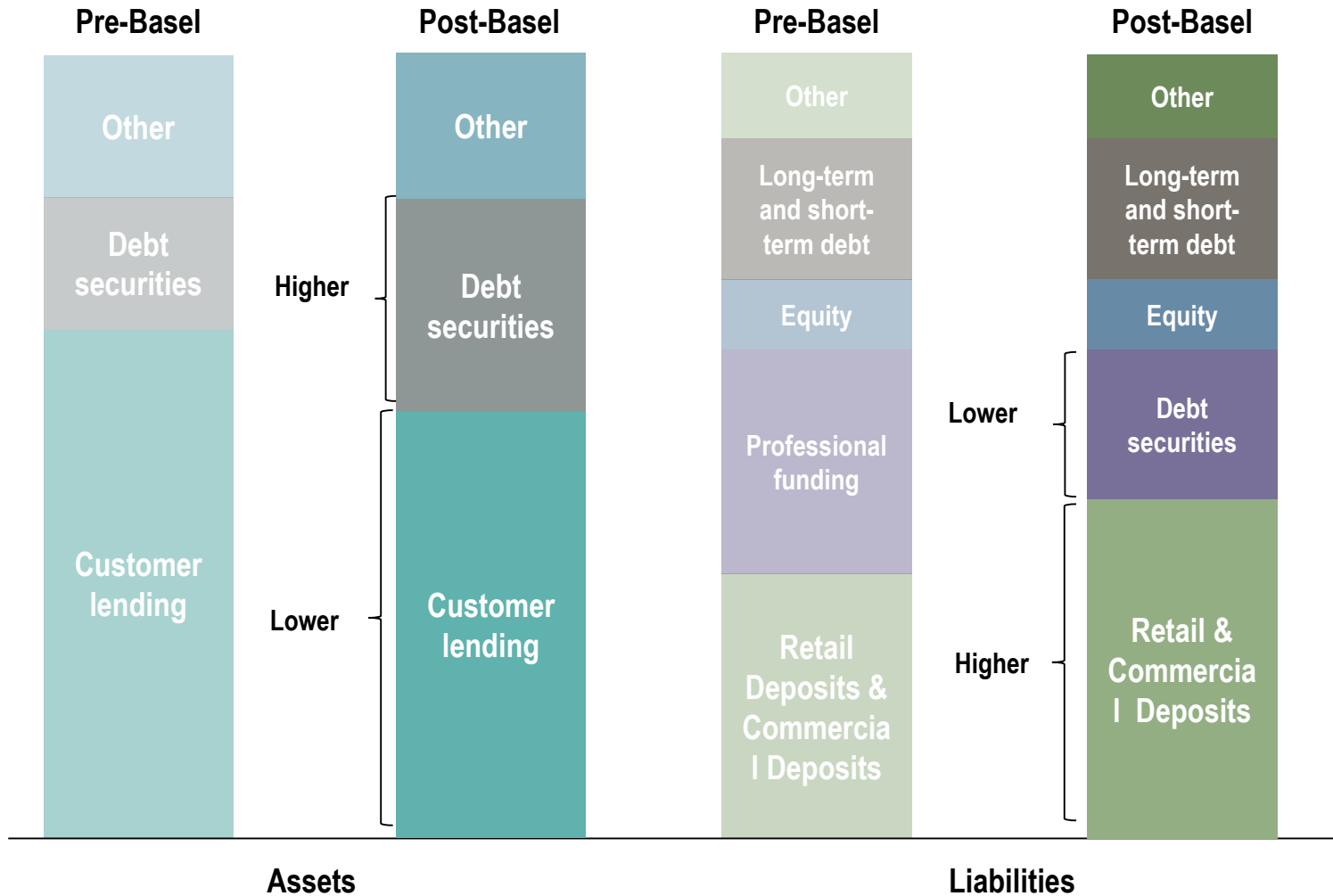


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Implied value of liquidity mismatch drives balance sheet structure



Expected impact on banks' balance sheets



- Increased competition for retail and corporate deposits
- Reduction in professional funding
- Increase investment in government bond and other “high quality liquid assets”
- Reduced customer lending



Change in advances composition: industry

ADVANCES

Dec-13

Dec-18

Retail

46%

39%

- Residential mortgages
- Vehicle asset finance
- Unsecured

28%

24%

8%

7%

10%

8%

Corporate

40%

48%

- Mortgages, instalment finance and leasing
- Corporate loans
- Other

12%

13%

17%

20%

11%

15%

Non-core

14%

13%



Change in funding composition: industry

Funding

Jun-13

Dec-18

Retail

21%

23%

Corporate

17%

15%

Commercial

23%

24%

Professional funding

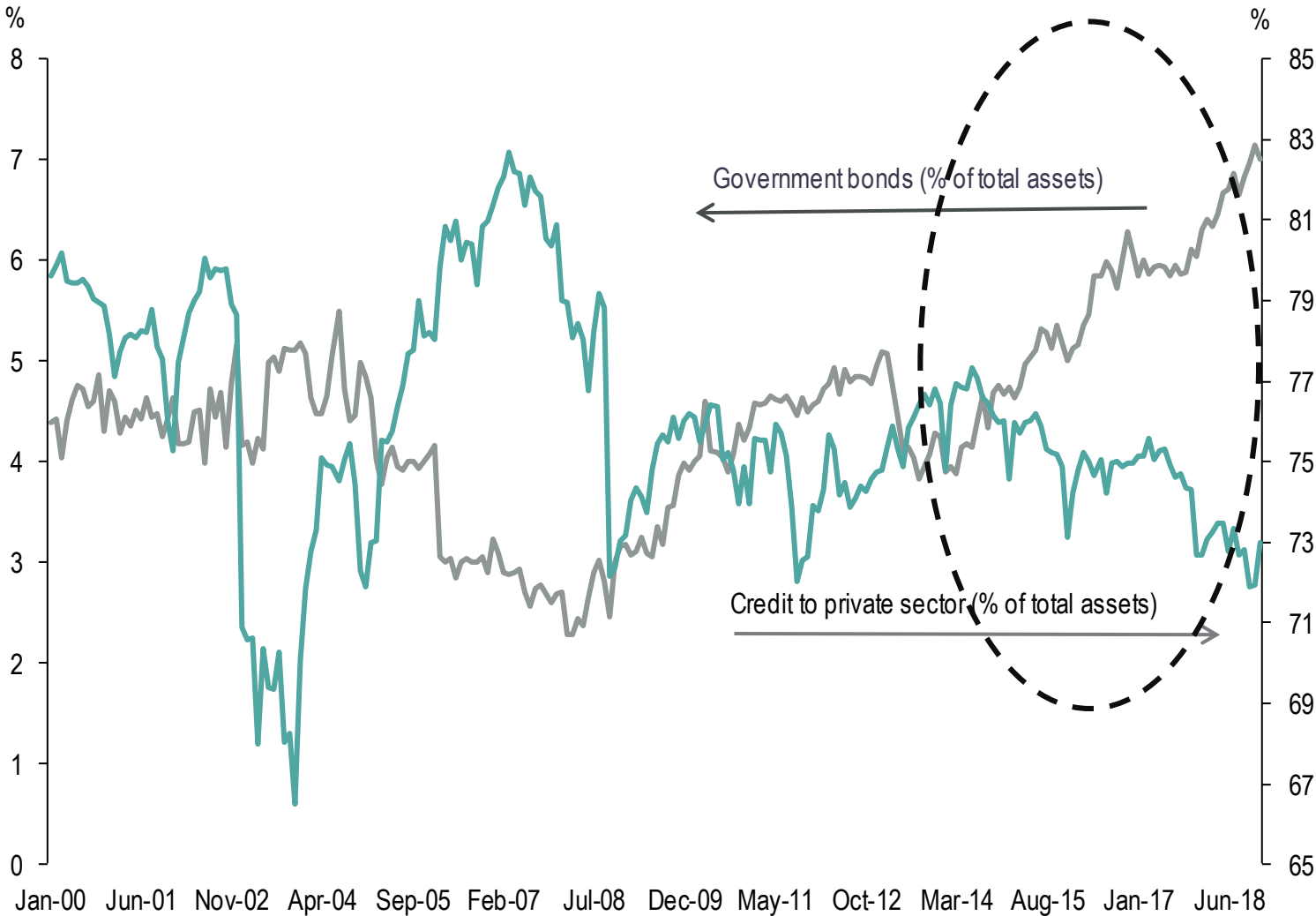
39%

38%



Bank sector assets: reallocation of funding from private sector to the government

