



# Asset Liability Management

## Approach of an Integrated Supervisor

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- Supervisory Approach to ALM in Banks
- Traded vs structural interest rate risk
- Liquidity considerations
- Control environment pertaining to ALM
- An integrated supervisor's experience with ALM
- Observed differences between sectors

- Banks should have in place an appropriate risk management framework and methodology for managing non-traded IRR.
- Currently, no specific capital charge
- No specified standards on ALM for banks
- Basel's proposed New Capital Accord (Jan 2001)
  - ↳ Need to develop a formal supervisory framework

This contrasts with:

- Traded market risk (including traded interest rate risk) - there is a requirement for reporting, management and a capital charge
- Liquidity - specified standards for measurement and management and requirements to hold liquid assets

## Basel's Principles:

- Board and senior management oversight
- clear policies and procedures to capture all sources of I/R risk
- segregation of duties
- establishing and enforcing appropriate limits
- regular stress testing
- adequate information systems for measuring, monitoring, controlling and reporting I/R risk
- internal controls reviewed independently, regularly



**Trading Book** includes positions which are:

- held for short-term resale;
- taken with the intention of benefiting from short-term price movements;
- arise from broking or market making; or
- taken to hedge other elements of the trading book

ADIs must have a trading book policy statement that indicates how they determine what falls in the trading book

**Banking Book** includes the rest

- Traded interest rate risk is subject to capital requirements - included in market risk requirements
- Banks must complete a return quarterly outlining the extent of market risk and the capital held
- There is also the option of using an internal model - based on VaR calculations
- APRA conducts regular onsite reviews to assess banks' management of their market risks



Capital is required to be held against the following risks in the trading book:

- Interest rate risk
- Equity risk
- Foreign exchange risk
- Commodities risk

The capital required is the total amount calculated x 12.5



## Standard Approach

Allocates positions across a maturity ladder with the capital charge in four components:

- net short or long weighted positions across the whole trading book
- a small proportion (10%) of the matched positions in each time band (vertical disallowance)
- a larger proportion (40-100%) of the matched positions across different time bands (horizontal disallowance) and
- a net charge for positions in options

There is also the option of calculating price sensitivities of each maturity - needs approval

There are also specific risk charges

- **APRA conducts onsite risk visits to assess banks' ALM practices**
- **Expect to see:**
  - Assessment of ALM threshold
  - Gap analysis
  - Net Interest Income
  - Market Value of Equity
- **Whilst not compulsory this forms our overall risk assessment of the entity**

- Can increase the capital requirement for a bank that manages risk poorly - this can include poor management of interest rate risk
- Currently such a decision would be a qualitative decision



- **Banks in Australia typically use:**
  - Gap analysis
  - Net Interest Income (NII)
  - Market Value of Equity (MVE)

## Gap analysis is...

- a *repricing* schedule that distributes interest-sensitive assets, liabilities and off-balance sheet positions into “time bands” according to their next *repricing date*. The time bands are usually monthly or 3 months out to 1 year, then yearly after that out to 5 or even 10 years (depending on the profile of the balance sheet)
- a *static* analysis, ie a snapshot of the balance sheet at a point in time
- calculated daily, weekly or monthly



Gap analysis can be used to generate *simple indicators of interest rate sensitivity* of both (i) earnings and (ii) economic value to changes in interest rates.

### (i) Earnings approach:

The size of the gap in a given time band indicates the bank's *repricing risk exposure*, where

"size of gap" = assets - liabilities + OBS hedges

- Then, shock each gap to arrive at approx change in net interest income



## (ii) Economic Value approach:

Application of *sensitivity weights* to each time band in the repricing schedule to evaluate the effects of changing interest rates on an ADI's economic value.

