



Technical Actuarial Considerations FY2019 4 September 2019

## Agenda FY2019



- Overview of Discovery Life results FY2019
- Technical discussion points
- Product and Distribution strategy

## Agenda FY2019





Overview of Discovery Life results FY2019



Technical discussion points



**Product and Distribution strategy** 

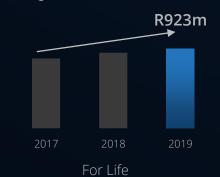
## Robust earnings, strong EV growth & positive cashflow generation within a complex period

### A complex period characterised by

- 1 Move to a new capital regime
- 2 Adjusted IFRS tax basis
- 3 Higher and volatile claims
- 4 Extensive review of actuarial basis:
  - Premium reviews
  - Strengthening of lapse and claims assumptions
  - Continued Vitality programme refinements

#### Value of New Business

- Number 1 writer of affluent protection business
- Growing market share





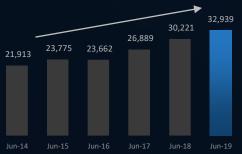
Robust earnings of c27% of premiums

### Earnings

For Life

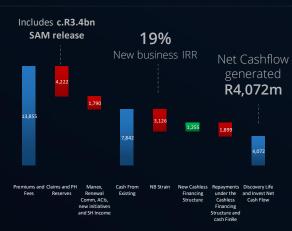
#### Embedded Value

• CAGR **25%** since 2001



R33bn

For Life & Invest



 Funding new business and share of dividend from internal sources



For Life & Invest

## Detailed disclosures to the market

Discovery life provides detailed disclosures on published results, which include:

- Segmental income statement
- Table of experience variances tables
- Table of methodology and assumption changes

Highlight key movements between periods and provide clarity around reasons for these changes

R million	SA Life	% vs FY2
Income statement		
Insurance premium revenue	12 131	+9%
Reinsurance premiums	(2 410)	
Net insurance premium revenue	9 721	
Fee income from administration business	-	
Vitality income	-	
Other income	42	
Investment income earned on assets backing policyholder liabilities	14	
Banking interest and similar income	-	
Finance charge on negative reserve funding	-	
Inter-segment funding <sup>1</sup>	(754)	
Net fair value gains on financial assets at fair value through profit or loss	1,056	
Net income	10 079	
Claims and policyholders' benefits	(8 205)	
Insurance claims recovered from reinsurers	2 168	
Net claims and policyholders' benefits	(6 037)	+12%
Acquisition costs	(1 705)	+6%
Marketing and administration expenses		TU/0
- depreciation and amortisation	(4)	
- impairment of intangible assets	1.	
- other expenses	(1 876)	
Recovery of expenses from reinsurers		
Transfer from assets/liabilities under insurance contracts		
- change in assets arising from insurance contracts	3 475	
- change in assets arising from reinsurance contracts	10	
- change in liabilities arising from insurance contracts	( 251)	
- change in liabilities arising from reinsurance contracts	(458)	
Fair value adjustment to liabilities under investment contracts	(3)	
Share of net profits from equity-accounted investments	(-,	
Normalised profit/(loss) from operations	3 230	-9%
Investment income earned on shareholder investments and cash	8	
Net fair value losses on financial assets at fair value through profit or loss	224	
Gains from dilution and disposal of equity accounted investments	_	
Gain on previously held interests in DiscoveryCard business	_	
Impairment of goodwill	_	
Initial expenses related to Prudential Book transfer	_	
Amortisation of intangibles from business combinations	_	
Market rentals related to Head Office building adjusted for finance costs and depreciation	_	
Finance costs	(2)	
Foreign exchange losses	\ <i>-</i> /	
Profit before tax	3 460	25
Income tax expense	(880)	
Profit for the year	2 580	
	2 300	

## Disclosed EV Experience Variances



### **Experience Variances FY2019**

Experience Variance	VIF after CoC	Net Worth	EV (Rm)
Expenses	(8)	50	42
Economic	(361)	104	(257)
Premium Income	(253)	22	(2 <b>6</b> 1)
Extended modelling term	189	-	189
Exits	(141)	(1)	(142)
Policy alterations	416	(497)	(82)
Mortality and Morbidity	46	(320)	(274)
Tax	(267)	319	51
Reinsurance	-	-	-
Other	13	(28)	(15)
Total	(368)	(351)	(719)

#### Significantly improved H2



Vitality Status driven

Combination of premium provisions & lower than expected lapses

Negative servicing

H1 Large claims experience



Detailed explanation provided further on

## Disclosed EV Methodology & Assumption changes



### Methodology & Assumption changes FY2019

Methodology and assumption changes	VIF after CoC	Net Worth	EV (Rm)
Modelling changes	(3,026)	3,364	338
Economic assumptions	(727)	(94)	(820)
Renewal expenses	(36)	(3)	(40)
Exits	(1,254)	-	(1,254)
Тах	(699)	-	(699)
Benefit Changes	1,251	(3)	1,248
Mortality and Morbidity	(444)	-	(444)
Premium and Fee Income	1,198	-	1,198
Reinsurance	(1,308)	1,255	(53)
Other	(12)	(1)	(14)
Total	(5,058)	4,519	(539)

Primarily the impact of SAM

Movements in market rates

Realigned basis and allowance for lower lapses on subset of book

- Adjusted IFRS tax basis

Realignment for changes to Health plans

Strengthened Income Disability claims assumption

Premium review



Detailed explanation provided further on

## Agenda FY2019





Overview of Discovery Life results FY2019



Technical discussion points



**Product and Distribution strategy** 

## Technical Discussion Points: previously covered questions H1 FY2019



	Questions raised		Discovery's response
1	Use of risk-free rates to discount profits	•	Our approach is consistent with <b>actuarial guidance</b> (as per SAP104) and market practice Margins explicitly allowed for in line with the requirements of SAP104
2	Are In-force premiums exceeding lapses?	•	Premium increases exceeded lapses by +1.4% in FY2018 Impact of premium increases has exceeded impact of lapses in last 6 financial years
3	Inflation assumption	•	Inflation assumption is <b>market consistent</b> and derived by considering market levels of nominal and real yield curves
4	Policy alterations	•	The basis was <b>strengthened</b> at June 2018 to allow for net negative policy alteration costs as explained in the document
5	Impact of Vitality on claims and client behaviour	•	Impact of Vitality on selective lapses extensively discussed in documents and results presentations  Understanding inforce book cash flow profile
6	Percentage of costs that are treated as new business costs	•	Externally disclosed that <b>c44% of management expenses</b> are treated as <b>renewal</b> Accounting Policy expenses in modelling
7	Does a negative reserve run down in a straight line similar to a DAC?	٠	Negative reserve is <b>similar in quantum</b> to a DAC at initial recognition only. Thereafter, it <b>unwinds based on prospective cashflow projections</b> .  Reserve Infographic

