

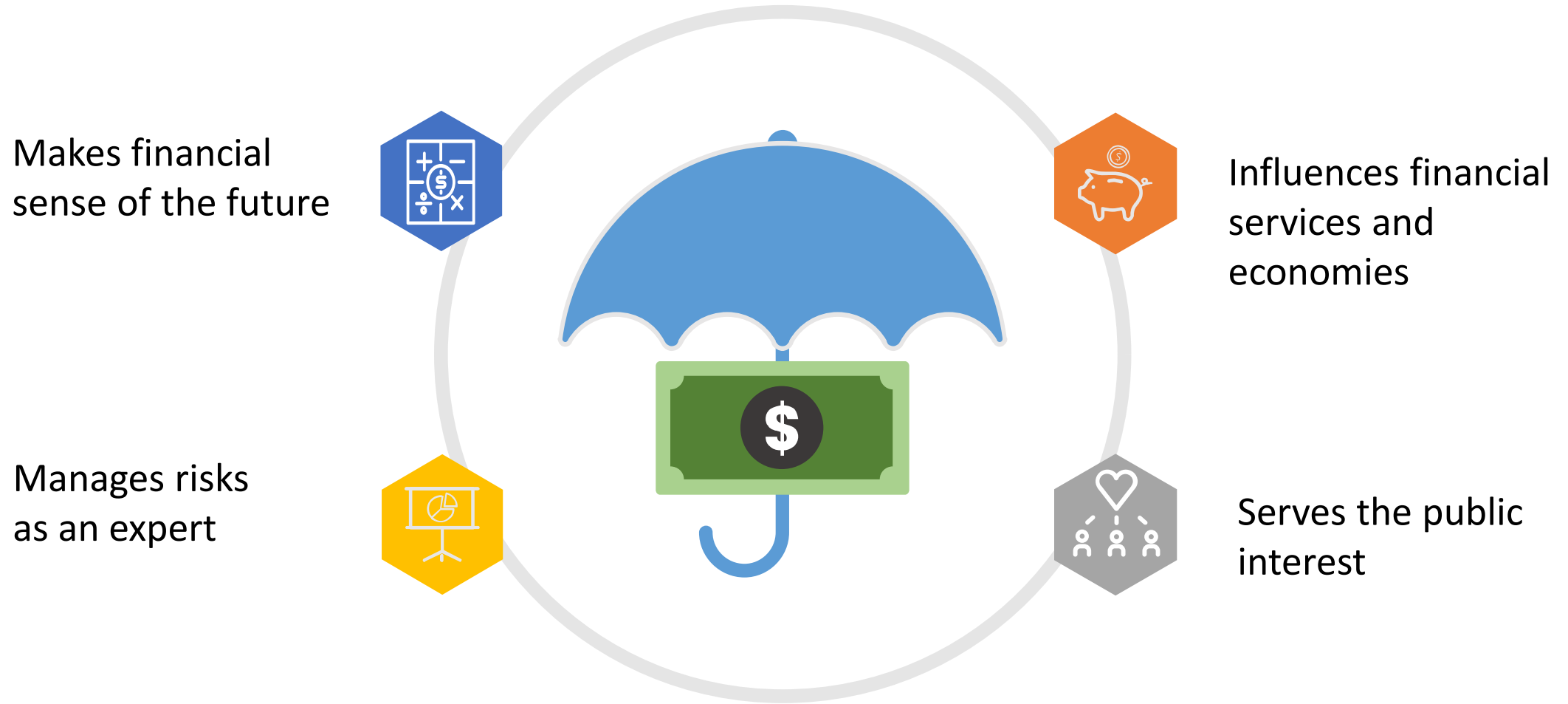
# Taking Actuarial Banking to the World

Kudzai Chigiji, Jerome Mahadeo, Iain Allan, John Young,  
Kearan Hartzenberg, Christiaan Opperman