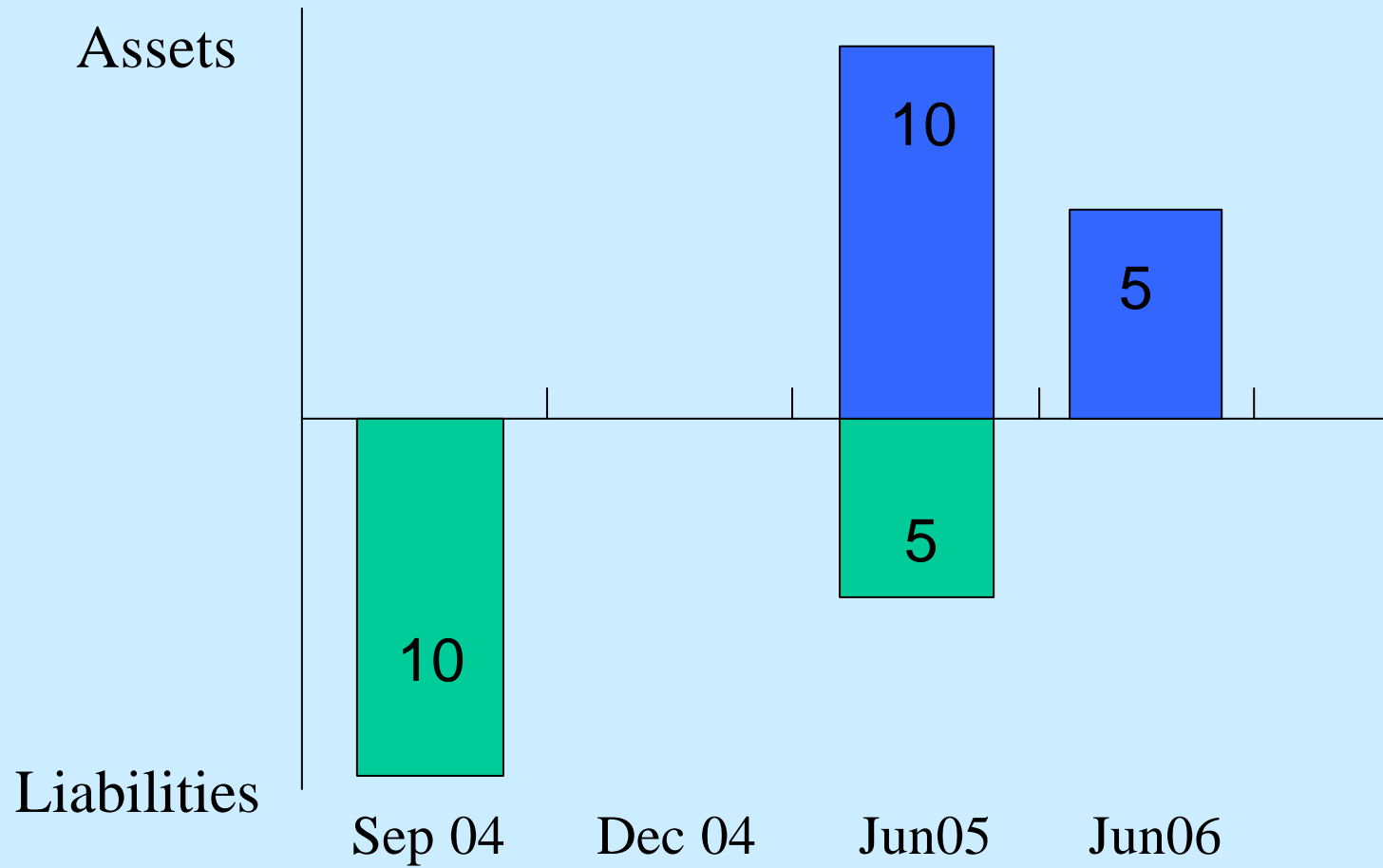
- *Sensitivity weights* typically based on estimates of *duration* of the assets and liabilities in each time band