## Technical Discussion Points: FY2019



Aspect		Description	
1	Discovery Life: Unique characteristics of the Discovery life business and ability to manage long term risks	• Dynamics of the Shared Value Model	Lapses
2	Resilience of IFRS vs. Embedded Value	<ul> <li>Difference between IFRS (reserving) and Embedded Value (Best estimate) assumptions</li> <li>Resilience of the IFRS Negative Rand Reserve</li> <li>IFRS 17 development</li> </ul>	
3	Embedded Value	Ongoing monitoring and mitigation of inherent risks and key assumption changes	
4	Cashflow generation and shareholder value creation	Cashflow from existing book as well as return on historic capital invested	
5	Other technical insights	<ul> <li>Market alignment: change to nominal and real interest rate assumptions</li> <li>Its about the Real Yield, not CPI</li> <li>Policy duration: Impact of business mix on average and maximum policy duration</li> </ul>	EXIT

## Technical Discussion Points: FY2019



Aspect		Description		
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## The dynamics of the model in practice





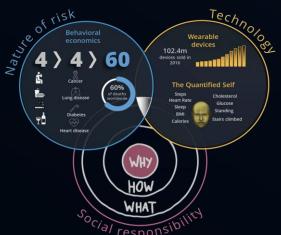
## Shared-Value Model serves as an enabler of unique risk management opportunities

## Shared Value

Make people healthier and enhance and protect their lives

svM creates unique risks but equally robust opportunities for risk management within the business

All the second s







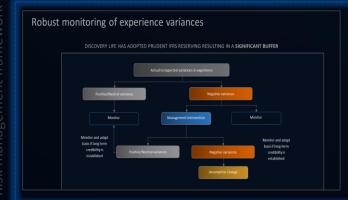


Engagement drives the emergence of unique risk characteristics over time

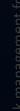


Engagement also enables more extensive risk data and insights allowing for a better framework to monitor, manage and mitigate risks









## Technical Discussion Points: FY2019



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## Illustrative example: Cashflow profile vs. IFRS emergence



1. Risk business characterised by significant upfront acquisition costs



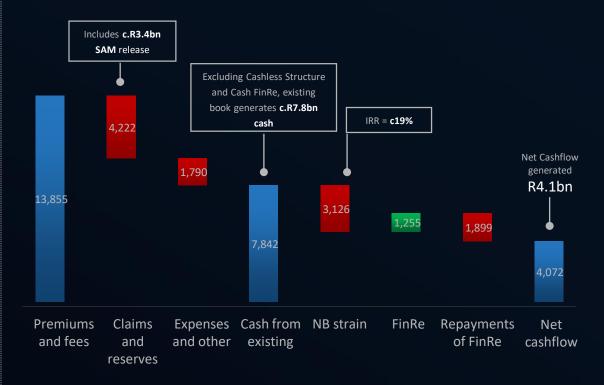
2. Reserve transfers effectively defer the recognition of these acquisitions costs into the earnings profile over time



3. Reflects as a stable emergence of profit over time



Cashflow profile (Life & Invest) as at 30 June 2019 (R'millions)





- Significant cashflow generation of cR7.8bn from existing book
- Investment into new business of cR3.1bn
- Positive net cashflow generation for Life company

Illustrative simplified example of a 5-year Term Life policy

## IFRS reserve assumptions include significant margins vs Best Estimate assumptions

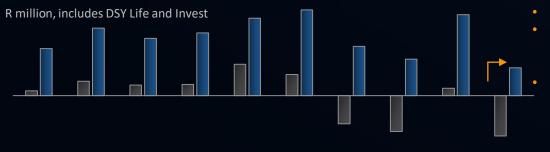
# Published variances are on a best estimate basis hence don't allow for these margins

Assumption	Prescribed reserving margins**
Mortality	7.5%
Morbidity	10%
Lapses	25%
Expenses	10%
Expense Inflation	10%
Interest rates	0.25% additive

Expected to realise the full IFRS Negative Rand Reserve (NRR) in cash in the first 16 years



Historic non-economic experience variances: EV vs. IFRS reserving basis



Significant margins in IFRS basis

Discovery life has never experienced negative variances relative to the IFRS reserving basis

>R9bn IFRS gross of tax margin over last decade

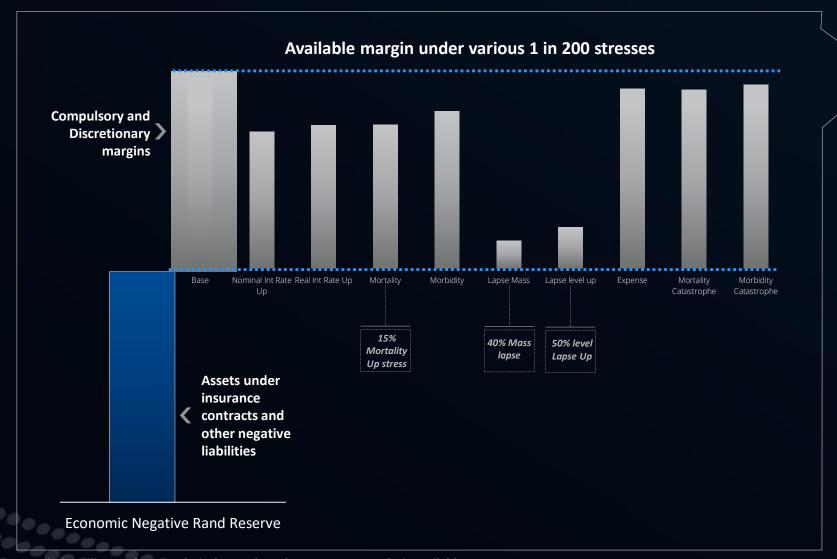
lun 2010 Jun 2011 Jun 2012 Jun 2013 Jun 2014 Jun 2015 Jun 2016 Jun 2017 Jun 2018 Jun 2019

■ EV Basis ■ Reserving Basis

<sup>\*\*</sup>Discretionary margins may be added

# Allowing for these margins in the IFRS basis the IFRS NRR exhibits a high degree of resilience





#### Assumptions

Resilient under 1/200 stresses



#### **RESILIENCE TESTING**



INDIVIDUAL SAM STRESSES APPLIED

The risk of emerging cashflows being lower than the recognised IFRS NRR is extremely remote

Risk of reserving strain does remain

Economic Value under each stress > Recognised IFRS NRR at 30 June 2017

Economic Value highly resilient

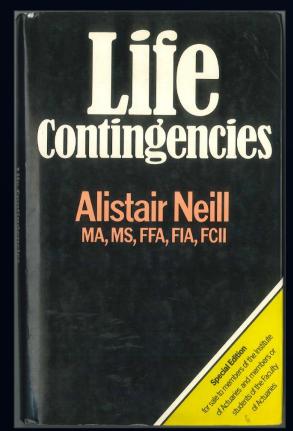
Recoverable with >99.5% probability

## How does the reserve move from one period to the next?



Follow long established actuarial principles

Published 1977



"Relationship between successive reserves": P124. Neill et al.