Bank sector assets: Government bonds and Treasury bills vs. private sector credit (% of total assets)



- Contributed to shift of funding resources from the private sector towards government

Source: SARB, FirstRand, December 2018



Impact of Basel regulations on banks' balance sheets

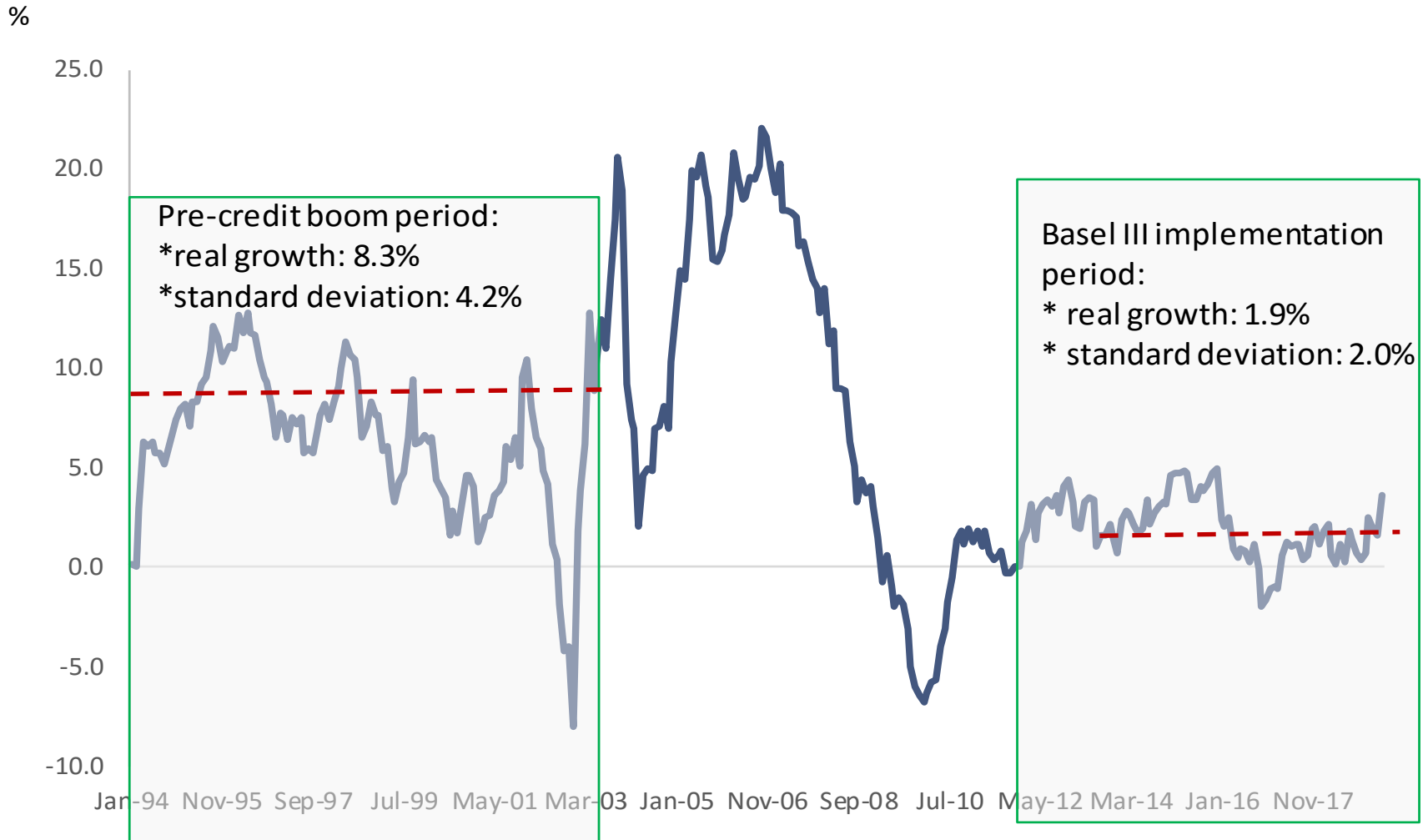
Some (un)intended consequences?



FirstRand

Less volatility in bank sector advances and the cost thereof

Credit extended to the private sector (% y/y)