November 2021



# An Actuary



# Banking is a Large Part of Financial Services

United States employment

Insurance and brokerage

2.86m, average wage \$39 per hour

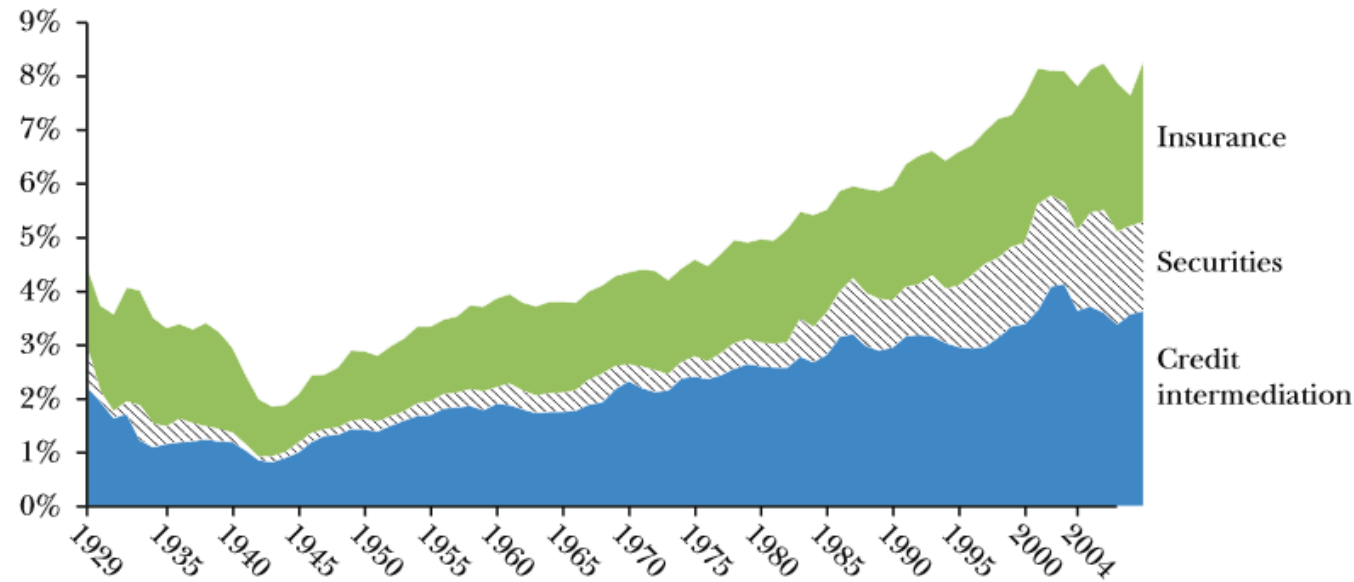
Credit intermediation

2.66m, average wage \$43 per hour

Securities

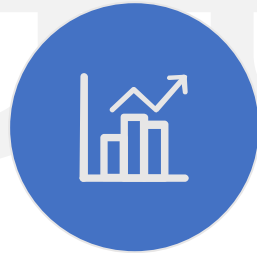
0.99m, average wage \$58 per hour

**The Growth of Financial Services**  
*(value added share of GDP)*



# Banking is Central to the Economy

Banks support  
economic growth



Enable payments,  
take deposits and make loans

Manage risks associated  
with 'borrowing short and lending long'

