Actuarial application in Banks
South African Case Study

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The Actuary in Banking
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Actuarial Application in Banks

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Purpose of this presentation
I explore ways in which actuaries add value in banks in South Africa today

Agenda
Landscape
Customer Needs
Regulations
Application
Training

The South African Reserve Bank

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QUANTIFYING RISK, ENABLING OPPORTUNITY
GDP growth in South Africa is mixed

South Africa’s Gross Domestic Product is c ZAR 4.5 trillion / USD 350 billion

Source: Statistics South Africa
GDP composition in South Africa

Banks deliver to all sectors of the economy

Source: Statistics South Africa
The market is lead by 4 large banks
However, new players have made inroads and new banks are expected to enter

Bank Loans and Advances

Source: Financial Statements
The banks are very well capitalised
Equity to total assets (Basel leverage) is very high

Source: Financial Statements
With strong levels of Capital ratios
Banks deliver solid return on equity, in line with CAPM expectations

Figure 3.4  Regulatory capital ratios and ROEs

Source: PwC analysis
And new capital instruments to meet Basel III

Since the introduction of Basel III, banks have introduced new capital instruments.
While maintaining strong results, the income statement also provides a guide on actuarial opportunities.

<table>
<thead>
<tr>
<th></th>
<th>1H17</th>
<th>2H16</th>
<th>1H16</th>
<th>2H15</th>
<th>1H17 v 1H16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net interest income</td>
<td>86,492</td>
<td>86,668</td>
<td>84,803</td>
<td>78,834</td>
<td>2.0%</td>
</tr>
<tr>
<td>Non-interest revenue</td>
<td>68,109</td>
<td>65,662</td>
<td>66,940</td>
<td>65,046</td>
<td>1.7%</td>
</tr>
<tr>
<td>Total operating income</td>
<td>154,601</td>
<td>152,330</td>
<td>151,743</td>
<td>143,880</td>
<td>1.9%</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>-87,290</td>
<td>-87,135</td>
<td>-85,893</td>
<td>-82,154</td>
<td>1.6%</td>
</tr>
<tr>
<td>Core earnings</td>
<td>67,311</td>
<td>65,195</td>
<td>65,850</td>
<td>61,726</td>
<td>2.2%</td>
</tr>
<tr>
<td>Impairment charge</td>
<td>-14,835</td>
<td>-13,356</td>
<td>-17,237</td>
<td>-13,336</td>
<td>-13.9%</td>
</tr>
<tr>
<td>Other income/(expenses)</td>
<td>-147</td>
<td>-1,378</td>
<td>183</td>
<td>-453</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Discontinued operations</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-261</td>
<td>-</td>
</tr>
<tr>
<td>Income tax expenses</td>
<td>-12,176</td>
<td>-12,513</td>
<td>-11,630</td>
<td>-11,432</td>
<td>4.7%</td>
</tr>
<tr>
<td>Profit for the period</td>
<td>40,153</td>
<td>37,948</td>
<td>37,166</td>
<td>36,244</td>
<td>8.0%</td>
</tr>
<tr>
<td>Attributable earnings</td>
<td>36,926</td>
<td>34,194</td>
<td>34,468</td>
<td>32,502</td>
<td>7.1%</td>
</tr>
<tr>
<td>Headline earnings</td>
<td>35,961</td>
<td>36,254</td>
<td>34,640</td>
<td>33,973</td>
<td>3.8%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>17.9%</td>
<td>18.6%</td>
<td>17.6%</td>
<td>18.4%</td>
<td>0.25</td>
</tr>
</tbody>
</table>

*Source: PwC analysis*
And strong levels of liquidity
The SARB has implemented Basel III in line with original requirements

Liquidity Coverage Ratio

<table>
<thead>
<tr>
<th>Bank</th>
<th>Standard</th>
<th>Firstrand</th>
<th>Absa</th>
<th>NEDBANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARD</td>
<td>94%</td>
<td>105%</td>
<td>124%</td>
<td>106%</td>
</tr>
</tbody>
</table>

Source: Financial Statements
Funding dynamic
Banks are increasing levels of long term funding (in excess of 6 months)

Source: Financial Statements
The National Development plan
Since the introduction of democratic South Africa, a plan has been developed where everyone

- feels free yet bounded to others;
- where everyone embraces their full potential,
- a country where opportunity is determined not by birth, but by ability, education and hard work.
- Realising such a society will require transformation of the economy and focused efforts to build the country's capabilities.
- To eliminate poverty and reduce inequality, the economy must grow faster and in ways that benefit all South Africans.