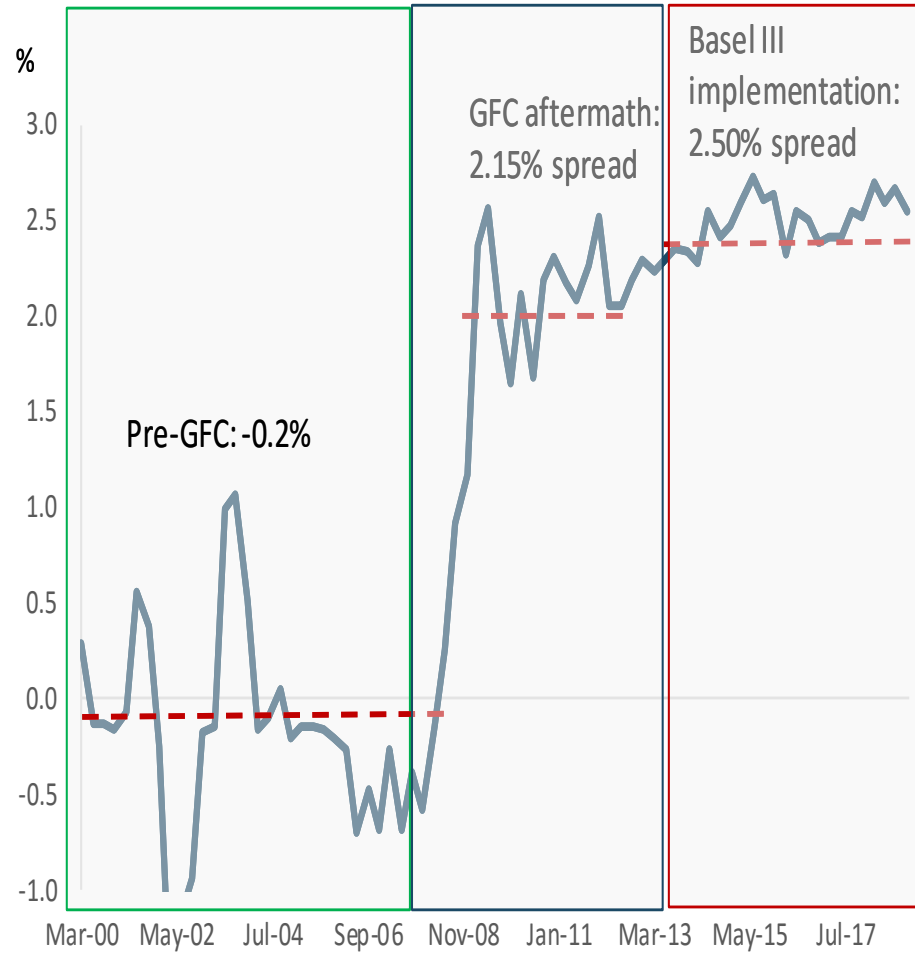


Source: SARB, FirstRand, December 2018

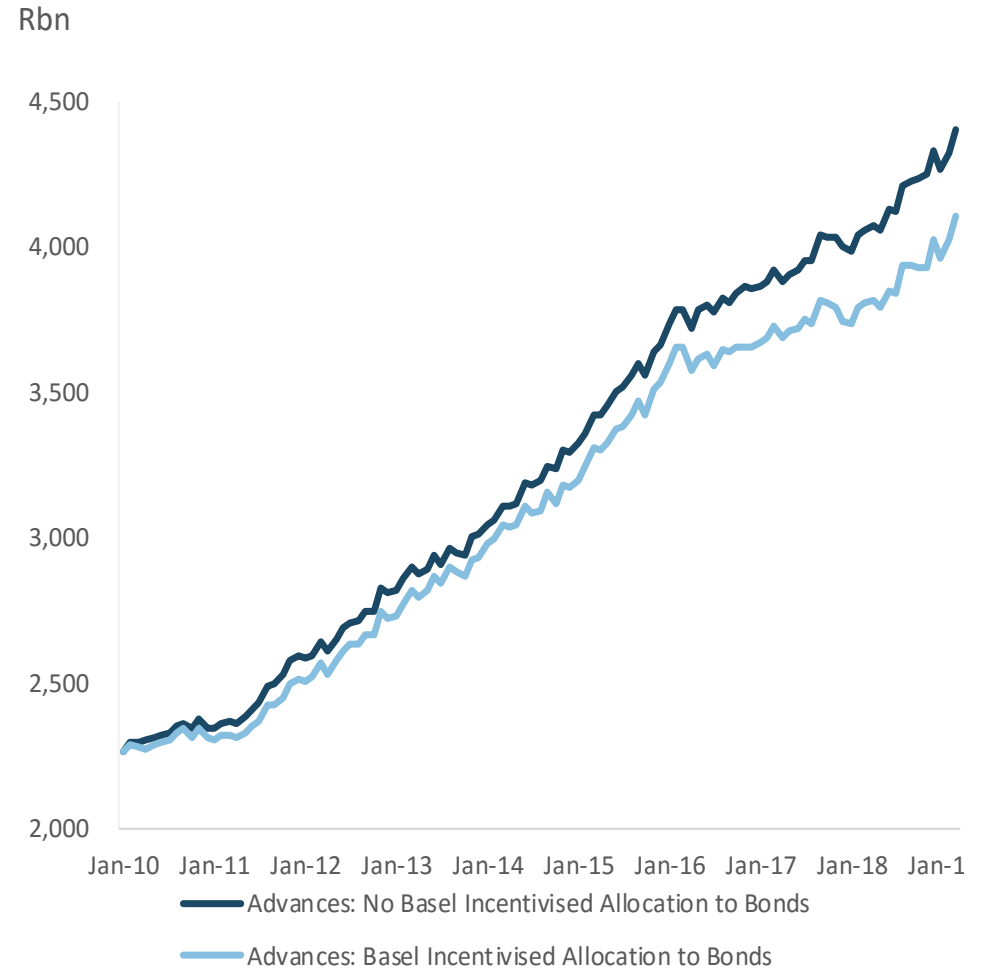


An increase in the cost of credit & a decrease in credit supply (pvt sector)