Banks' performance  
varies over economic  
cycles



Credit losses are higher  
in periods of recession

Credit losses reduce  
banks' capital available

Banks can contribute to  
feedback loops



Easy lending can add  
to asset bubbles

Tight lending can exacerbate  
recessionary pressures


# Influencing Financial Services



Home Insurance



Car Insurance



Life Insurance



Health Insurance



Investments



Pensions



South Africa ~ 15%

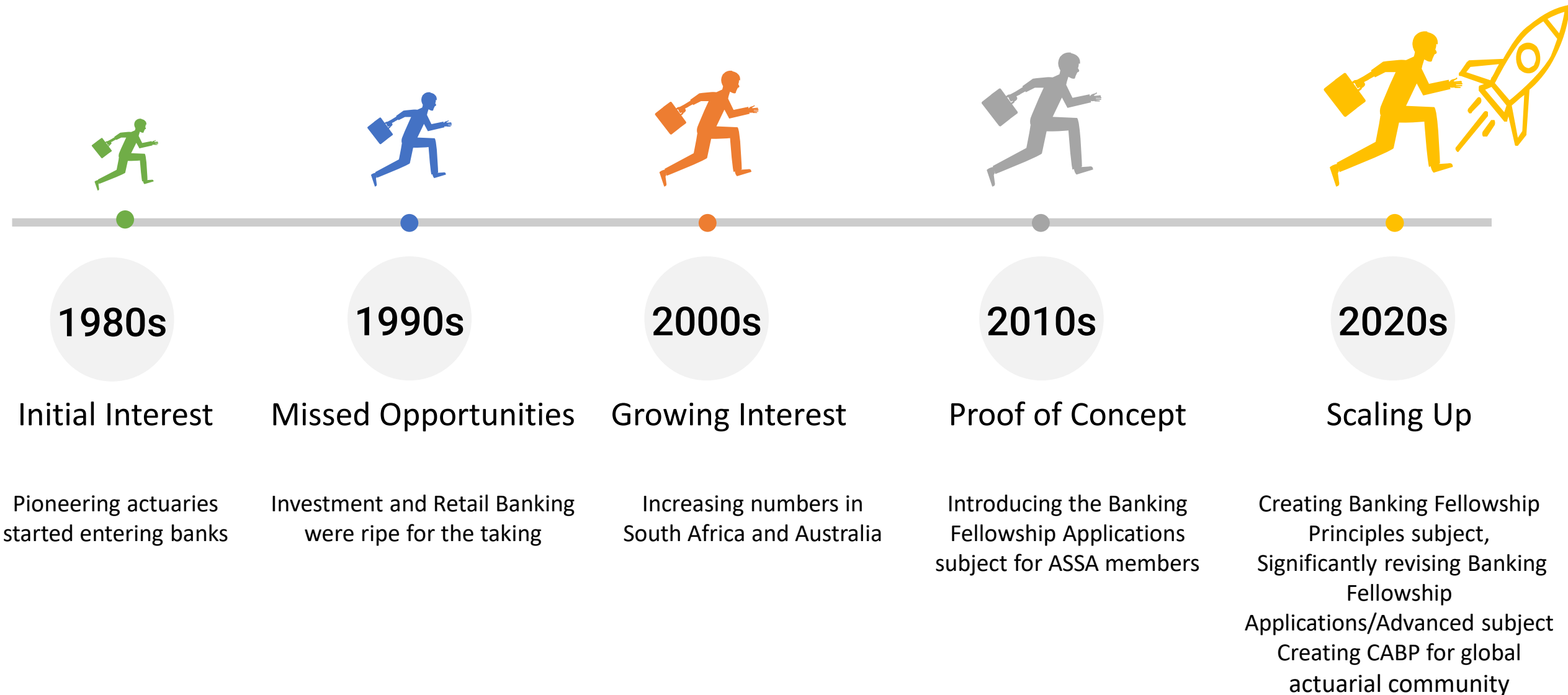


Banking

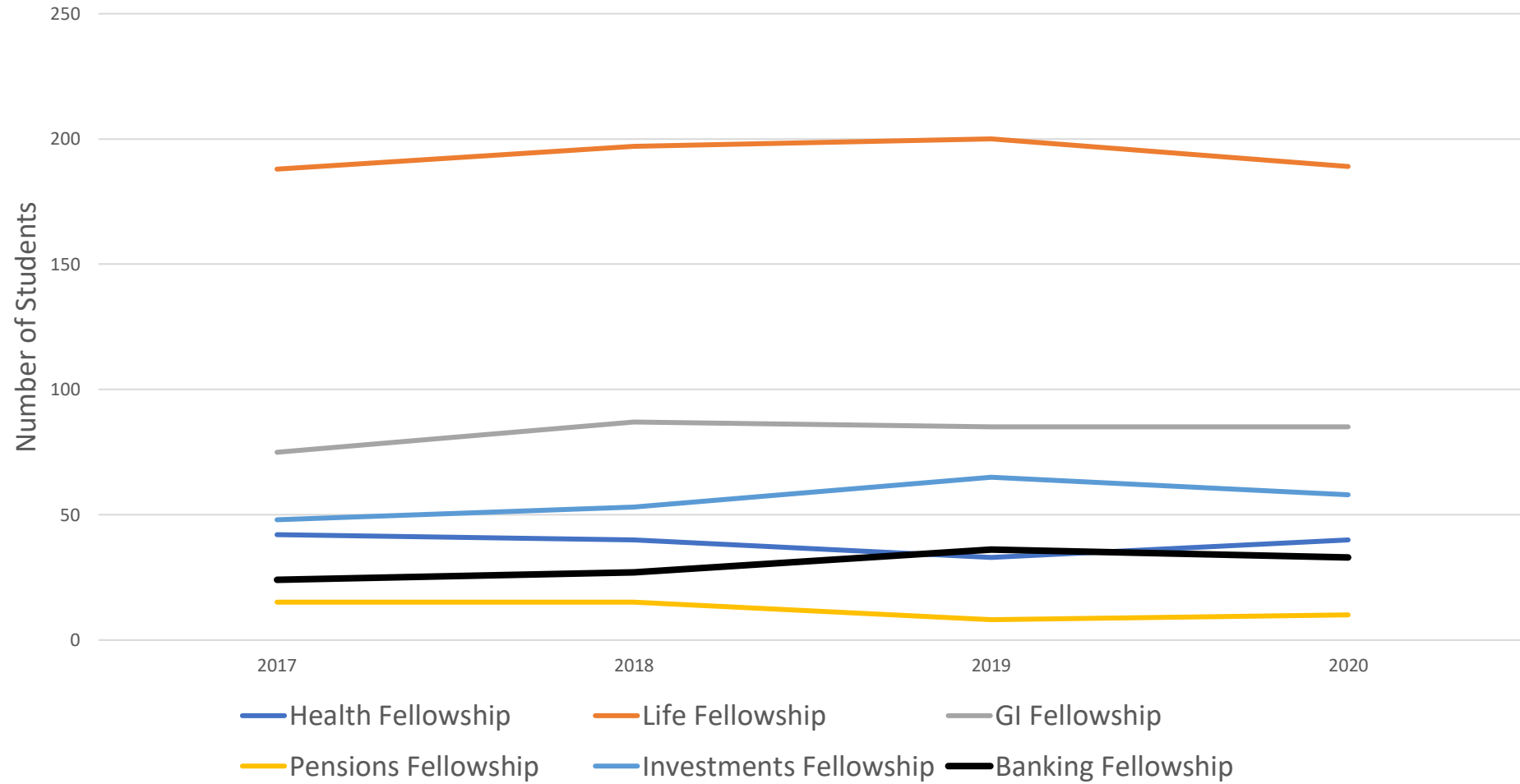


Australia ~ 10%

# It's been a Journey!



# ASSA Exam Trend



# Banking is Global

Citigroup

HSBC

JP MorganChase

Bank of America

Bank of China

Barclays

BNP Paribas

China Construction Bank

Deutsche Bank

Industrial and Commercial Bank of China

Mitsubishi UFJ FG

Agricultural Bank of China

Bank of New York Mellon

Credit Suisse

Goldman Sachs

Groupe Credit Agricole

ING Bank

Mizuho FG

Morgan Stanley

Royal Bank of Canada

Santander

Société Generale

Standard Chartered

State Street

Sumitomo Mitsui FG

Toronto Dominion

UBS

UniCredit

Wells Fargo



# Banking is Diversified



Central banks



Universal banks



Investment banks



Commercial banks (retail and corporate)



Retail banks (personal and small business)



Community banks (>4500 in US)