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ACTUARIAL SOCIETY
OF SOUTH AFRICA

QUANTIFYING RISK, ENABLING OPPORTUNITY
Banks play a vast role
The services provided by banks empower economic growth

- Deposit taking
- Lending
  - Mortgages, Vehicle Finance, Personal Loans, Cards
  - Business Finance, Project Finance
  - Small and Medium Sized Enterprises and Development Finance
  - Investment banking
- Maturity transformation (Treasury)
- Payments
- Transactional support
- Capital Markets
- Trading
- Risk Management
Banking activity is thoroughly regulated

Regulatory support is one of the growth areas for actuarial support

- Basel III
- The ICAAP / CCAR framework
- Recovery plans
- Resolution
- IFRS 9
- BCBS 239 (risk data aggregation & reporting)
- Anti money laundering
- Financial crime
# Basel III – The regulatory response


## Agenda

### Landscape

### Customer Needs

### Regulations

### Application

### Training

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<tr>
<th>Capital Reform</th>
<th>Liquidity standards</th>
<th>Systemic Risk</th>
</tr>
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<tbody>
<tr>
<td>• Quality, consistency and transparency of capital.</td>
<td>• Increased short-term resilience by ensuring banks hold sufficient high quality liquid assets (Liquidity Coverage Ratio).</td>
<td>• Incentives for banks to use central counterparties for OTC derivatives.</td>
</tr>
<tr>
<td>• Enhancing risk coverage.</td>
<td>• Increased long-term resilience by ensuring banks fund with more stable sources of funding (Net Stable Funding Ratio).</td>
<td>• Higher capital for trading and derivative activities.</td>
</tr>
<tr>
<td>• Controlling leverage.</td>
<td>• Reducing procyclicality and promoting countercyclical buffers.</td>
<td>• Higher capital for inter-financial exposures.</td>
</tr>
<tr>
<td>• Reducing procyclicality and promoting countercyclical buffers.</td>
<td></td>
<td>• Capital surcharge for systemic banks.</td>
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</table>
Resolution framework for banks

The Financial Stability Board issued the Key Attributes of Resolution frameworks.

- No creditor worse off than in liquidation
- Hierarchy of claims in liquidation:
  - Depositor preference
  - Deposit insurance
  - Total loss absorbing capital
    - New style senior
    - Tier 2
    - Additional Tier 1
    - Core Equity Tier
The core application syllabus provides an extensive range of skills:

- Modelling
- Assumption setting
- Expenses interrogation
- Developing the cost and the price of products
- Investment management
- Provisioning
- Relationship between assets and liabilities
- Maintaining profitability
- Determining the expected results
- Reporting actual results
- Asset management
- Capital management
- Insolvency and closure
- Options and guarantees
- Monitoring

The Actuarial toolbox has wide application.

In South Africa some banks have benefitted from actuarial input.
The banking fellowship addresses industry needs

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Syllabus Objective</th>
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<tr>
<td>1,13</td>
<td>Bank model, Market structure, Strategy</td>
</tr>
<tr>
<td>2, 12</td>
<td>Legislation, Regulation, Taxation, Governance</td>
</tr>
<tr>
<td>14</td>
<td>Product</td>
</tr>
<tr>
<td>8,9,10</td>
<td>Treasury</td>
</tr>
<tr>
<td>11</td>
<td>Portfolio measurement and management</td>
</tr>
<tr>
<td>4,5,6,7</td>
<td>Risk Management</td>
</tr>
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<td></td>
<td>Professionalism – The code</td>
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The integrated planning framework
Actuarial skills have been applied in the Internal Capital Adequacy Assessment Process (ICAAP).

- Plans (BS + IS) and strategy
- Risk assessment
- Impact on plans
- Revise plan manage risk
- Reporting
- Revise plan manage risk

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QUANTIFYING RISK, ENABLING OPPORTUNITY
Comprehensive Capital Analysis and Review

The outline below provides a clear business case for actuarial input.

Models require to:

1) properly incorporating a balanced blend of key drivers and management control variables;
2) skillfully blend statistical rigor and bank-specific business insights but keeping to relatively manageable key drivers;
3) identifying the right data and model requirements early in the development cycle to avoid costly model redevelopment after failing model validation.

Banks need to utilize experienced capital markets and analytics experts to design and build robust model development, validation and reporting processes that track business strategy closely and satisfy the Fed’s increasingly higher standards for an integrated framework.
One approach to risk aggregation is deploying a full multi-factor simulation modeling across all the business lines (full-scale simulation).

Full-scale simulation is fairly tedious and requires all underlying historical data to be stored and controlled in a central warehouse.

Developing a proper model, data and validation framework can be fairly challenging in terms of both governance as well as comprehension by management.
Other frictions
These frictions provide both opportunity and challenge to enter the industry.

- Regulation
- Fintech
- Unprecedented volatility
- Systemic risk / dependency structures
- Commodity security for Sub Saharan Africa
- Demographic movements
- Availability of good people
A warning
Actuaries may exhibit an over reliance on historic data trends.
Where to start?
Reflecting on the experience of South African Actuaries.

- Business imperative
- Executive sponsorship
- Non-executive director sponsorship
- Regulatory changes
- Financial standards changes
- Transition from internal actuarial roles
- Training programmes
Conclusion

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