#### 4.4 Relationship between successive reserves: mortality profit

Adding Pr to the basic prospective reserve formula for a wholelife assurance—formula (4.2.1)—we obtain

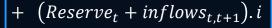
$${}_{t}V_{x}+P_{x}=A_{x+t}-P_{x},a_{x+t},$$
 and substituting  $A_{x+t}=vq_{x+t}+vp_{x+t}A_{x+t+1}$  and 
$$a_{x+t}=vp_{x+t}\ddot{a}_{x+t+1},$$
 gives 
$${}_{t}V_{x}+P_{x}=(vq_{x+t}+vp_{x+t}A_{x+t+1})-P_{x}vp_{x+t}\ddot{a}_{x+t+1}$$
 
$$=vq_{x+t}+vp_{x+t}(A_{x+t+1}-P_{x}\ddot{a}_{x+t+1})$$
 or, 
$${}_{t}V_{x}+P_{x}=v(q_{x+t}+p_{x+t},t+1)V_{x},$$
 and multiplying by  $1+i$  
$$({}_{t}V_{x}+P_{x})(1+i)=q_{x+t}+p_{x+t},t+1}V_{x}. \tag{4.4.1}$$

This formula demonstrates that the reserve at the end of t years increased by the premium then due and by one year's interest provides insurance for the next year plus the reserve at the end of t+1 years. This is the principle used in the construction of the table in section 4.1.

Equivalent to disclosure in investor communication

 $Reserve_{t+1}$ 

 $= Reserve_t + inflows_{t,t+1}$ 



 $-\overline{claims_{t,t+1}} - \overline{expenses_{t,t+1}}$ 

- other outflow $s_{t,t+1}$ 

*Time value of money and cashflow* development is material to reserve unwind

Reserve unwind follows text book prospective reserve development from one period to the next

## IFRS 17 development



Principle / concept	Discovery accounting policy under IFRS 4	IFRS 17	Comments
Profit at initial recognition?	No profit or loss at initial recognition	No profit at initial recognition but expected future losses are capitalised & recognized	Consistent in terms of profits but IFRS17 will recognize losses on onerous contracts
Acquisition costs to be deferred	All acquisition costs	Directly attributable acquisition costs, including costs in respect of unsuccessful sales	Some differences in attributable costs, e.g. branding
Margins impacting pace of profit recognition	Compulsory and discretionary	Risk Adjustment (RM) and Contractual Services Margin (CSM)	Similar in concept. Discretion as to the level of the RM and hence the CSM at initial recognition
Experience variances offset against margins	Yes, except for policies no longer in-force. Applied at portfolio level	Yes, including for policies no longer inforce.  Applied at the unit of account level	Similar, but IFRS17 potentially allows for greater degree of absorption of experience variances within a unit of account by adjusting the CSM
Changes in discount rate	Absorb through margins (assuming they exist)	Policy decision required. If OCI is elected, then variances below the line	IFRS 17 could potentially move investment variances below the line
Unit of account	Portfolio level	Differentiate between at least 3 groups per portfolio year: profitable, profitable but at risk and unprofitable	Unit of account introduces complexity / separates different policies
Date of commencement cohorts	No differentiation of basis by DOC alone	Separation of basis / economic assumptions by DOC	Different economic assumptions by DOC. RM & CMS tracked separately by DOC
Reserving approach	Prospective	Prospective	Consistent



# Resilience of IFRS Negative Rand Reserve

## Key Takeaway

- 1. Discovery Life's NRR is robust and resilient
- 2. Always maintain large margin in IFRS basis  $\rightarrow$  income statement strain following a basis change does not threaten the recoverability of NRR
- 3. Published variances are on a best estimate basis
- 4. Discovery Life has never experienced a negative variance on a the IFRS reserving basis
- 5. Expected to realise the full NRR in cash in the first 16 years
- 6. Text book development of prospective reserve
- 7. Discovery Life's accounting policy, in principle, is aligned to IFRS 17

## Technical Discussion Points: FY2019



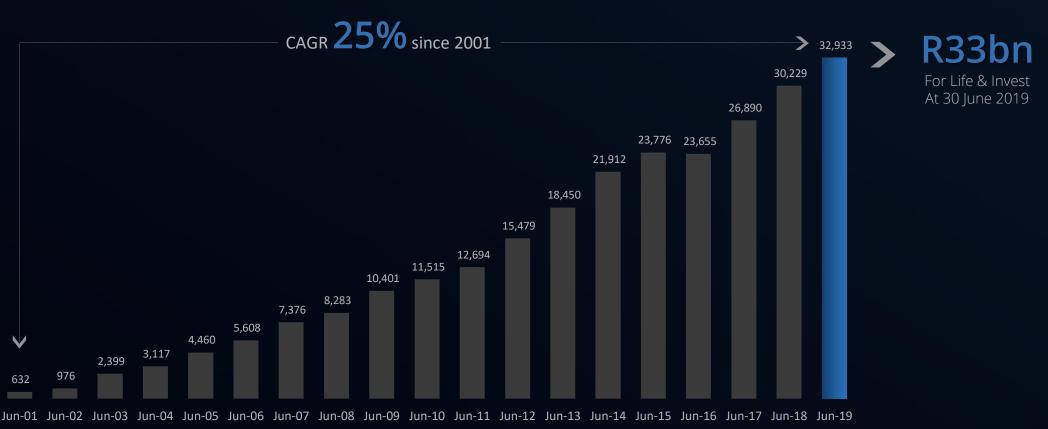
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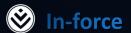


Recognition



## Disclosed Embedded Value sensitivities: Life & Invest





Assumption	Value of in- force	Cost of required capital	ViF net of CoC	Impact
Base	27,277.4	(1,176.9)	26,100.5	
Risk discount rate +1%	24,655.6	(1,129.4)	23,526.2	-10%
Risk discount rate -1%	30,386.5	(1,232.0)	29,154.5	12%
Lapses -10%	29,571.7	(1,261.9)	28,309.8	8%
Interest rates -1%	28,021.1	(1,221.2)	26,799.9	3%
Equity and property market value -10%	26,839.4	(1,208.6)	25,630.8	-2%
Equity and property return +1%	27,594.5	(1,185.6)	26,408.9	1%
Renewal Expense -10%	27,740.2	(1,140.1)	26,600.1	2%
Mortality and Morbidity -5%	29,157.0	(1,010.6)	28,146.4	8%
Projection term + 1 year	27,440.0	(1,179.5)	26,260.5	1%