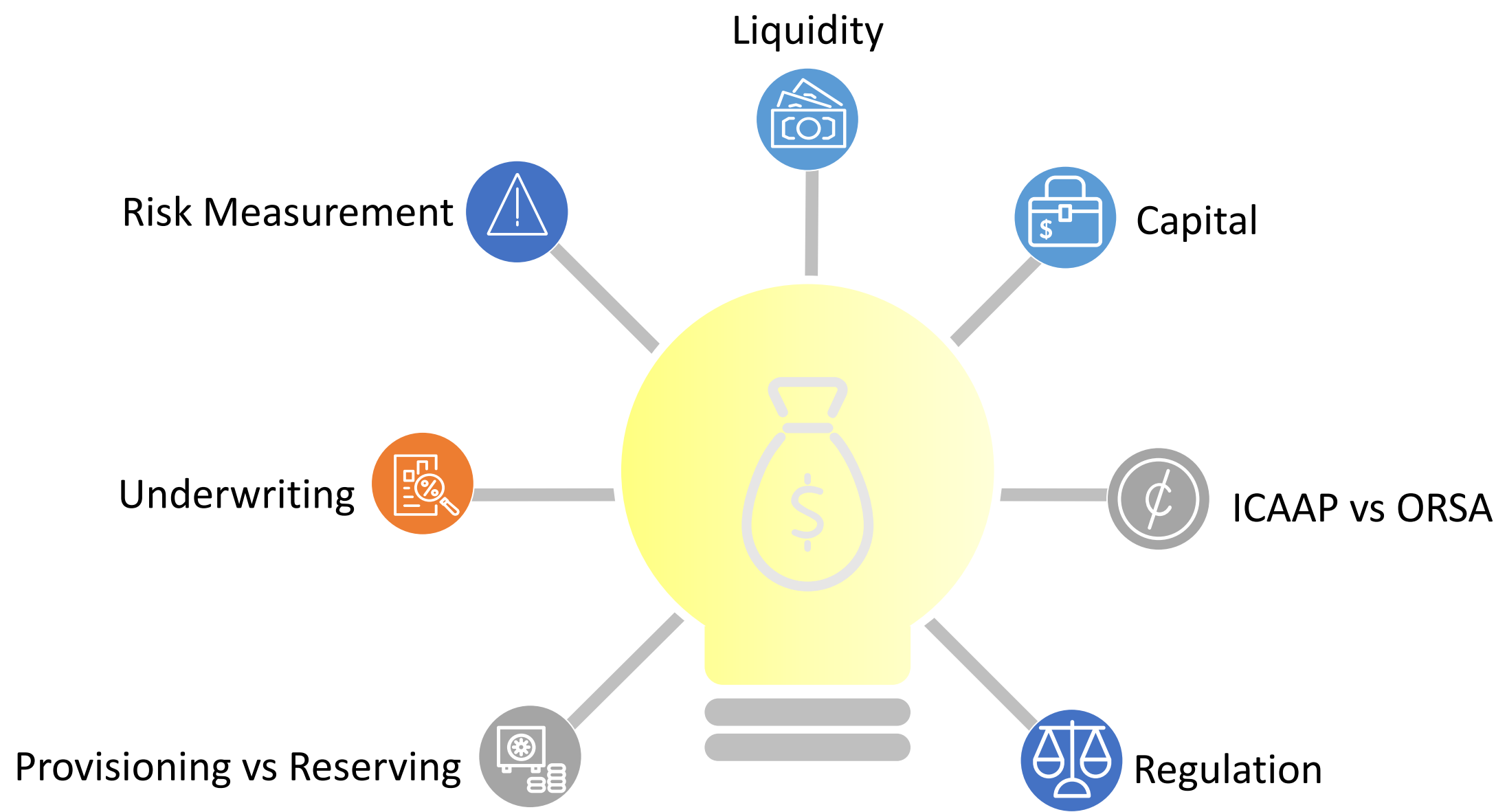


New banks e.g. Revolut, Bank Zero, Tyme Bank



Non-banks e.g. PayPal, Chime, leasing companies

# Banks versus Insurance Companies



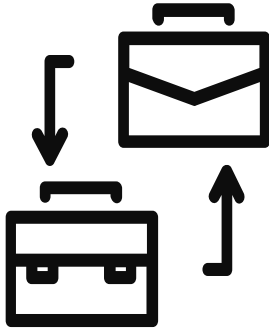
# Possible Roles in Banking

Activities	Businesses	Functions
Strategy and planning	Retail banking	Strategy
Customer segmentation	Corporate banking	Finance
Product development	Specialist areas e.g.	Risk
Fraud detection	• Asset finance	Treasury
Credit assessment	• Trade finance	Legal
Pricing and profitability	• ESG financing	Compliance
Expected credit losses	Investment banking	HR
Capital assessment	Bancassurance	
Risk management	Asset management	
Scenario assessment	Wealth management	
Stress testing	Private banking	
Asset-liability management		
Liquidity management		

# Possible Roles for Actuaries in Banking

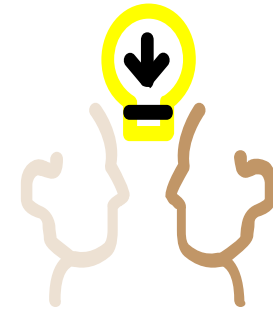
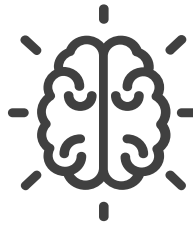
## Transfers