Cost of debt (households): spread above the prime rate



Bank sector assets: Pre-Basel Liquid Asset Ratio scenario vs actual

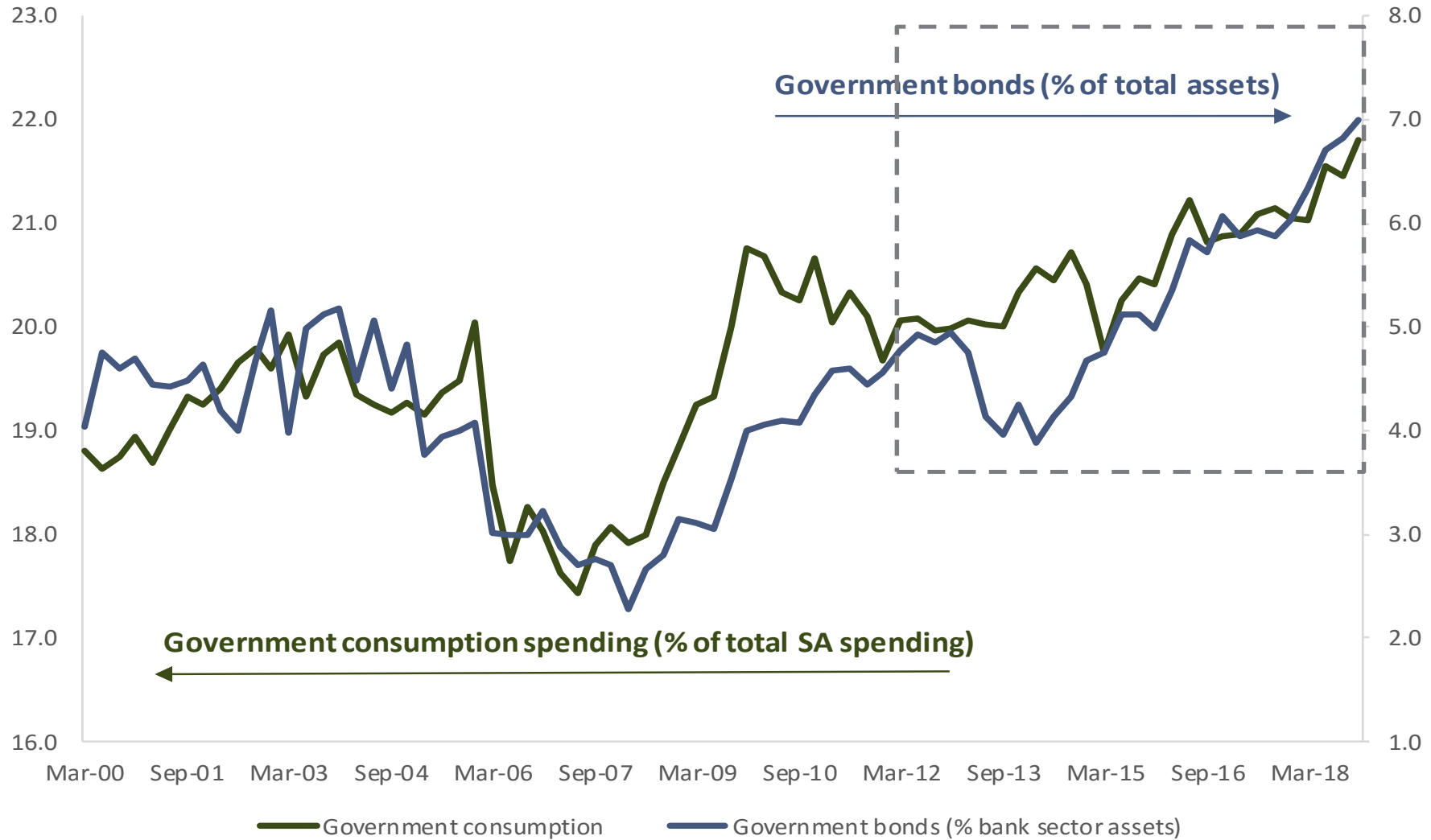


Source: SARB, FirstRand, December 2018



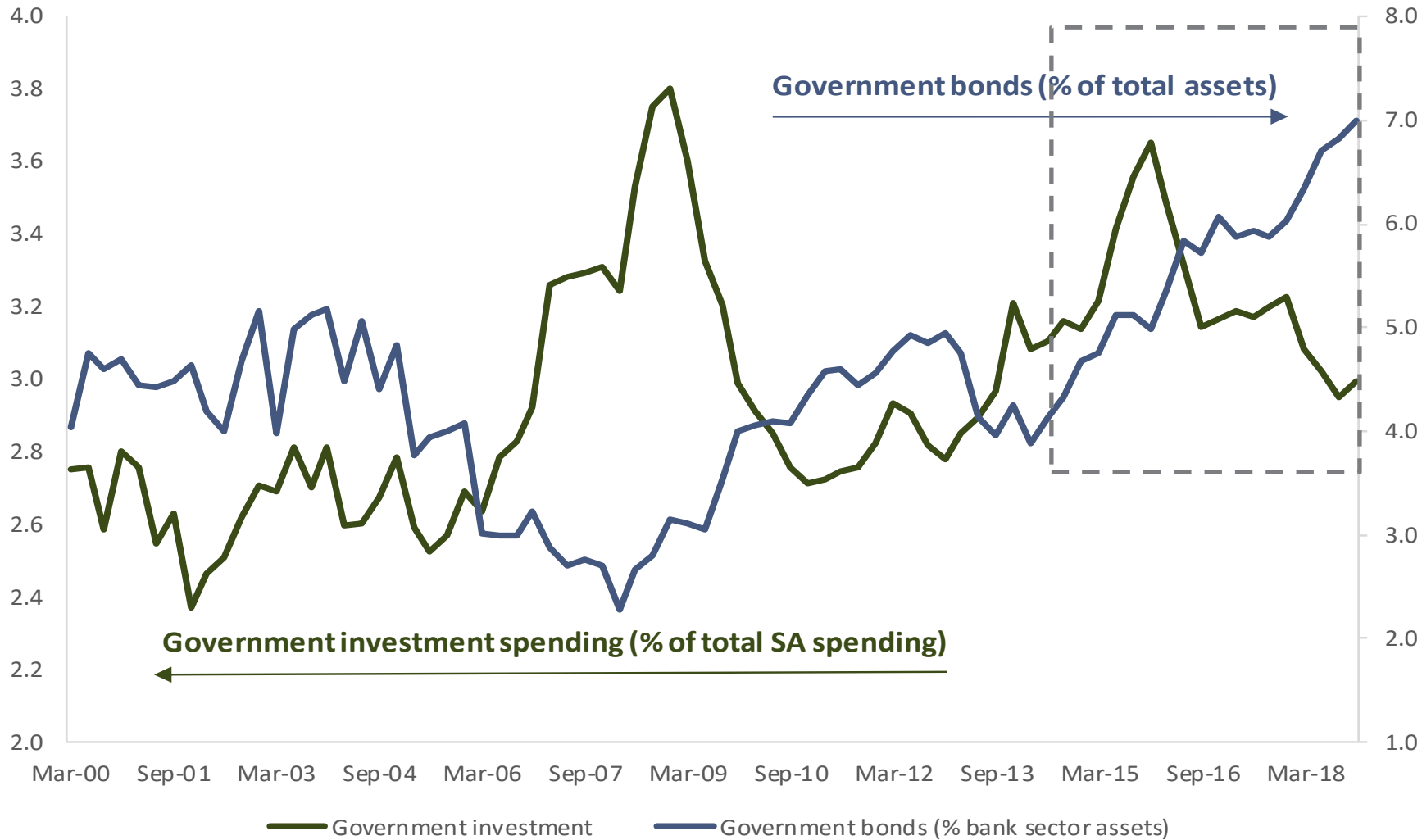
More funds available for government spending (liquid assets)

Bank sector government debt holdings (% of total assets) & government spending (% total SA spending)



More funds available for government spending (liquid assets)

Public sector investment spending growth (% total spending) & Bank sector investment in government bonds (% total assets)

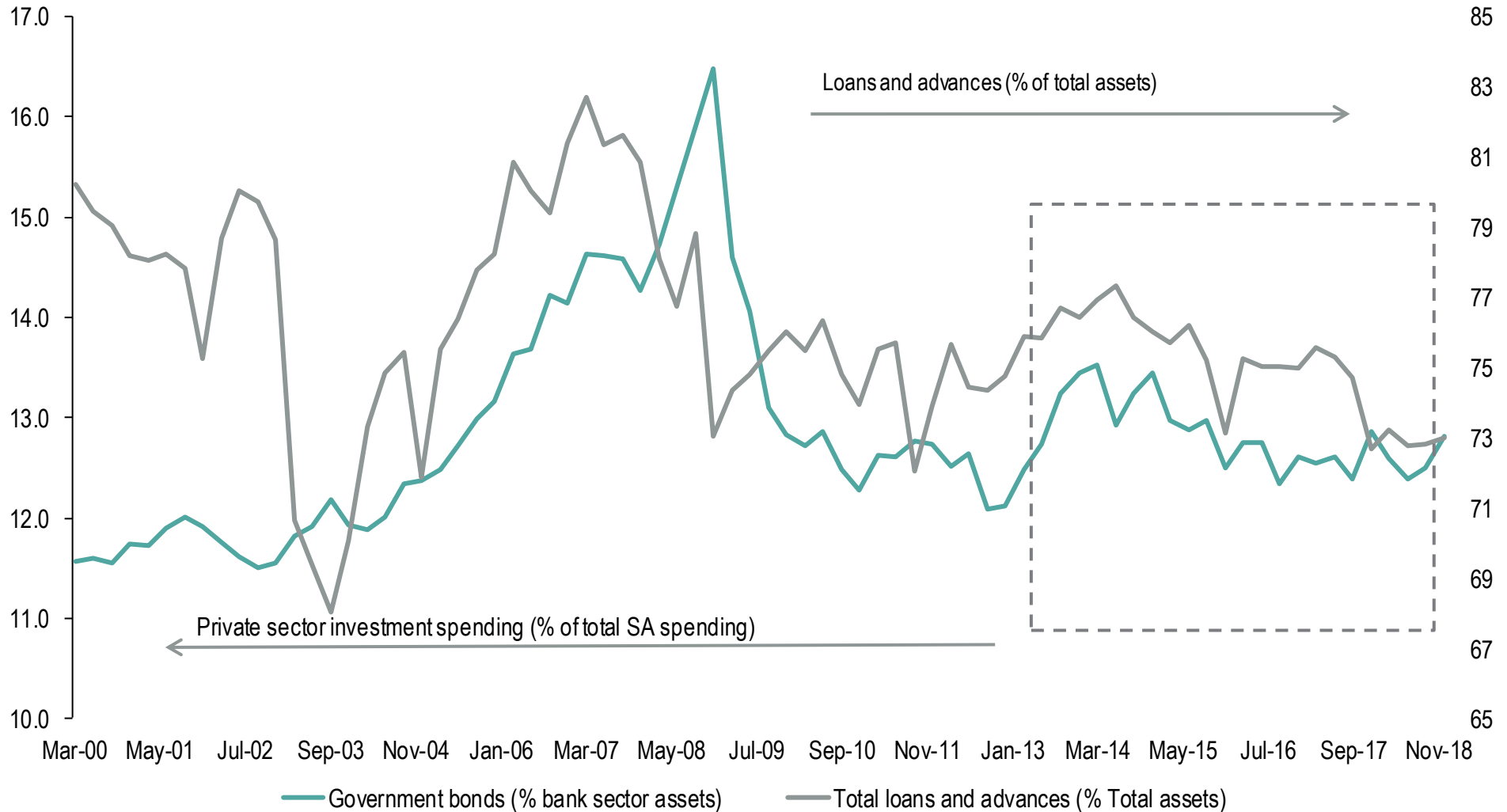


Source: SARB, FirstRand, December 2018



How much has reallocation of funding sources contributed to lower private sector investment spending?