Base:	Best	estimate	assumptions

Sensitive to long-term lapses Movements in market rates

## New Business

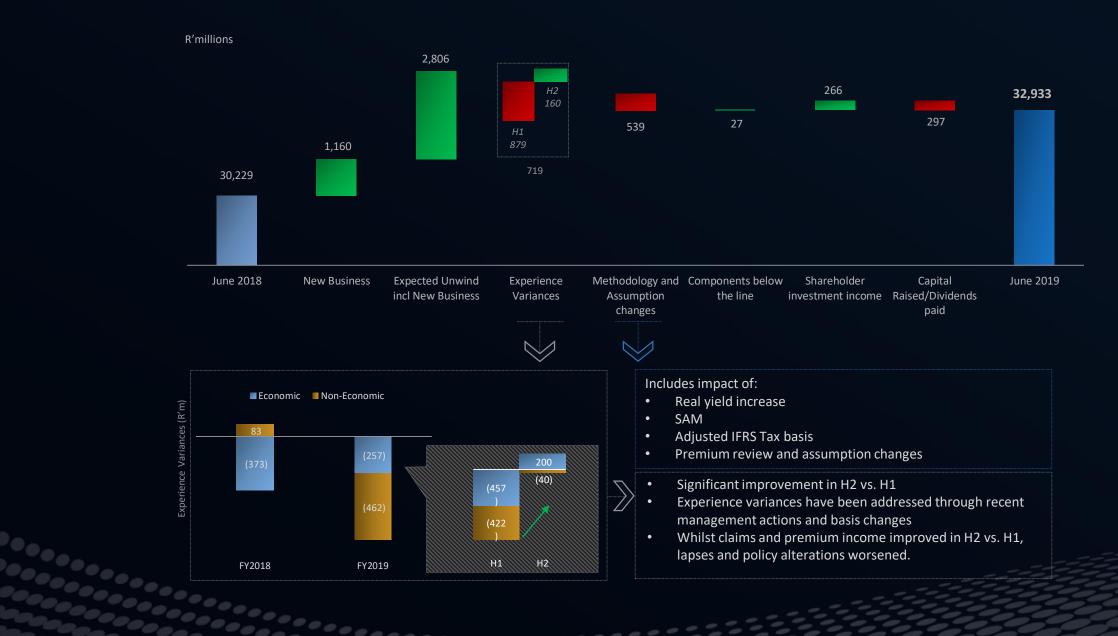
<b>New Business</b>	Assumption	Value of new business	Cost of required capital	VNB net of CoC	VNB Impact
	Base	1,241.8	(81.8)	1,160.0	
	Risk discount rate +1%	947.3	(78.5)	868.7	-25%
	Risk discount rate -1%	1,592.2	(85.7)	1,506.5	30%
	Lapses -10%	1,523.5	(87.7)	1,435.7	24%
	Interest rates -1%	1,321.4	(84.9)	1,236.4	7%
	Equity and property return +1%	1,271.2	(82.4)	1,188.8	2%
	Renewal Expense -10%	1,287.4	(79.3)	1,208.1	4%
	Mortality and Morbidity -5%	1,354.8	(70.3)	1,284.6	11%
	Projection term + 1 year	1,258.3	(82.0)	1,176.2	1%
	Acquisition costs -10%	1,388.0	(81.8)	1,306.1	13%
				-:::	

#### Managed through:

- Product
- Robust claims and underwriting
- Shared-value product construct

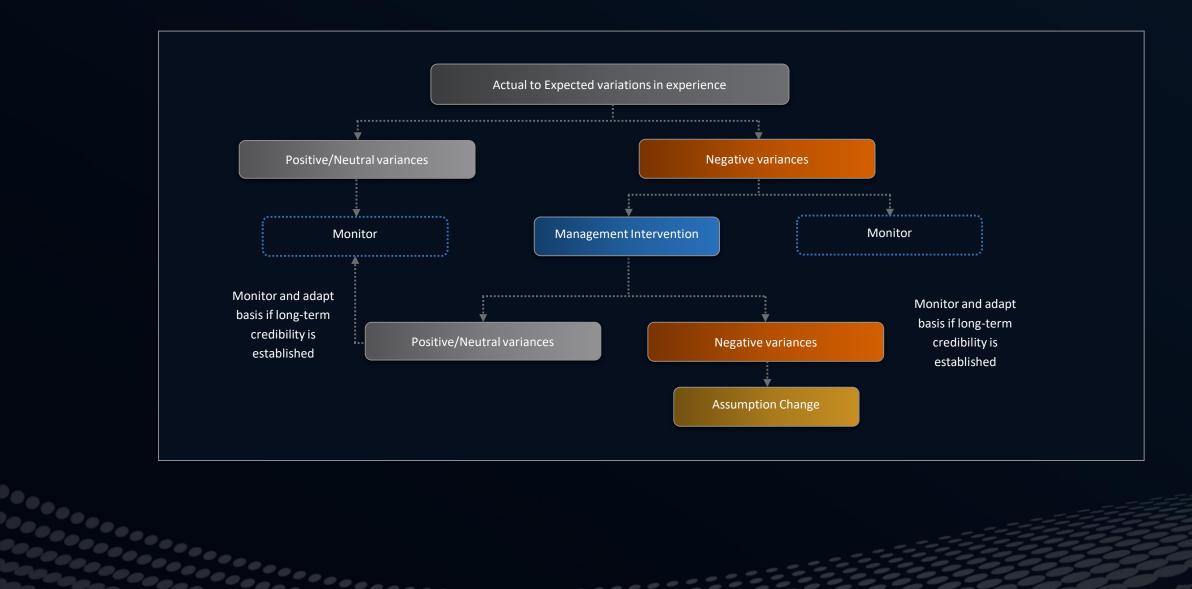
## Analysis of change in Embedded Value for Life & Invest