Building on existing skills and experience



## Problem-solving Current Issues

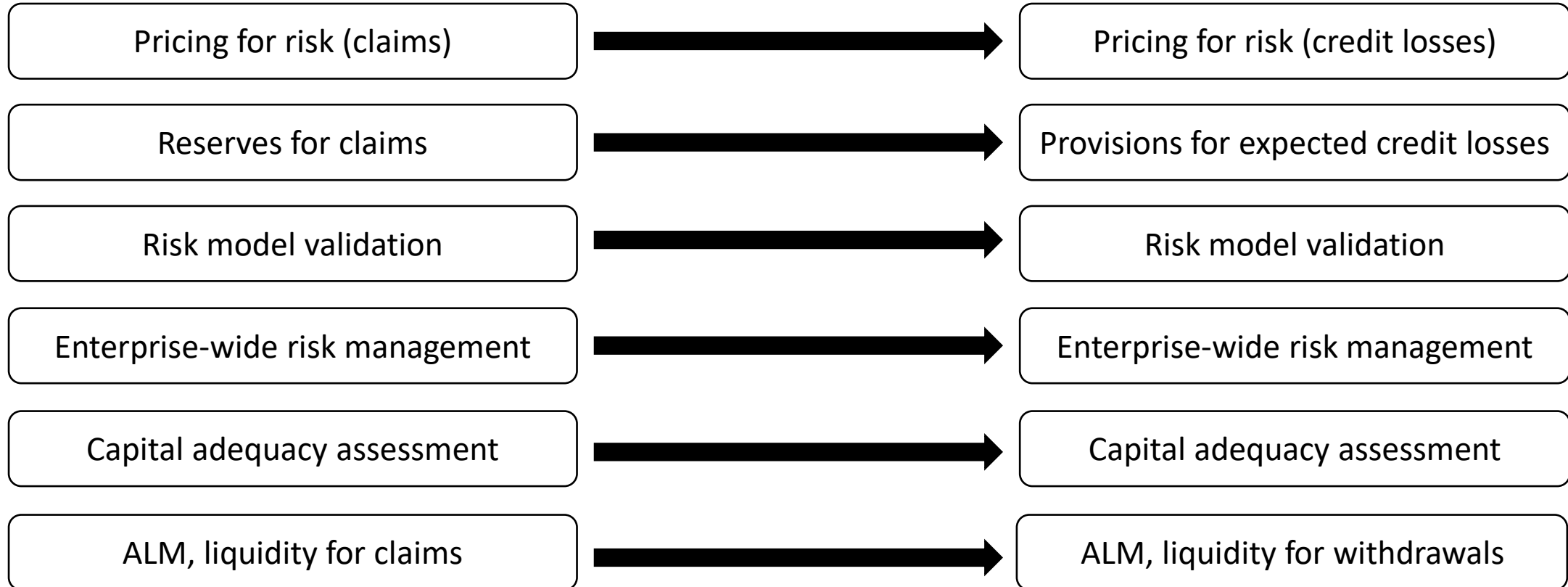
Lower barriers to entry



# Direct Skills Transfers

From Insurance ....

.... To Banking



# Problem-solving Current Issues

## Provisions for Expected Credit Losses (ECLs)

Lower GDP forecast implies higher ECLs

Last 18 months have underlined need for judgement



## Non-financial Risk (i.e. risks other than credit, market)

Risks such as conduct risk, cyber risk, risk of IT failures

Low frequency but potentially large losses

# Top Global Risks by Likelihood



# Problem-solving Current Issues

## Product Development & Pricing

Better IT, more data, new entrants, more competition

Innovative online products and services



## Climate Change Stress Testing

Quantify physical and transition risks

Capital and pricing for climate change risks

## Community Banks

Challenges, in changing environment

Enterprise-wide support, from single source

## Fintechs

Large amounts of data, augmented by open APIs

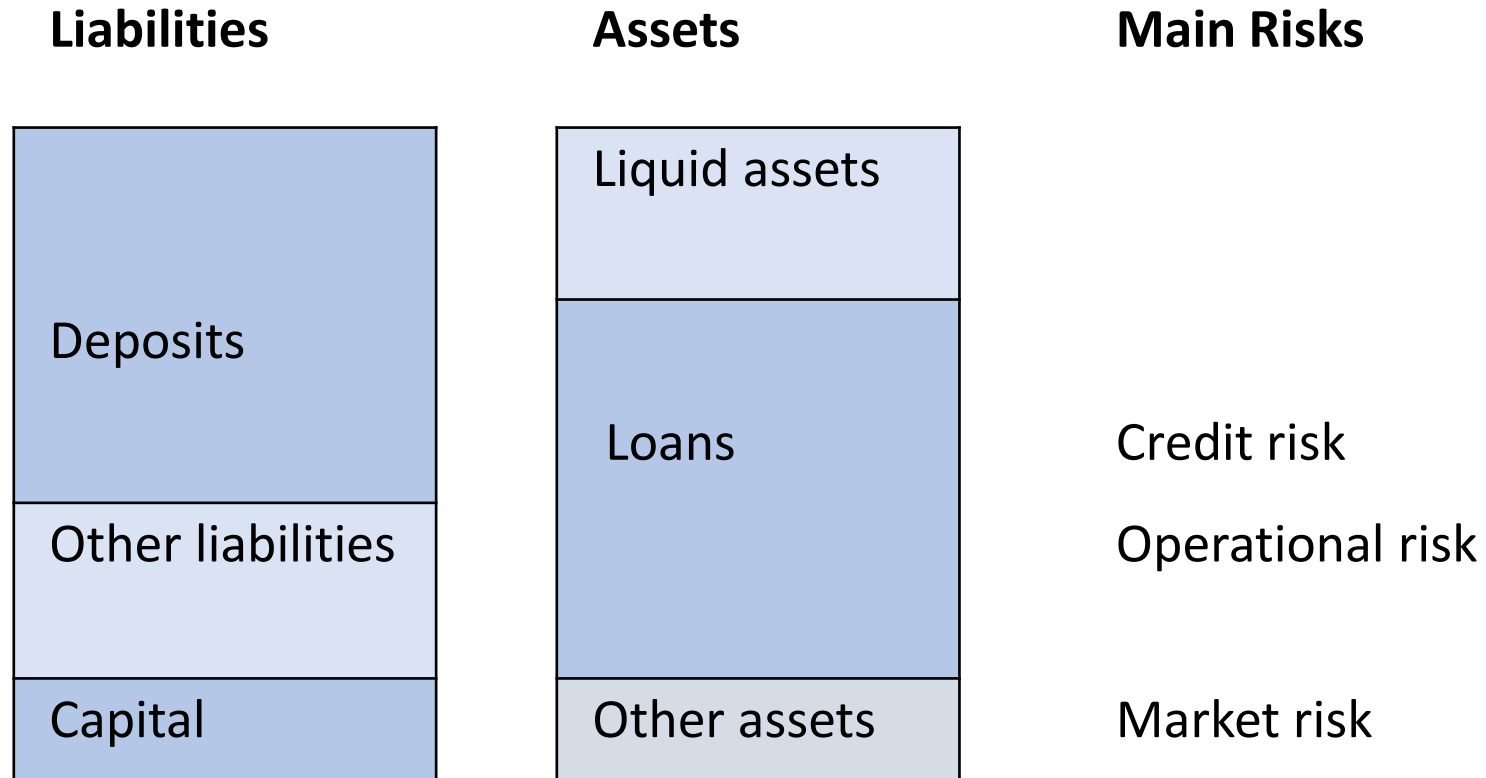
Many new opportunities to apply data science



# Q & A

How can Actuaries help banks to solve these problems?