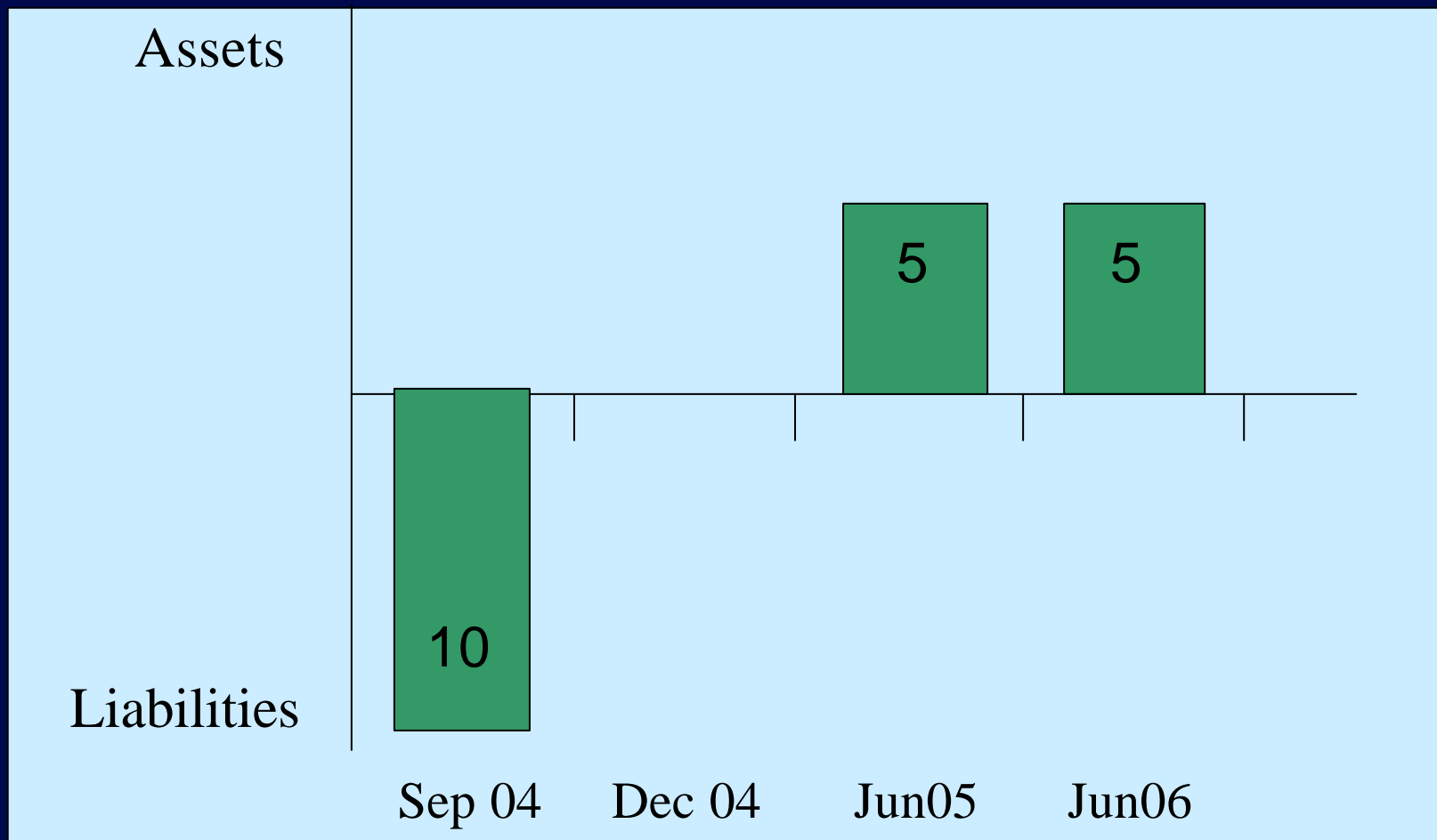
# Example of Gap Analysis



following repricing characteristics:	Net
1 Assets repricing in 3 months (Sep) 6.0% \$10M	\$0
2 Liabilities repricing in 3 months 5.0% Short	\$10M
3 Assets repricing in 6 months (Dec) 6.25% \$0	\$5M
4 Liabilities repricing in 6 months Hedged	\$5M 5.25%









So what does this gap diagram show?

It's a *basic* representation of the *repricing characteristics* of the *balance sheet*