## Robust monitoring of experience variances

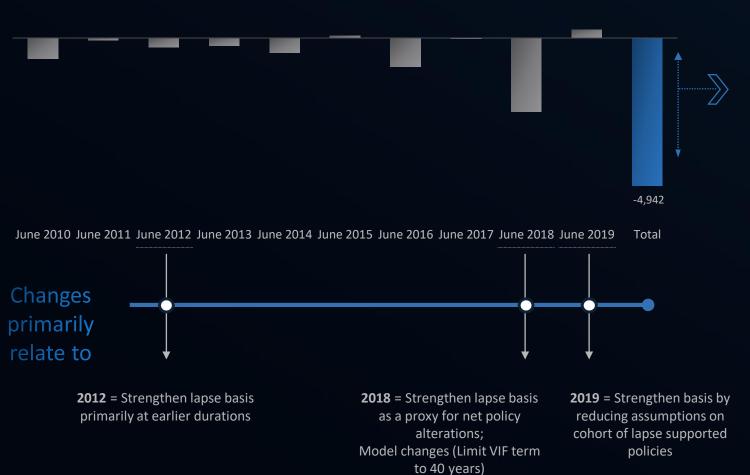




## Cumulative EV assumption and methodology changes



Historic methodology and assumption changes: Non-economic



#### Normalised for yield curve methodology change and cost of FinRe

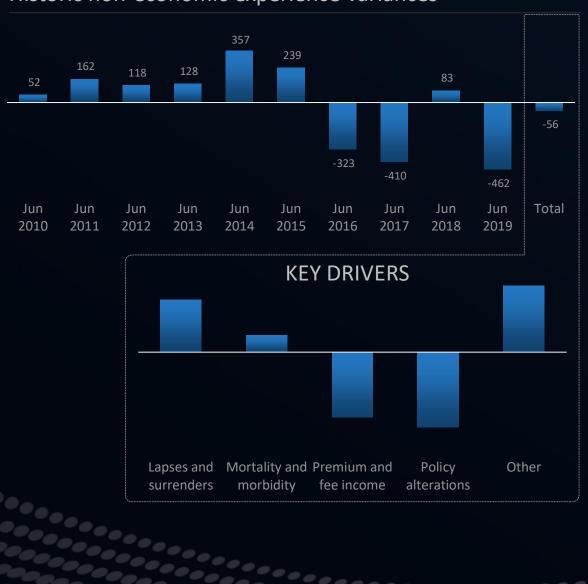


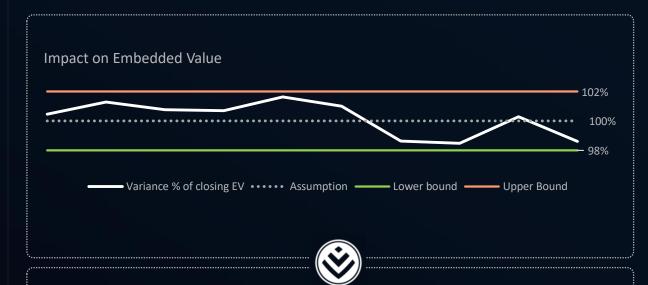


## Cumulative EV experience variances: Life & Invest



#### Historic non-economic experience variances





- Overall experience variances have shown a slight negative over the last 9 years
- Variances are comfortably within a 2% corridor of total Embedded Value over time
- Key drivers of experience variances have been addressed through product and operational interventions over time

## Current experience variances: Life & Invest



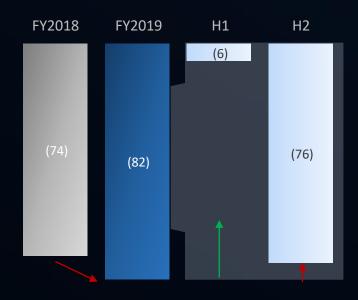
#### 2018/19 non-economic EV variances



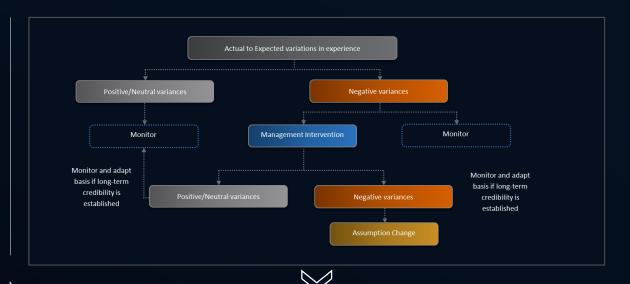
## **Policy Alterations**



#### Driven by negative servicing



- Operation interventions and Basis change at June 2018 → too soon to revisit
- Significant improvement seen in H1 however current economic climate has seen further pressure and resulted in worsening of experience in H2
- Overall, resulted in worse experience than expected when comparing FY2018 and FY2019



# Key management actions to be taken over forthcoming period

Operational interventions focusing on:

- 1. Product
- 2. Integration
- 3. Distribution

## Current experience variance: Life & Invest



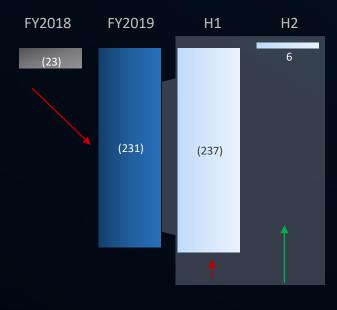
#### 2018/19 non-economic EV variances



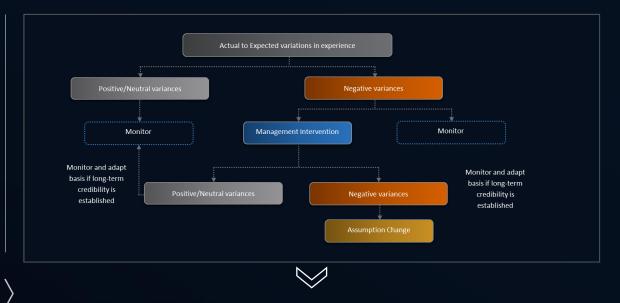
## Premium and Fee Income



### Driven by Vitality Engagement







### Key management actions:

- Inappropriate screening and fraudulent device activities were
   observed as the biggest Vitality-related issues at the end of 2018
- Changes are planned to better align Vitality statuses to Health outcomes

## Current experience variances: Life & Invest



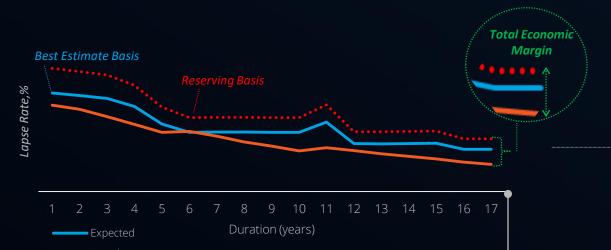
#### 2018/19 non-economic EV variances



# Long-term Lapses: number of lapses below expected and reducing by age and duration



Overall Lapse experience better than expected (policy count basis)



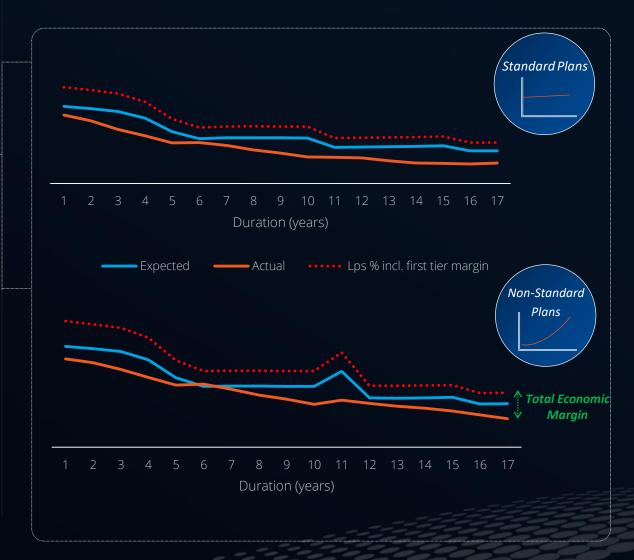
- Expected experience implies c18% of policies expected to remain after 16 years
  - Actual experience from FY2003 cohort show c24% of policies remaining after 16 years