Private sector investment spending growth



Conclusion



FirstRand

In summary

- Banks have increased the loss absorbing capacity in terms of
 - Capital, expected loss provision (IFRS 9), resolution plan (TLAC)
- Banks have increased their liquid assets
- Banks have realized the importance of deposit franchise
 - Increase price of money to savers
 - Increased discretionary savings
- Manage liquidity mismatches



In summary

- **At what economic costs?**
 - Reduction in money multiplier
 - Increase in price of money to advances
 - Increase the correlation between sovereign and banking industry
 - Decrease in GDP
 - Change composition in balance sheet, i.e. increase liquid assets, transmitted through to other sectors of the economy.
 - Cost of reduction in SA Sovereign Risk would have a severe earnings impact

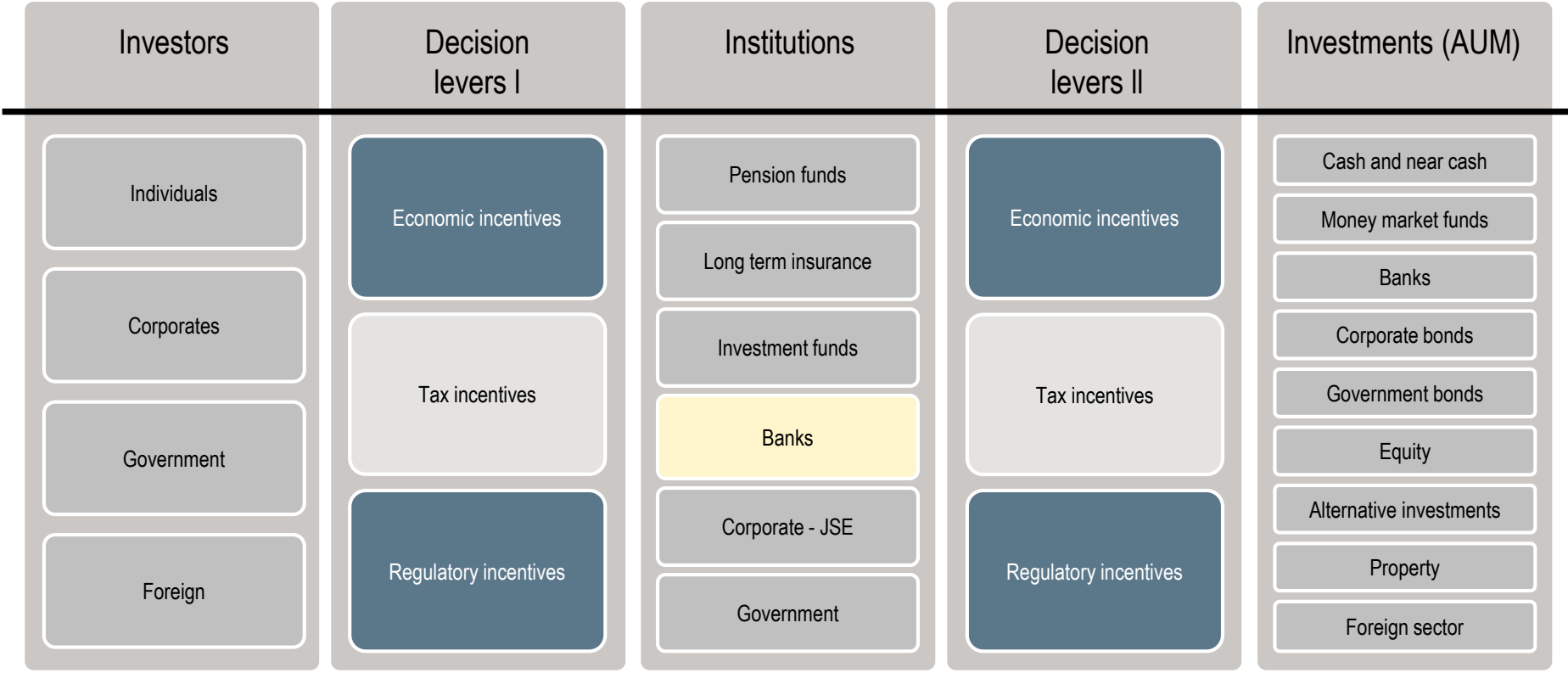




FirstRand

End

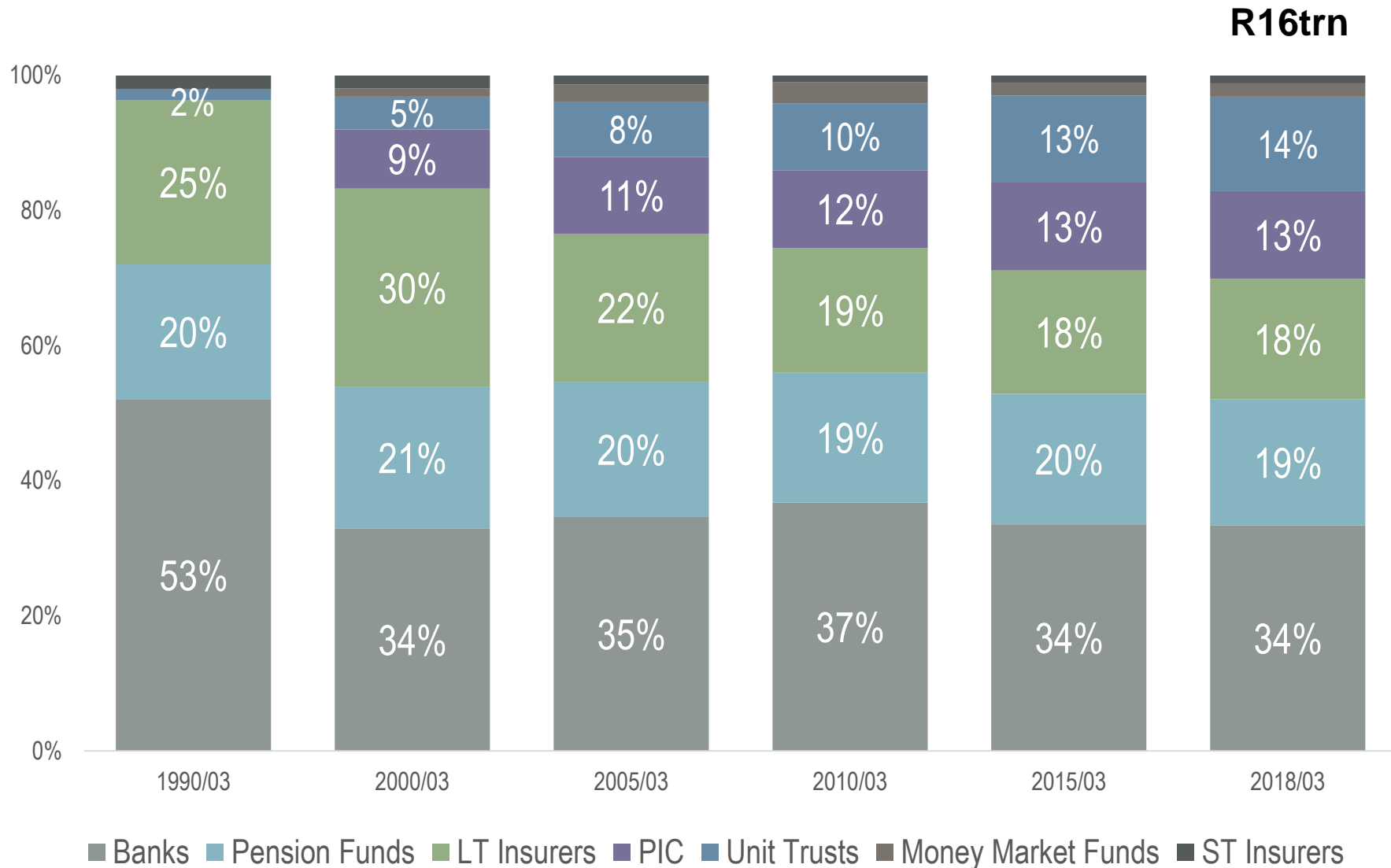
Integrated financial sector policy: Multiple investor needs, competing platforms, providers and investments