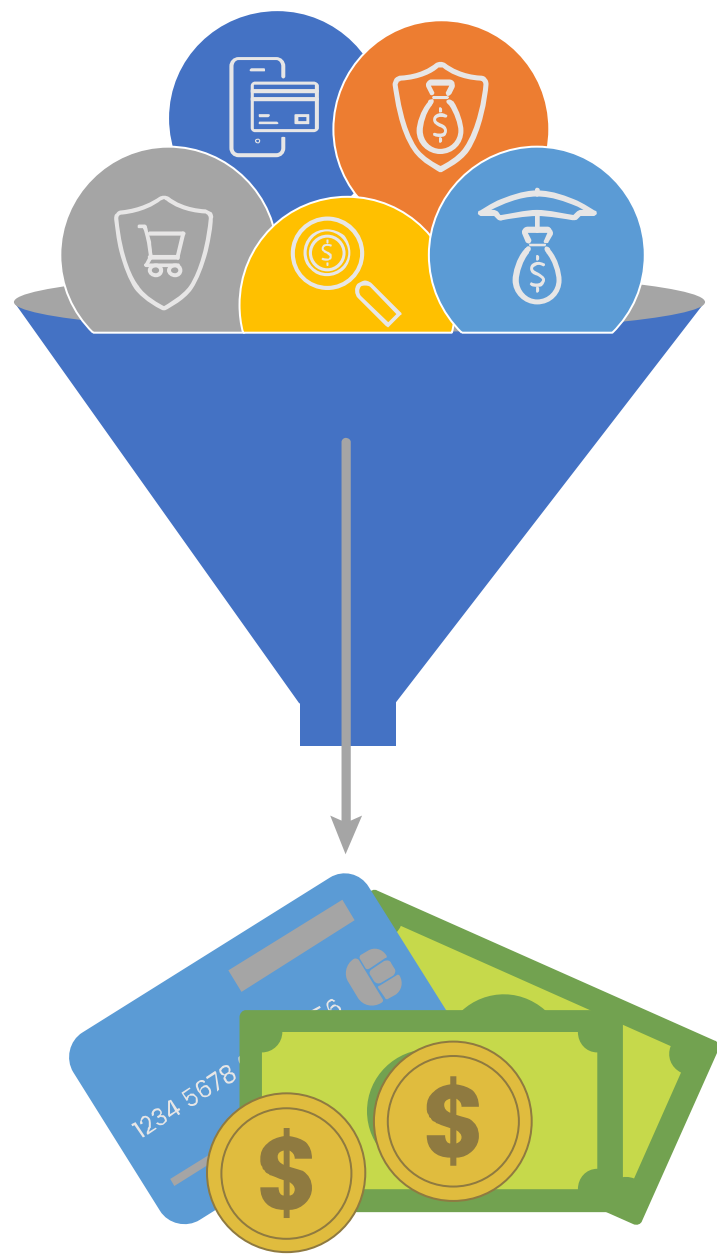
# Overview of Banking



## Capital and liquidity

- Banks hold capital against possible losses on assets
- Banks hold liquid assets for possible withdrawals

# Banking Risks



**Credit Risk**  
Counterparty credit risk  
Credit concentration risk



**Market Risk**  
Interest rate risk in the banking book



**Operational Risk**  
Conduct risk  
Non-financial risk



**Liquidity Risk**  
Funding risk



**Capital Risk**  
Across all risk.

# Overview of Syllabi

## **Principles**

1. Overview of banking
2. Banking regulations
3. Banking risk management
4. Product pricing
5. Credit risk measurement
6. Market risk measurement
7. Operational risk measurement
8. Capital measurement
9. Liquidity measurement

## **Applications/Advanced**

1. Credit risk management
2. Market risk management
3. Operational risk management
4. Treasury management
5. Liquidity management
6. Capital management
7. Governance
8. Strategy
9. Complex problem solving

# Example of Banking Principles Content: Product Pricing

- Pricing loan products (mortgages, vehicle loans, personal loans)
  - Discounted cashflow model
  - Expected credit losses (ECL), cost of funds (transfer pricing), operational costs, profit margin
- Pricing deposit products (current accounts, savings accounts)
  - Price elasticity
  - Marginal cost of raising funds (deposits)
- Pricing Investment Banking products (securitisations, derivatives)
  - Black-Scholes derivative pricing formula
  - Dynamic hedging

# Example of Banking Principles Content: Credit Risk Measurement

- IFRS9
  - Replacement for IAS39, impact on impairments
  - Probability of default (PD), Exposure at default (EAD), Loss given default (LGD)
- Basel Pillar I minimum capital requirements
  - Standardised vs Internal Ratings-Based (IRB) approaches set out in Basel II regulations
  - Retail vs wholesale exposures
- Credit risk in the trading book (revisions in Basel III)
  - Counterparty credit risk (CCR)
  - Credit valuation adjustment (CVA)

# Example of Banking Principles Content: Liquidity Risk Management

The Basel III short-term liquidity metric is the Liquidity Coverage Ratio (LCR).