Non-Standard Plans, Age, A/E %

FY2016-FY2018 figures

••••• Lps % incl. first tier margin

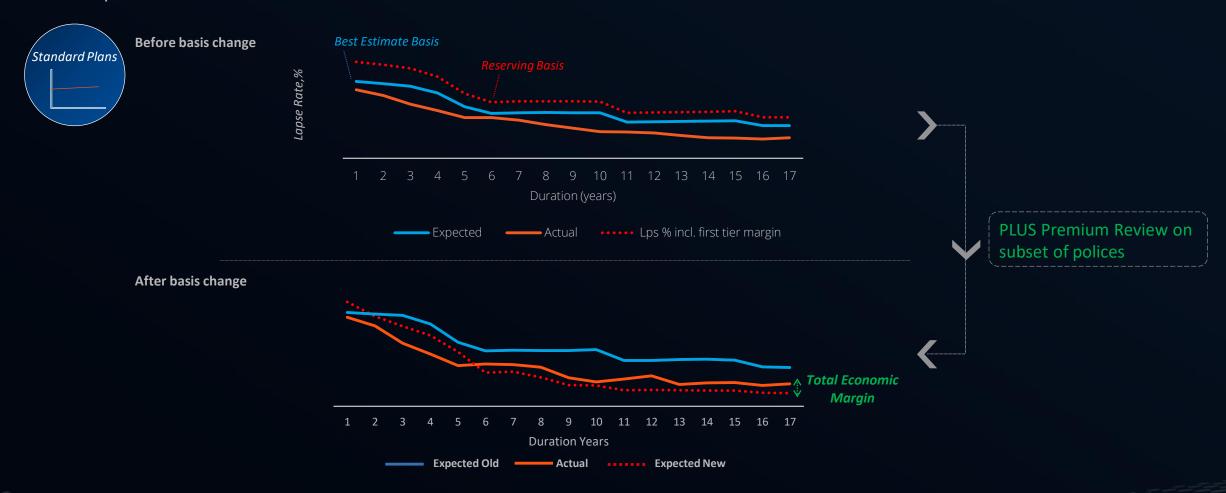
DURATION	0 to 25	26 to 35	36 to 45	46 to 55	56 to 65	> 65	
1	104%	90%	87%	80%	62%	48%	
2	100%	85%	83%	80%	63%	60%	
3	98%	78%	76%	77%	67%	57%	
4	101%	78%	76%	73%	69%	53%	
5	101%	90%	84%	84%	72%	57%	
6 - 10	81%	89%	85%	85%	79%	63%	
> 11 yrs	77%	81%	74%	69%	69%	59%	



## Realignment of lapse basis to ensure prudence against low long term lapses



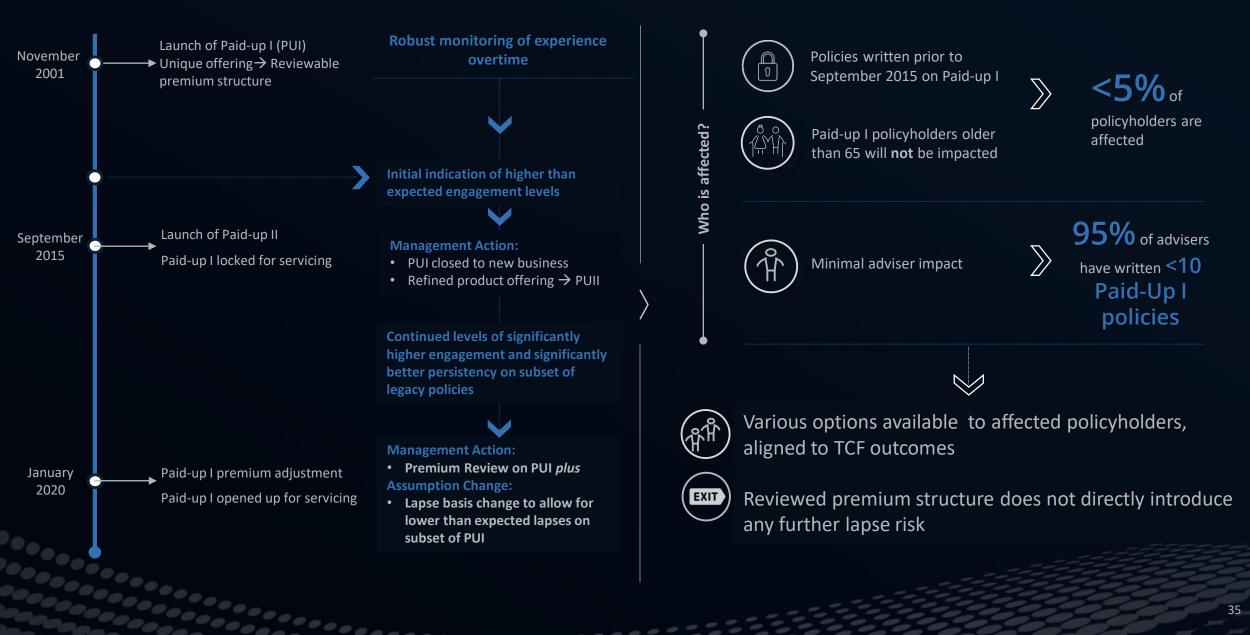
Significantly lower than expected lapses on a pocket of highly engaged legacy polices resulted in decision to strengthen lapse basis and review of premium rates



Additional allowance has been made for stressed economic environment

## Premium Review: Subset of lapse supported legacy business





## Current experience variances: Life & Invest



#### 2018/19 non-economic EV variances

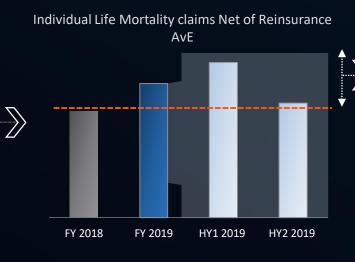


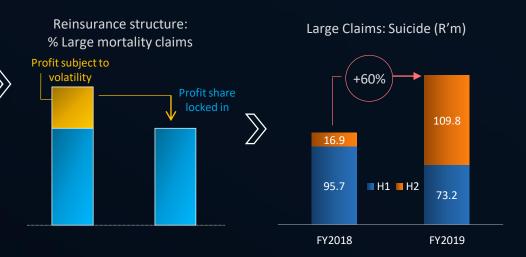
## Large claims volatility addressed through reinsurance