Banks are only one of many platforms

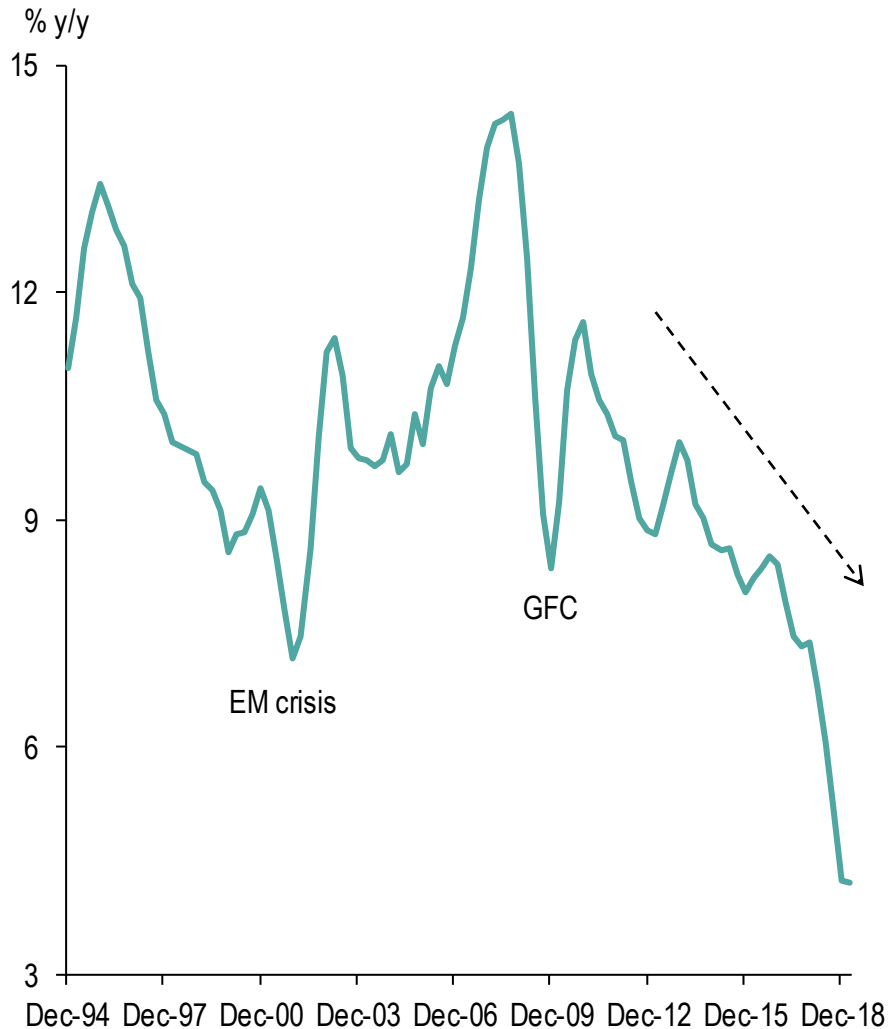


Assets under management by FI licence

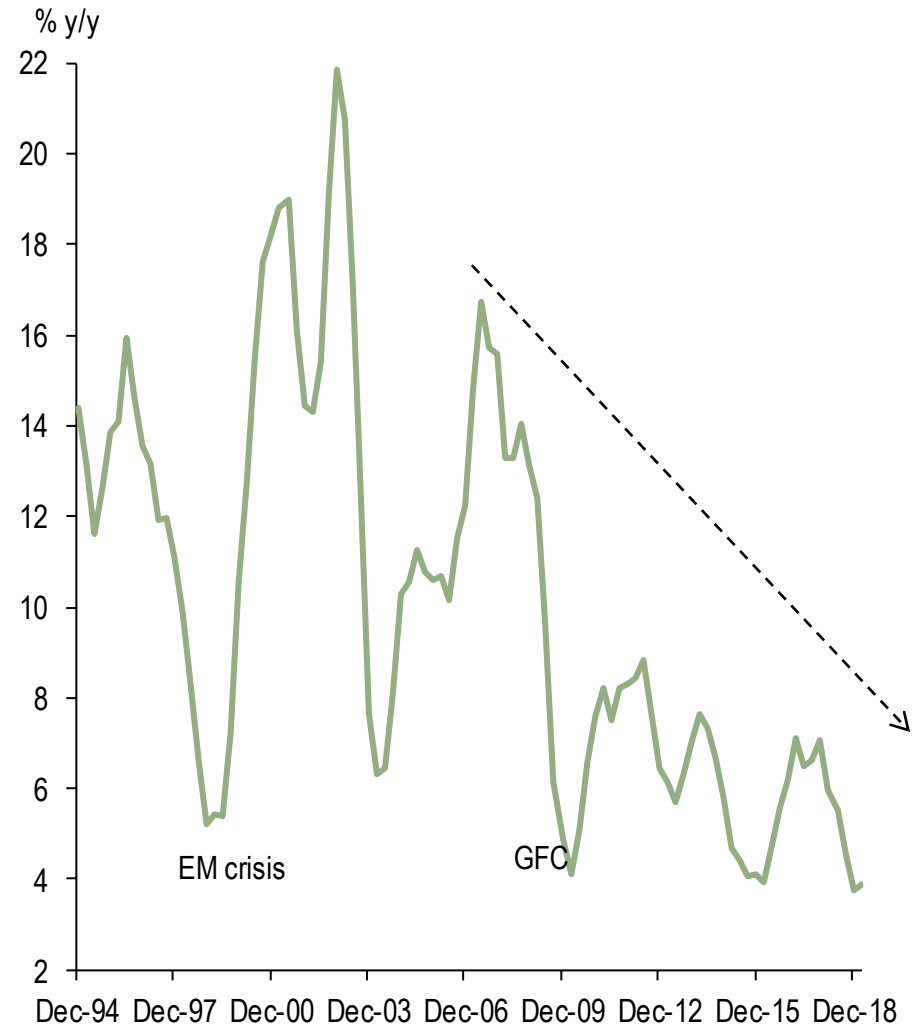


SA's income growth is under significant pressure

Corporate income growth (gross operating surplus)