The LCR metric is given by:

$$\frac{\text{Stock of high-quality liquid assets (HQLA)}}{\text{Total net cash outflows over the next 30 calendar days}} > 100\%$$

The LCR is a regulatory-defined stress scenario, in that regulators define assumptions on the rate of deposit withdrawals and assign pre-determined weights that reflect assumed stress outflow/inflow rates.

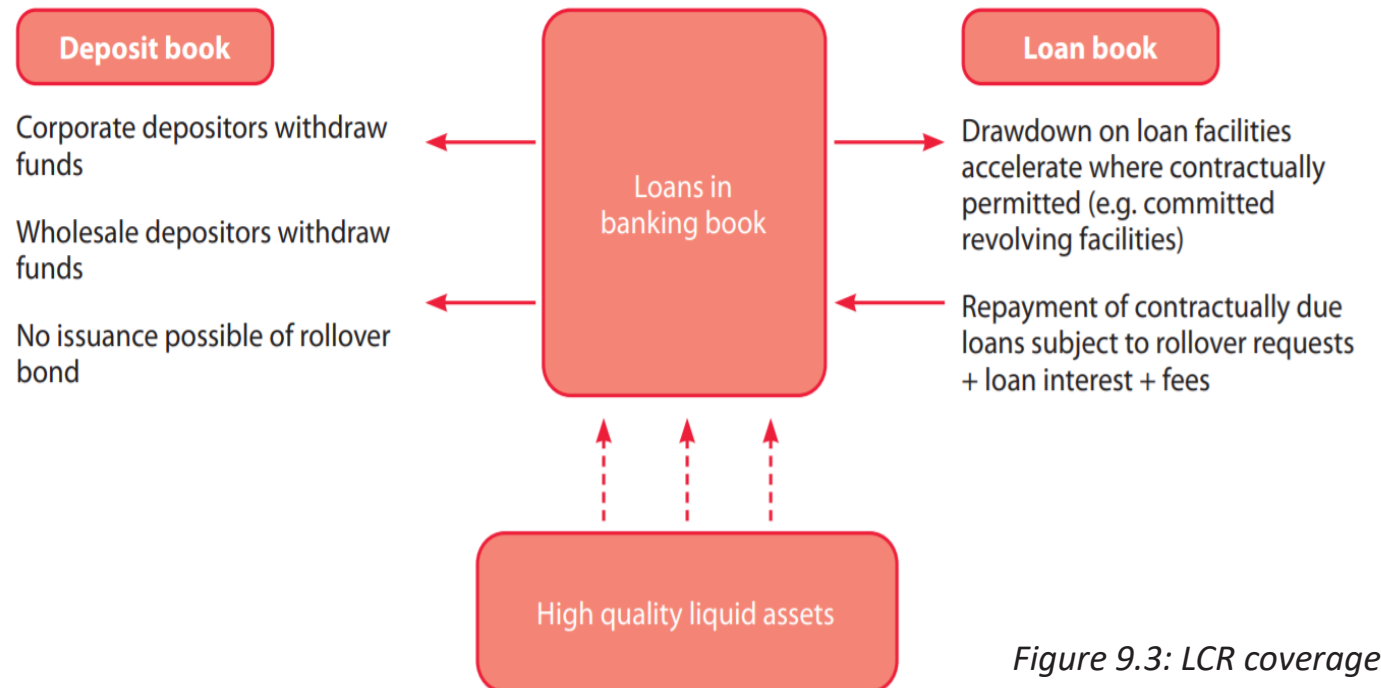
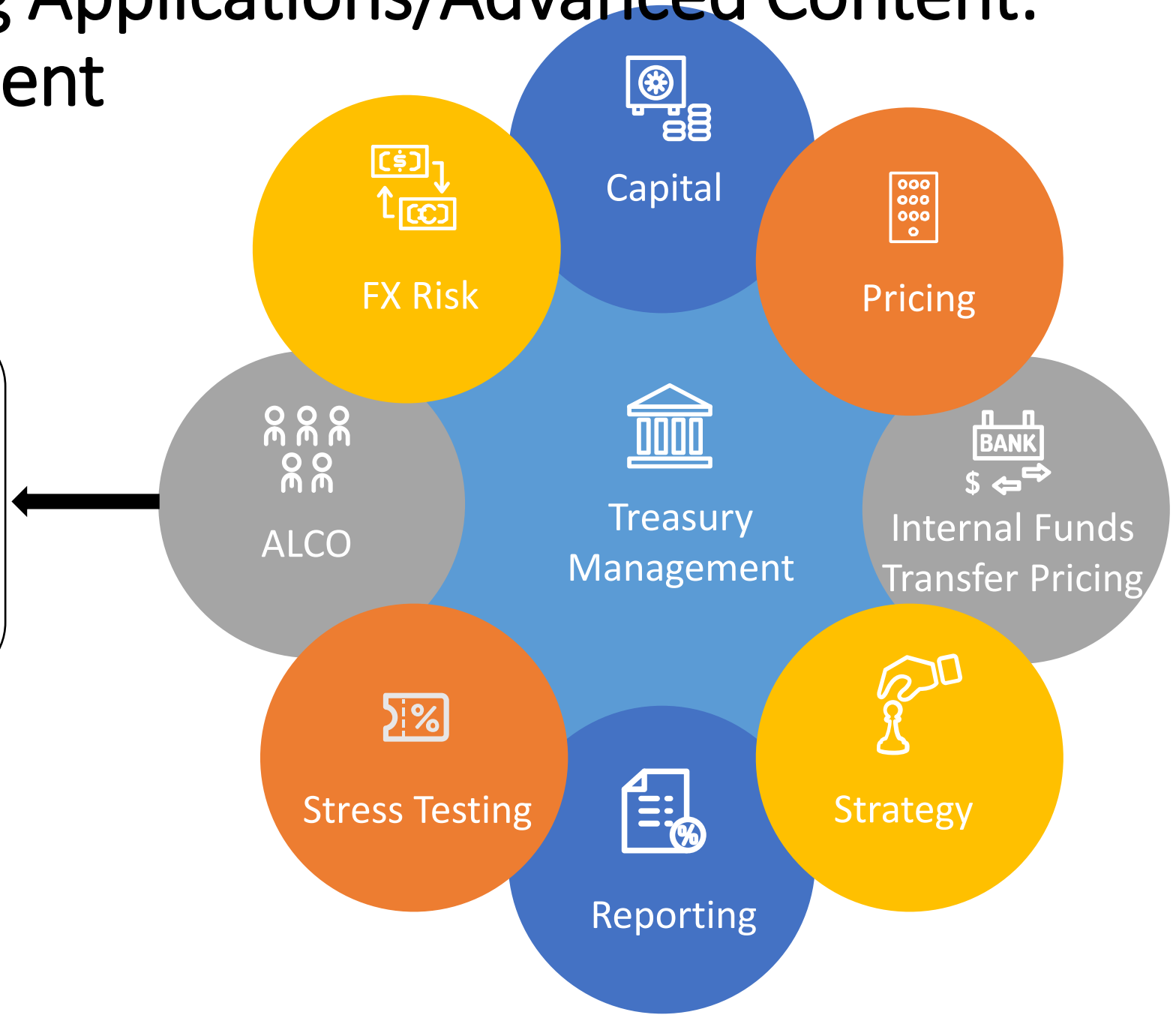