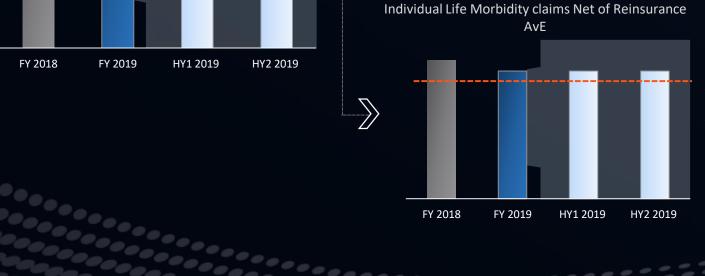


Individual Life Total claims Net of Reinsurance AvE



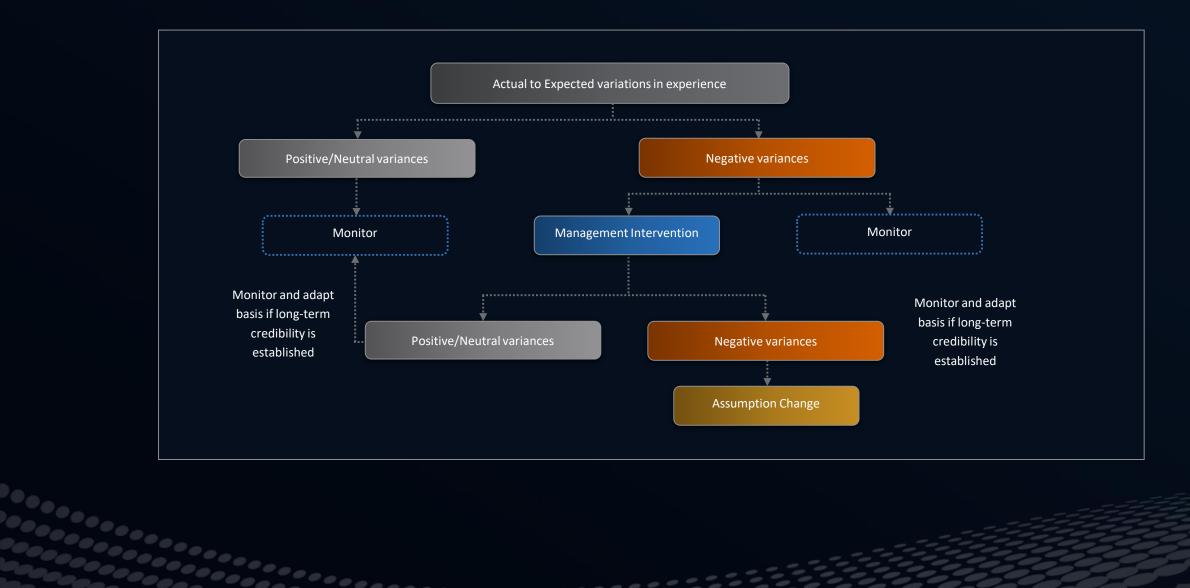






Improved year-on-year result and strengthened basis for Income Continuation Benefit (ICB) claims

























# Discovery Life Embedded Value

#### Key Takeaway

- 1. Discovery Life has a robust and strongly governed risk monitoring framework
- 2. Shared-value model is a tool for further risk mitigation
- 3. Strengthened claims assumption on income continuation benefit
- 4. Overall long term lapses well below expectation
- 5. Realignment of lapse basis to ensure prudence against low long term lapses
- 6. Significantly lower than expected lapses on a pocket of highly engaged legacy polices resulted in decision to strengthen lapse basis and review of premium rates

# Technical Discussion Points: FY2019



	Aspect	Description
1	Discovery Life: Unique characteristics of the Discovery life business and ability to manage long term risks	• Dynamics of the Shared Value Model  Sales  Selection  Mortality  Lapses  EXIT
2	Resilience of IFRS vs. Embedded Value	<ul> <li>Difference between IFRS (reserving) and Embedded Value (Best estimate) assumptions</li> <li>Resilience of the IFRS Negative Rand Reserve</li> <li>IFRS 17 development</li> </ul>
3	Embedded Value	<ul> <li>Ongoing monitoring and mitigation of inherent risks and key assumption changes</li> </ul>
4	Cashflow generation and shareholder value creation	Cashflow from existing book as well as return on historic capital invested
5	Other technical insights	<ul> <li>Market alignment: change to nominal and real interest rate assumptions</li> <li>Its about the Real Yield, not CPI</li> <li>Policy duration: Impact of business mix on average and maximum policy duration</li> </ul>

# Strong historic cash generation and significant value created in Life & Invest



Illustrative example: Annual Cash inflows and outflows for a new protection policy



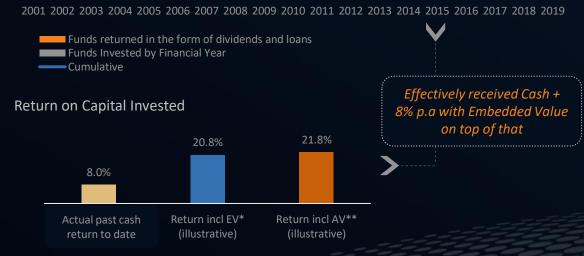
Cumulative cashflow after layering the new protection policy assuming new business growth of 15% p.a. Example portfolio growing at 15% only



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Historic net shareholder capital invested in Discovery Life and Invest





V = Embedded Value at risk discount rate (risk free yield curve + 2.625%)



# Discovery Life's cash generation

#### Key Takeaway

- 1. Discovery Life & Invest is cashflow generative
- 2. Self-sustaining, funding new business and share of dividend
- 3. R5.2bn repaid to group over the period, net cumulative repayment of R3.1bn at June 2019
- 4. Effectively received cash + 8% p.a. with Embedded Value on top of that

# Technical Discussion Points: FY2019

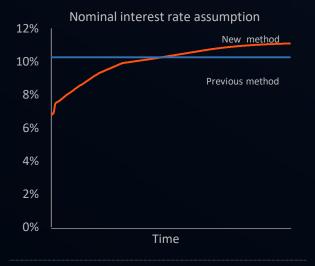


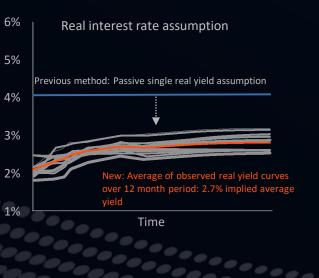
	Aspect	Description
1	Overview of Discovery Life: Unique characteristics of the Discovery life business	• Dynamics of the Shared Value Model  Sales  Selection  Mortality  Lapses  EXIT
2	Resilience of IFRS vs. Embedded Value	<ul> <li>Difference between IFRS (reserving) and Embedded Value (Best estimate) assumptions</li> <li>Resilience of the IFRS Negative Rand Reserve</li> <li>IFRS 17 development</li> </ul>
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#### Economic assumption changes

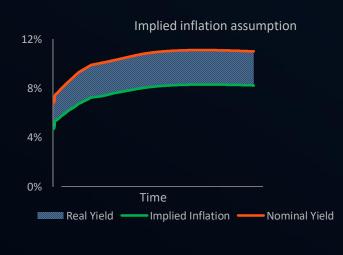


Change to economic assumptions at June 2018 ensures market alignment and run-off patterns implied by yield curves as per SAM capital framework





Implied inflation is a function of the real yield curve and hence market movements *not* an explicitly set CPI assumption