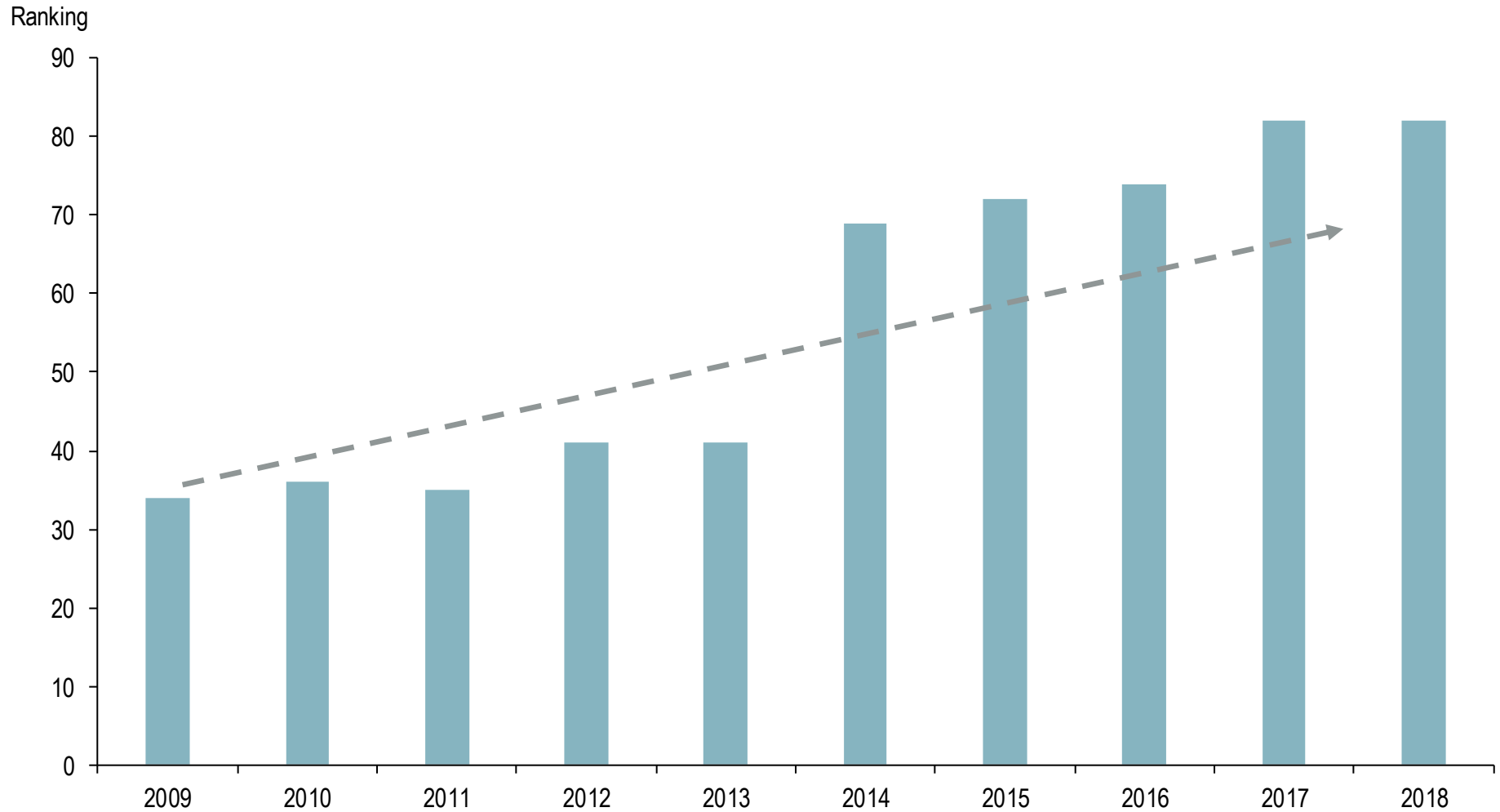


Remuneration of employees

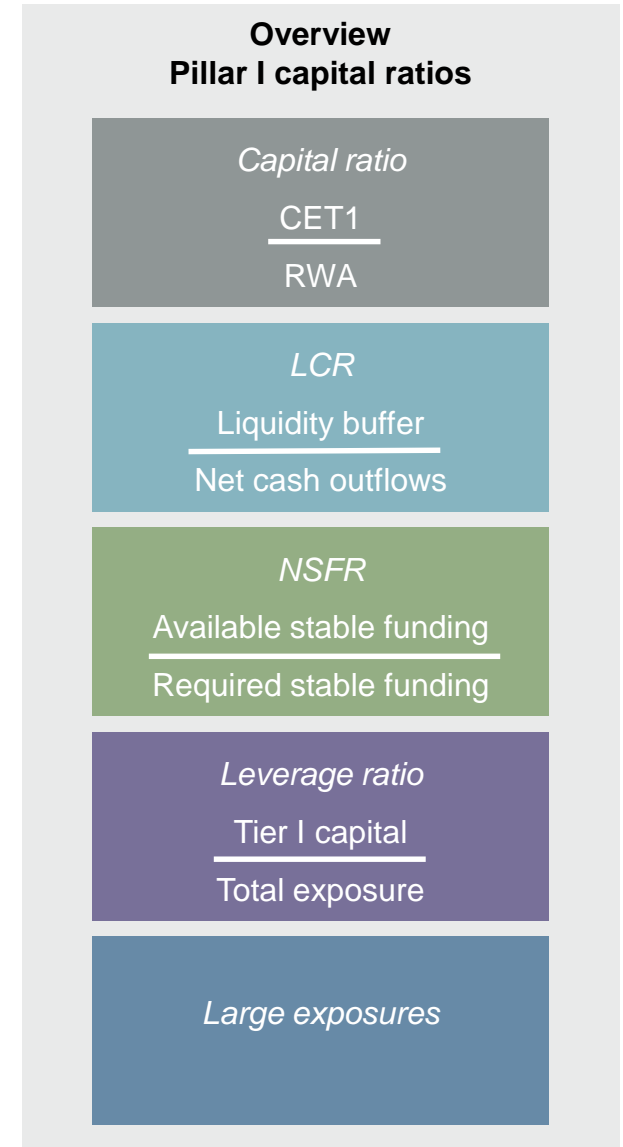
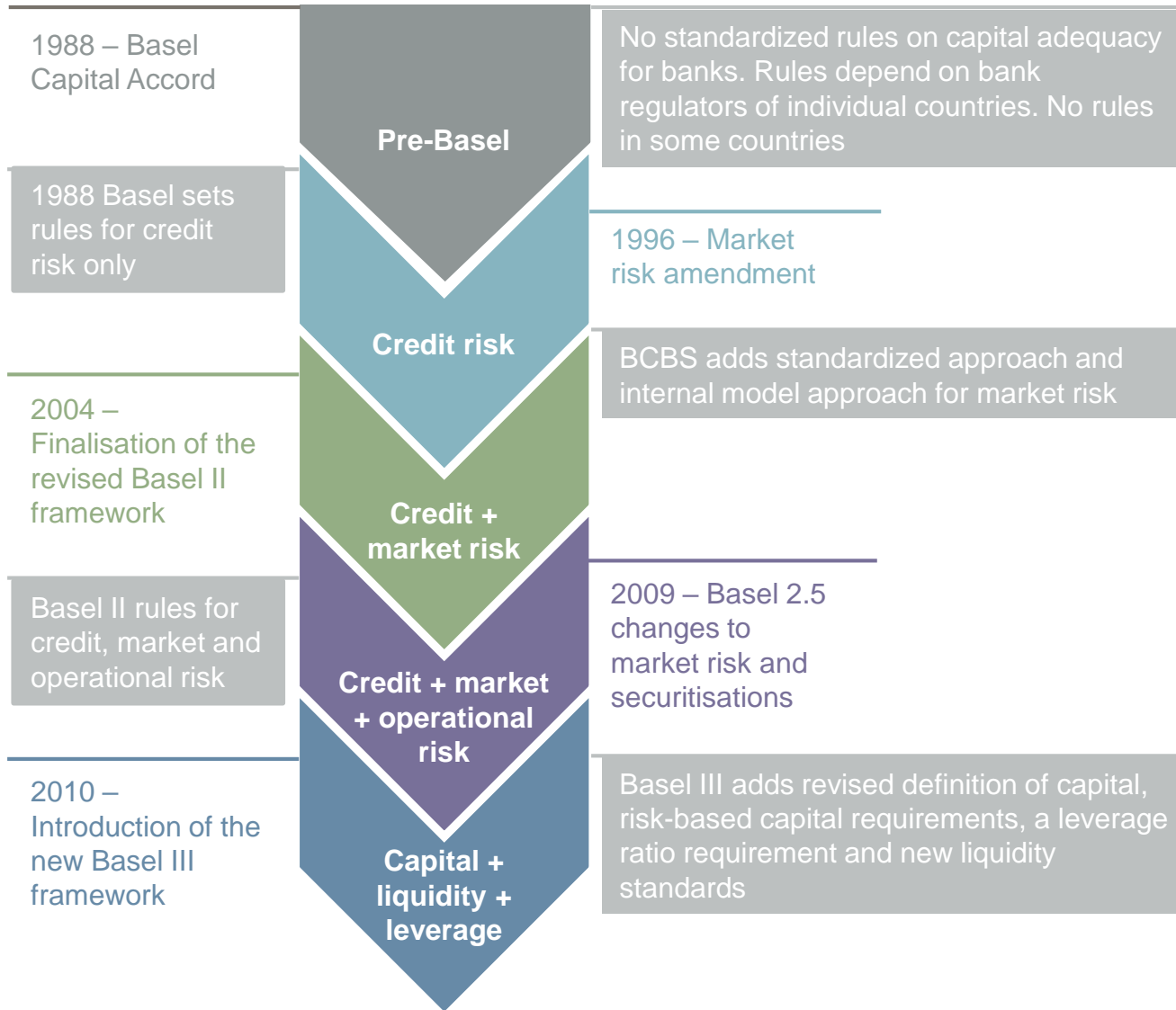