Highlights *existing repricing mismatches* in the balance sheet

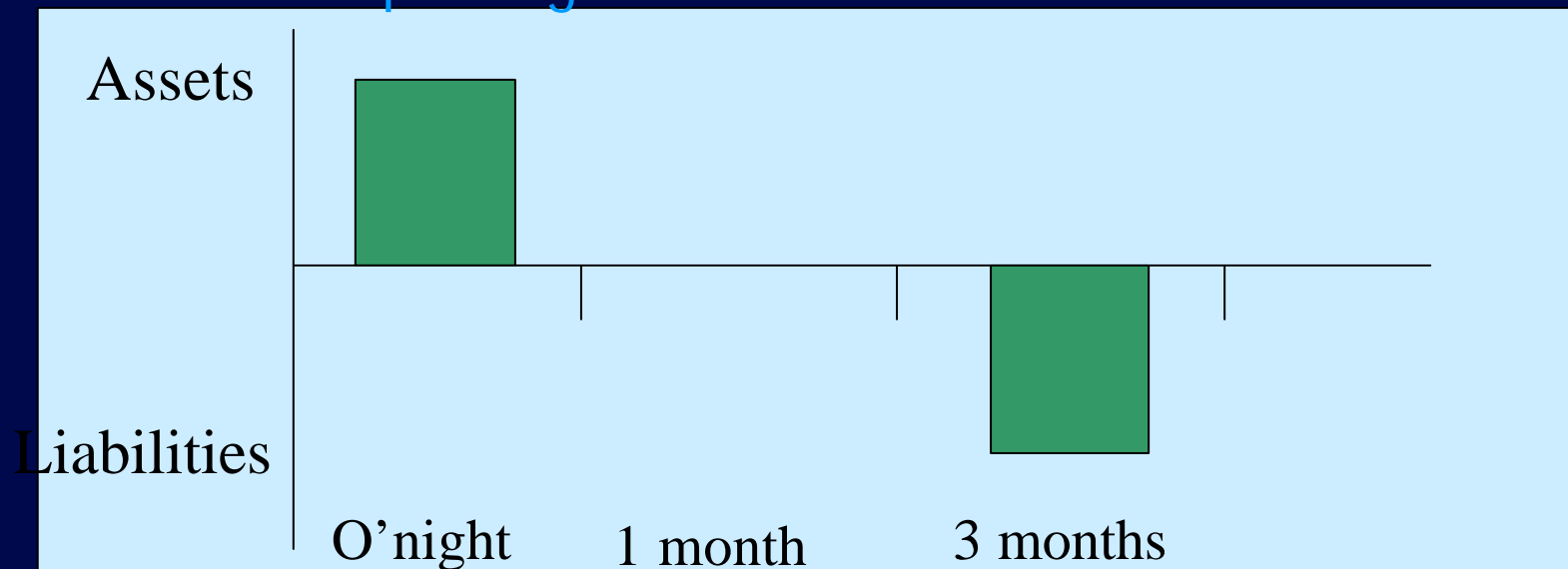
What would happen if interest rates increased?



## Practical example of repricing mismatch:

In Australia, most mortgages are variable rate and therefore reprice as the cash rate changes (ie are slotted into the “overnight” bucket), however funding is typically priced off the bill rate (90 days).

⇒ repricing mismatch





## How does a bank know whether the size of a "gap" is acceptable?

- This will depend on the bank's risk appetite and will be reflected in gap limits. The 'risk appetite' reflects the level of interest rate risk that management is willing to tolerate given its expectation of future interest rate changes
- Gap limits on individual time buckets, are usually a dollar figure
- Gap limits can act as a trigger for management to decide whether to put a hedge in place, or whether to alter the structure of the balance sheet (eg build up the level of short term funding v long term funding, etc)