Figure 9.3: LCR coverage

# Example of Banking Applications/Advanced Content: Treasury Management

1. Strategic and tactical governance of the balance sheet and liquidity requirements
2. Balance sheet management
3. Liaising with business units





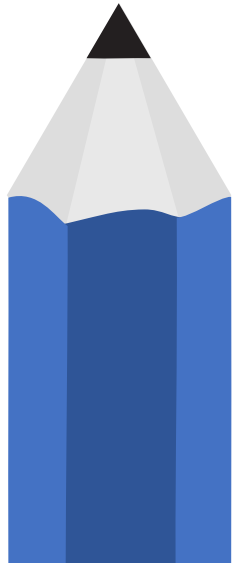
# Examples of Banking Applications/Advanced Content: Capital Management, Strategy

- Capital Management
  - Capital requirements: minimum, additional
  - Capital buffers: stress testing
  - Capital adequacy, ICAAP submission
- Strategy
  - Strategic planning process, opportunities/threats
  - Mergers and acquisitions
  - Current strategic issues

# Tuition and Exams

## Education Material

Course notes, Marking  
option, Specimen exam  
papers, Mock exams



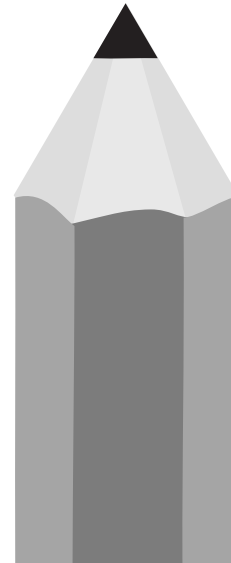
## Live Online Tutorials

Applications/Advanced  
classes with case studies



## Certificate in Actuarial Banking Practice

Fellows, non-ASSA and  
non-IFoA Associates

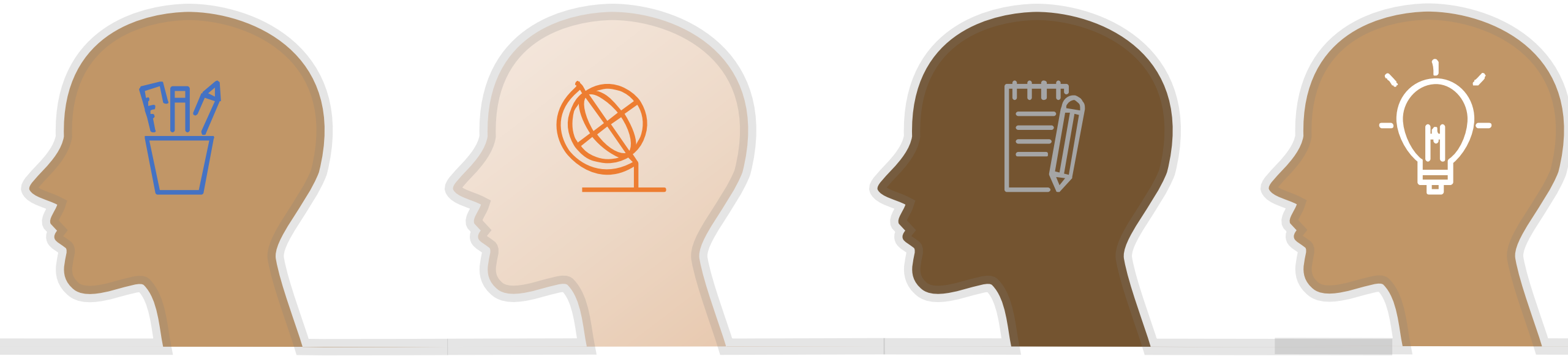


## Online Examinations

Online in May and  
October



# CPD for Banking Actuaries



IAA  
Banking Forum  
events

ASSA  
Banking Committee  
events

IFoA  
Banking Community  
events

Events of other  
Banking and  
Finance bodies

# Banking Examples in Pre-Associate Modules



# The Future



More education  
partnerships



More CPD events



Greater  
engagement  
with employers



Greater  
engagement  
with regulators

It's still day 1