#### Market alignment had a:

- Positive impact at June 18
- Negative impact at Dec 18
- Negative impact at June 19

c50% of the Discovery Life book have benefits & premiums linked to CPI



#### **But - Its about the Real Yield, not primarily CPI**

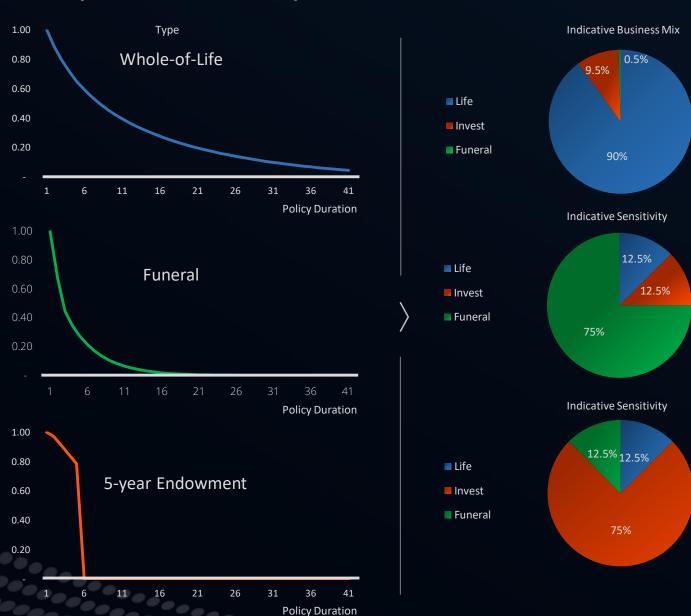
Sensitivity to CPI assumption & fixed real yield shows minimal impact on IFRS NRR

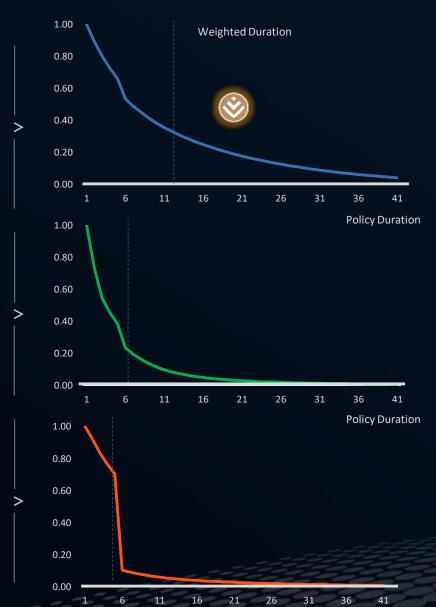


### Policy Duration: Impact of business mix on duration



Policy Duration 49

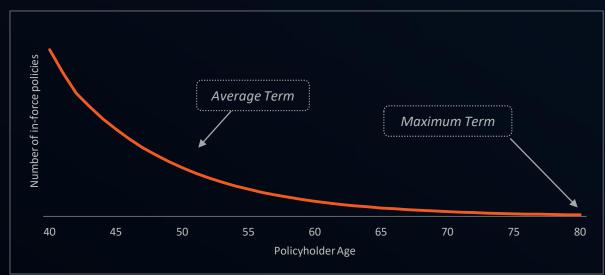


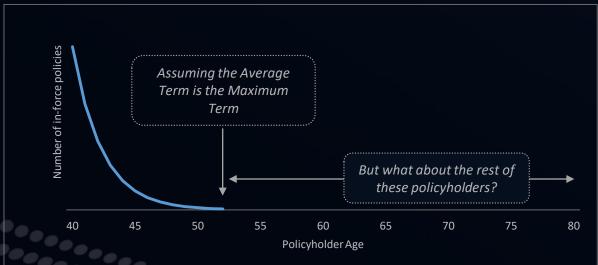


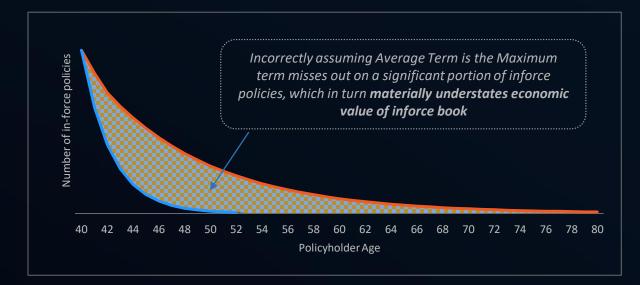
## Policy Duration: Average term vs Maximum term



Illustrative example: WoL, group of policyholders aged 40 at entry







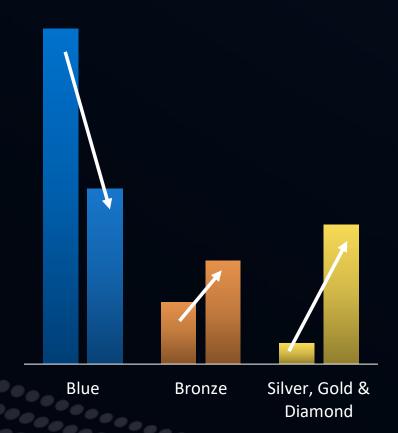
# Status mix per cohort changes, leading to an increasing DMT over time



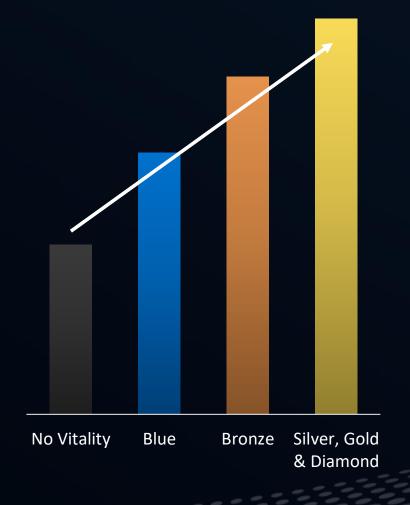
Decreasing lapses by status implies a changing status composition

Cohort status distribution by policy count

2009 vs 2019



Increasing Discounted Mean Term (DMT) by status



Resulting in an increasing portfolio DMT over time



**10.2** (Indicative portfolio of 50% Blue and 50% no Vitality)

2013 2019





# Other technical insights

#### Key Takeaway

- 1. Its about the real yield not CPI Discovery Life aligned to market movements and has relatively low exposure to CPI
- 2. Discovery Life is a long-tailed monoline insurer hence significantly longer policy durations
- 3. Average duration should not be confused with Maximum duration when assessing value of inforce book
- 4. DMT significantly improves by Vitality status, overall portfolio DMT for Discovery Life is higher than traditional risk portfolio

## Discovery Life in FY2019: concluding remarks





Shared-Value model provides unique risk management framework to monitor and mitigate inherent risks



Addressed key business risks: implemented management action and basis changes



IFRS reserving assumptions are robust with sufficient margin and economic value is resilient with a history of strong positive variances



Discovery Life is self sustaining from a cashflow and capital perspective  $\rightarrow$  funds new business strain from existing book and pays its share of dividend to the group



Business delivered a robust performance  $\rightarrow$  highest market share in affluent risk space





Technical Actuarial Considerations FY2019 4 September 2019