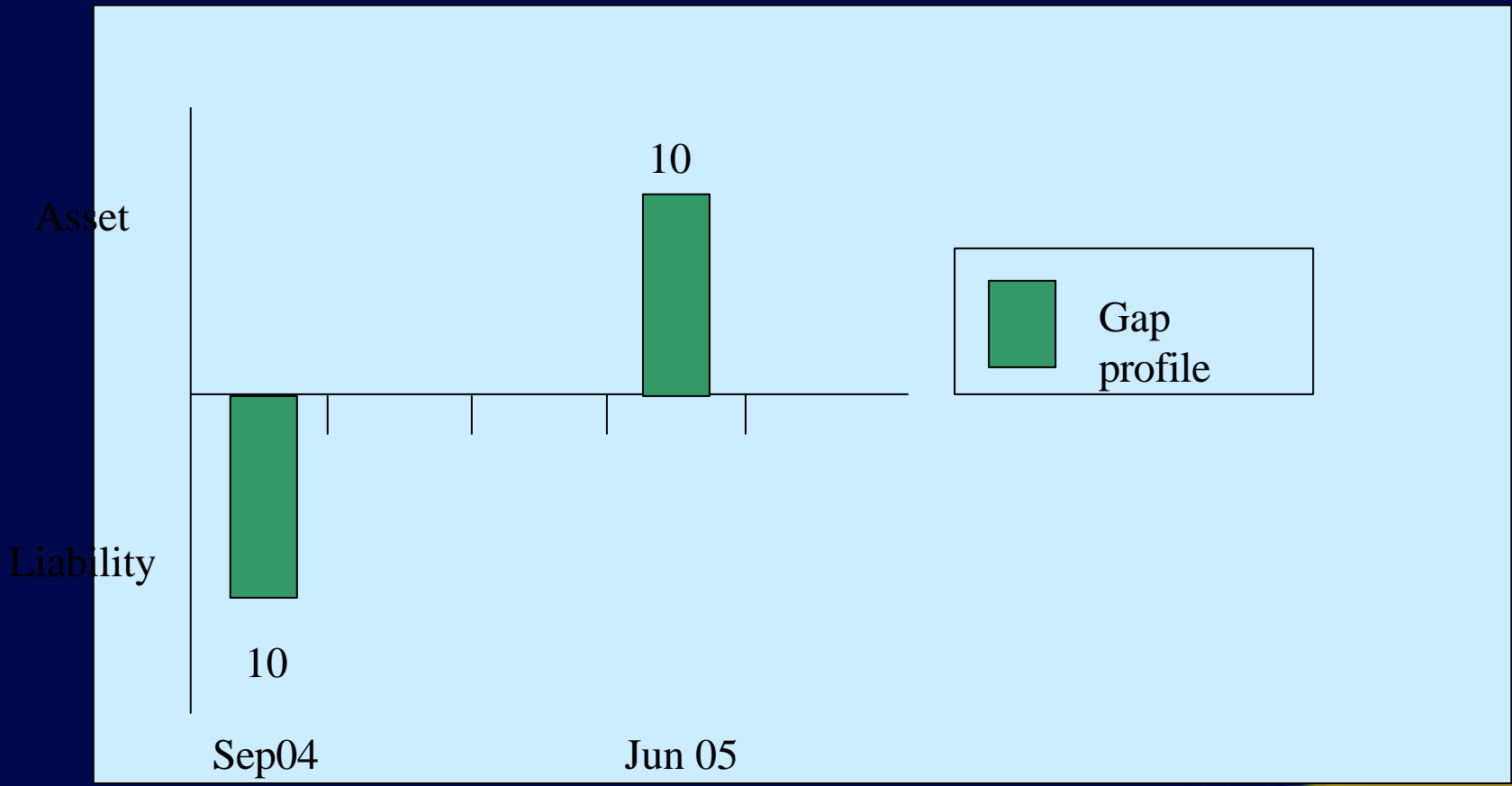
## Derivatives can be used to alter the gap profile

- to lengthen or shorten an asset or a liability
- to “eliminate” a gap in a particular time bucket
- interest rate swaps typically used
  - plain vanilla or more exotic/tailored
- interest rate futures and FRAs also used
- interest rate options