The cost of doing business are increasing

South Africa: Ease of Doing Business Index



Basel IV timeline



Summary of comparisons between standardised approaches – Basel II vs. Basel IV

Risk type	Basel II	Basel IV
Credit risk Standardised approach	<ul style="list-style-type: none"> • Calculation of risk weights per exposure • Risk weights for a country (sovereign) exposure ranges from 0% to 150% and for an exposure to another bank or corporation ranges from 20% to 150% • Credit ratings considered in determining the appropriate risk weights 	<ul style="list-style-type: none"> • Seeks to improve the granularity and risk sensitivity of the standardised approach • New additions: <ul style="list-style-type: none"> • New risk weights for rated and unrated exposure to covered bonds • Exposure to project finance, object and commodities finance - risk weights for rated exposures follow the general corporates and three subcategories of specialised lending is introduced to improve granularity
Operational risk Standardised approach	<ul style="list-style-type: none"> • Very similar to BIA, except that different business lines have different multipliers • Total capital charge – three year average of the simple summation of the regulatory capital charges across each business line in each year 	<ul style="list-style-type: none"> • SMA - new standardised approach is an accounting measure based on the bank's income (business indicator component) and historical losses experience (internal loss multiplier) • Assumes operational risk increases at an increasing rate with the bank's income and the likelihood of incurring operational risk losses increases in the future if the bank has higher historical operational risk losses • Combination of BIA, TSA and ASA
Market risk Standardised approach	<ul style="list-style-type: none"> • Simple sum of the three components: the risk charges under the sensitivities-based method, the default risk charge and residual risk add-on • Sensitivities-based method: delta, vega and curvature 	<ul style="list-style-type: none"> • Using elements from the former standardised measurement method, the sensitivities-based method builds on the elements and expands the use of delta, vega and curvature risk to factor sensitivities • The standardised approach capital charge is the sum of the sensitivities-based method capital charge, default risk charge and residual add-on



Expected impact on monetary transmission mechanism

- **Interest rate channel: An increase in lending spreads**

Relationship between the central bank's policy rate and other interest rates. For example:

- Higher liquidity and capital requirements suggests wider spreads between risk-free rates and rates faced by bank customers because of:
 - Higher funding costs
 - Lower return on investment (more investment in government bonds due to LCR and NSFR)

- **Credit channel: A decrease in the availability of credit to the private sector**

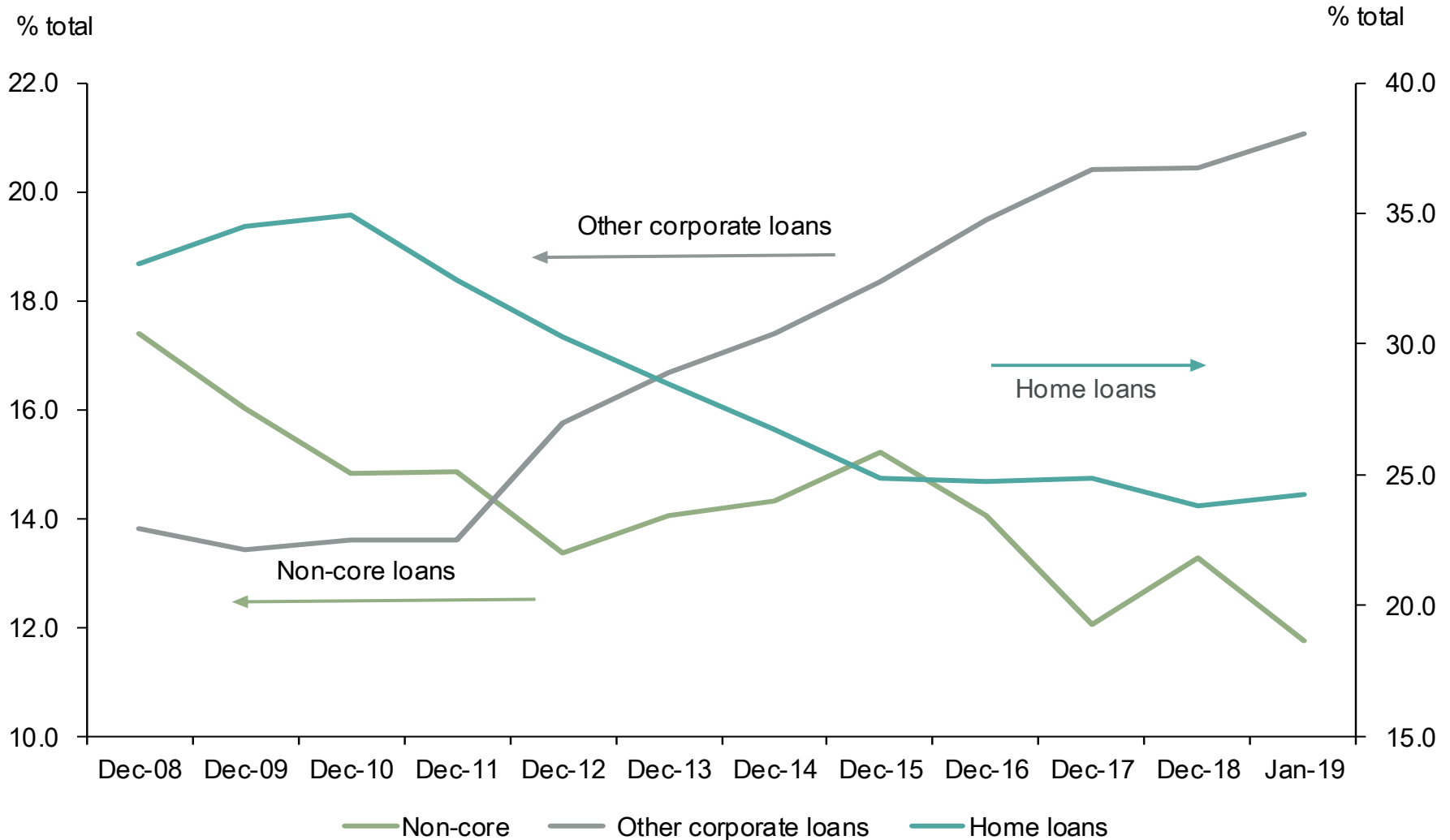
Basel III increases the amount of capital banks should hold against risk-weighted measures of assets

- Any effects on monetary transmission will be greater in those financial systems where firms and households are more reliant on banks for their external finance
- May require a slightly different policy rate all else equal



Bank sector assets: shift away from mortgage lending

Bank sector assets: Home loans, "other" corporate loans and institutional (% of total funding)



Source: UBS, FRB SARF BA900, December 2018