# Example of Swaps in a Gap Profile

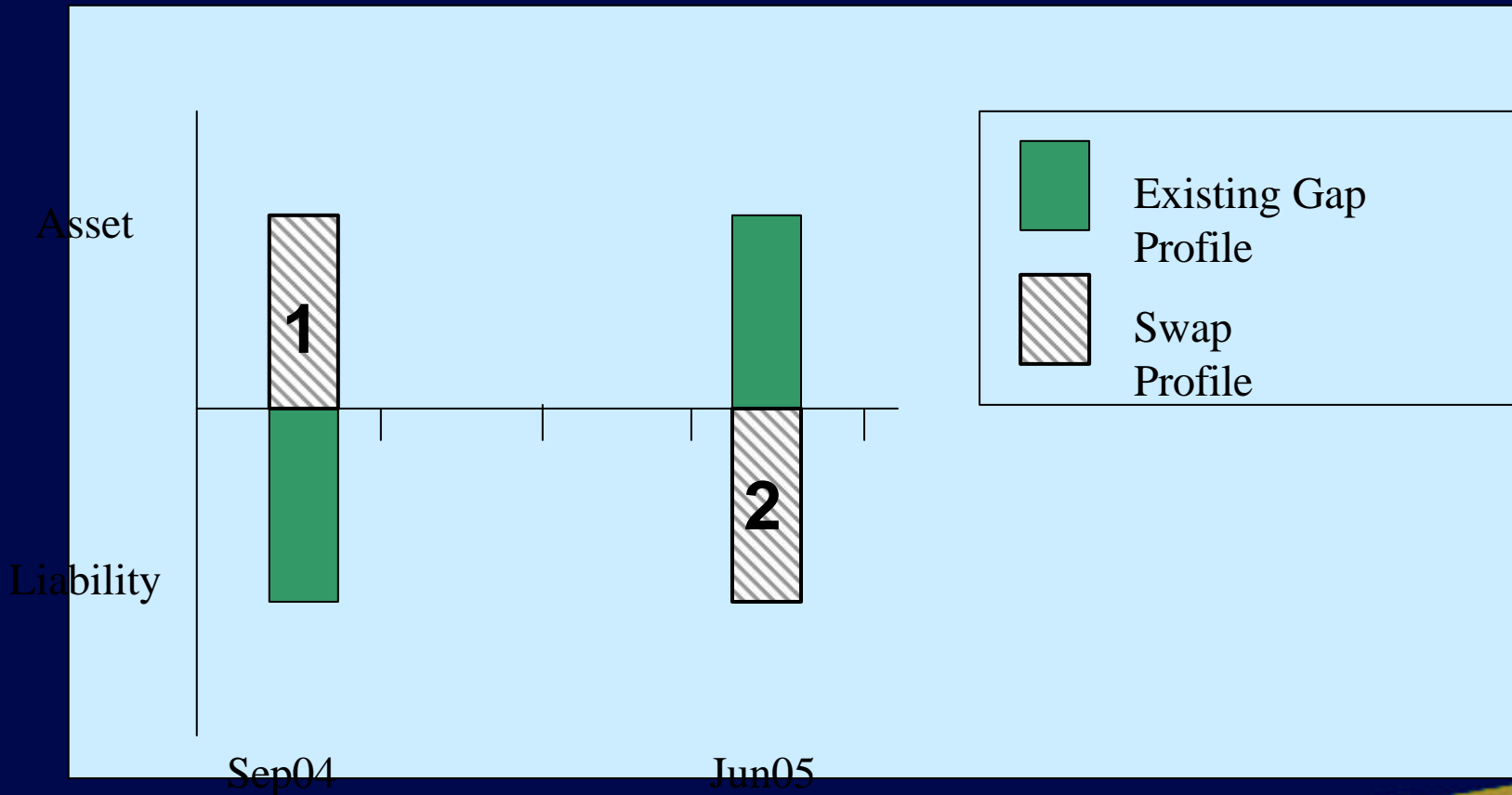


Given the gap profile below, swaps can be used to “eliminate” the repricing gaps (- see next slide).

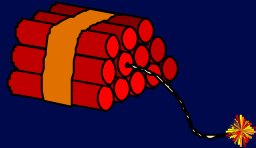




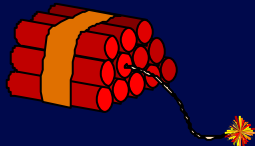
To “eliminate” the gaps, transact a \$10M pay fixed for 1 year quarterly swap  $\Rightarrow$  receive floating







Gap is very *basic approach* - it's a static analysis, difficult to portray products with embedded options or no maturity...



Assets and liabilities that are netted must reprice fully to the same indicator interest rate, and with the same timing, *otherwise the gap report will misrepresent the true risk to some extent*

### Net Interest Income is...

- the *difference* between interest bearing assets and interest bearing liabilities, plus off-balance sheet hedges, typically over the *next 12 months*
- either a *static* or *dynamic* calculation
  - - static ↻ based on balance sheet snapshot
  - - dynamic ↻ forward looking, so it would include a range of assumptions such as balance sheet forecasts (volume, mix), market interest rate changes and pricing assumptions

- Generally *short term* focus - 12 month horizon
- Generally calculated at the end of each month
- In terms of interest rate risk measurement, a bank will calculate the change in NII over a specified period (eg 12 months) given a specified shock(s) to the yield curve. The end result is assessed against a Board-approved NII *limit*.



- Stress Testing should be performed for a range of yield curve shocks, to see the possible impact on NII under a range of interest rate scenarios, eg:
  - *parallel* shifts eg  $\pm 200$  bps,  $\pm 50$  bps
  - *steepening* / flattening / twisting of the yield curve

## Market Value of Equity is...

- the *present value* of a bank's *assets* minus the present value of its *liabilities*
- quantification of the sensitivity of the market value of a bank's equity to a change in interest rates
- a hypothetical liquidation value of the bank
- a *long term* focus (whereas NII is short term)

*Recall:*  $MVE = NPV \text{ of Assets} - NPV \text{ of Liabilities}$

- Quantifying the *sensitivity* of the market value of a bank's equity to a change in interest rates
- MVE can assist in decision making over the *long term* (whereas NII is a short term focus)
- NPV concept  $\Rightarrow$  as interest rates  $\uparrow$ , MVE  $\downarrow$



- The change in MVE, for a given shift in interest rates, is measured against a limit.
- Stress Testing should be performed for a range of yield curve shocks, to see the possible impact on MVE under a range of interest rate scenarios

Banks are required to have a comprehensive liquidity management strategy

Banks must either meet:

- Minimum Liquid Holdings
- Scenario analysis liquidity requirements



## Minimum Liquid Holdings

- Bank must hold a set percentage (9%) as “high quality liquid assets”

## Scenario Analysis

- Uses maturity gap analysis

Must be done on two scenarios:

- Going concern
- Name crisis
  - Assumes significant outflow of deposits
  - Assumes difficult to obtain new funding
  - Must remain cash positive out to five days

What RISKS does ALCO focus on?

- Non-traded interest rate risk, liquidity, capital management, pricing strategy, transfer pricing strategy

3 distinct ROLES:

- *take* risk decisions (see next slide)
- *review* risk positions and compliance with risk limits
- *establish* and *review* policies
- establish and review NII and MVE limits (these limits are usually approved at Board level)



One of the decisions that should be made by ALCO is the view on interest rates

A bank's own view on interest rates is important

- The *forward curve* - the most likely path of future interest rates. A bank's view of future interest rates should be made after considering the shape and position of the forward curve
- An interest rate view that *deviates* significantly from the forward curve might expose the ADI to potentially large earnings or losses
- Some banks may choose to base their analyses and decisions on the market implied forward yield curve, others may use their economist's forward curve (which may differ to the market curve)

An effectively functioning ALCO is part of the overall control framework of the organisation.

This will include the appropriate:

- Limits
- Reporting
- Monitoring

It also requires segregation of duties between the active decisions and the recording of positions

Internal controls must be reviewed independently and regularly

- While there are differences between the industries, the ALM concept is not radically different
- There are different rules for each of the industries we regulate:
  - Life insurers must effectively hold capital for ALM mismatch and are required to comment on it annually
  - P&C insurers are required to have an all-encompassing risk management strategy – this should include investment risks.



- All industries are required to ensure they have sufficient liquid funds - this is a general legal requirement on all companies
- Governing acts permit us to take action against regulated entities that fail to hold sufficient capital or in the correct form *eg an annuities provider which met capital requirements but was faced with liquidity shortages had a liquidity requirement imposed on them*

- Specialist teams that look at all industries
- Two key teams:
  - Balance Sheet and Market Risk (BSMR)
  - Risk Models
- BSMR assesses ALM, investment risk, traded market risk across ALL regulated entities
- Risk Models assesses the models used to measure and manage risk, and to calculate capital requirements
- Skills can be applied to a wide range of situations





- This approach enables us to compare practices across all industries whilst still considering the unique characteristics of each industry
- The financial concepts are not radically different
- The need for a robust control framework is unchanged
- Most of the requisite controls are the same



- **In the Australian market:**
  - Banks tend to have better systems of internal control
  - Banks must deal with liquidity risks more frequently due to the nature of their business
  - Insurers have a wider range of investments
  - Insurers make greater use of attribution analysis when assessing performance

- Insurers tend to place greater reliance on duration and convexity – this reflects the much lower liquidity risk
- Not always sufficient consideration of liquidity risk by insurers
- Life insurers tend to integrate ALM into setting investment mandates (eg when setting target duration and convexity, and when deciding on asset allocation)

- Life insurers tend to pay attention to ALM, however the control structure is often less well developed
- P&C insurers do not always consider ALM systematically

- The differences are influenced by the different types of business, reflecting ALM's *strategic function*
- Banks tend to run margin-based businesses, where returns are based on earning a margin over funding cost, but subject to the risk of funding recall (withdrawal of deposits)
- Insurers (especially P&C) are running a business based on accepting risks, and earning a return off investments before paying claims
- A large part of many life insurer's business is investment management - managing a pool of investments until required to return the money - under contractually agreed terms (eg *endowment policies*)