# ASSET/LIABILITY MANAGEMENT SUMMARY

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# HOW DO BANKS MAKE MONEY?

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## HOW DO BANKS MAKE MONEY?

- Lend Long, Borrow Short
  - Based on a stable, upward sloping yield curve

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## 3-6-3 RULE

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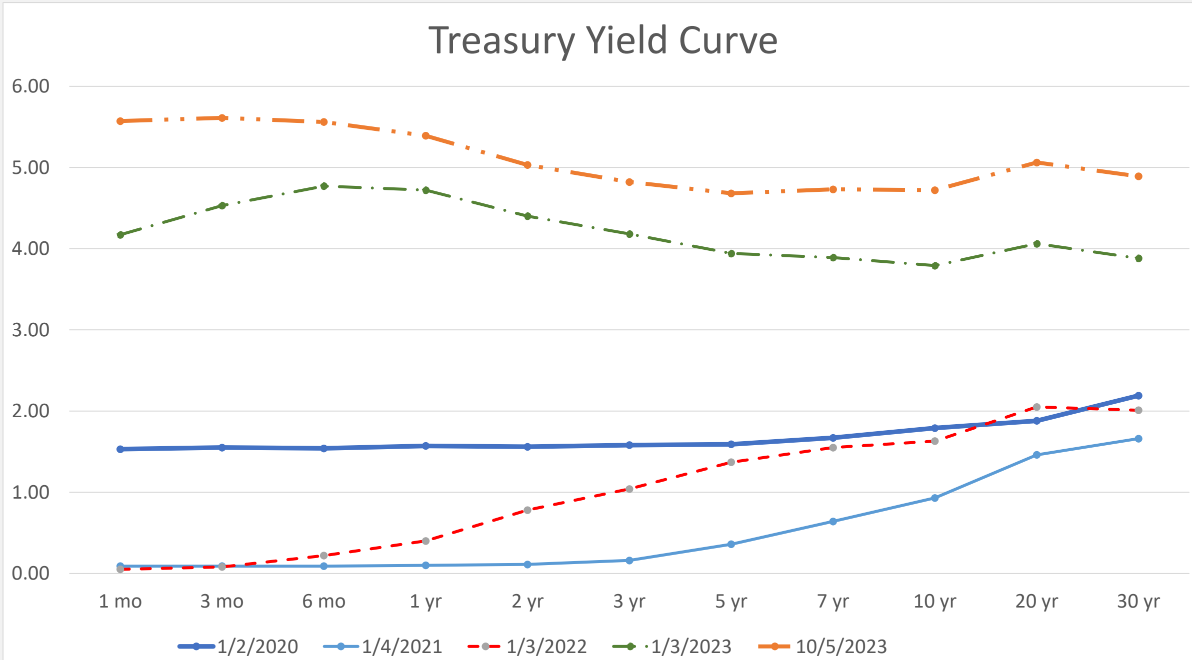


# BANK'S BALANCE SHEET

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# BANKING 101

| Typical Bank Balance Sheet | |
|---|---|
| **Assets** | **Liabilities** |
| Loans | Deposits |
| Investments | Borrowings/Debt |
| Fixed Assets | Equity/Capital |
| Total Assets | Total Liabilities & Equity |

# BANKING 101

| Typical Bank Balance Sheet | |
|---|---|
| **Assets** | **Liabilities** |
| Rate Sensitive | Rate Sensitive |
| Fixed Rate | Fixed Rate |
| Non-Earning | Non-Paying<br>Equity/Capital |
| Total Assets | Total Liabilities & Equity |

# PART I – (STATIC) GAP ANALYSIS

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# ALCO

- Risk to a bank's earnings by "borrowing short and lending long"
  - Inverted Yield Curve

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## GAP ANALYSIS

- **Driving Question:**
  - If interest rates change, what will be the immediate impact on **Net Interest Income?**

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## GAP ANALYSIS

- GAP Analysis

$$GAP_t = RSA_t - RSL_t$$

  - $RSA_t$
    - Rate Sensitive Assets
      - Those assets that will mature or reprice in a given time period (t)
  - $RSL_t$
    - Rate Sensitive Liabilities
      - Those liabilities that will mature or reprice in a given time period (t)

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## GAP ANALYSIS

- GAP Analysis

$$GAP_t = RSA_t - RSL_t$$

  - Positive GAP = Asset Sensitive
    - Benefits from rising rates
  - Negative GAP = Liability Sensitive
    - Benefits from falling rates
    - Typical bank has a Negative Gap

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## STATIC GAP ANALYSIS

- For Parallel Shifts in the Yield Curve

**GAP Summary**

| GAP | Change in Interest Rates | Change in Interest Income | | Change in Interest Expense | Change in Net Interest Income |
|---|---|---|---|---|---|
| Positive | Increase | Increase | > | Increase | Increase |
| Positive | Decrease | Decrease | > | Decrease | Decrease |
| Negative | Increase | Increase | < | Increase | Decrease |
| Negative | Decrease | Decrease | < | Decrease | Increase |
| Zero | Increase | Increase | = | Increase | None |
| Zero | Decrease | Decrease | = | Decrease | None |

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# GAP EXERCISE

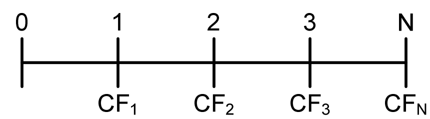


# PART II DURATION GAP

# ASSET VALUATION

- The Value of any Asset is the Present Value of all Future Cash Flows

$$\text{Price} = PV = \sum_{n=1}^{N} \frac{CF_n}{(1+i)^n}$$

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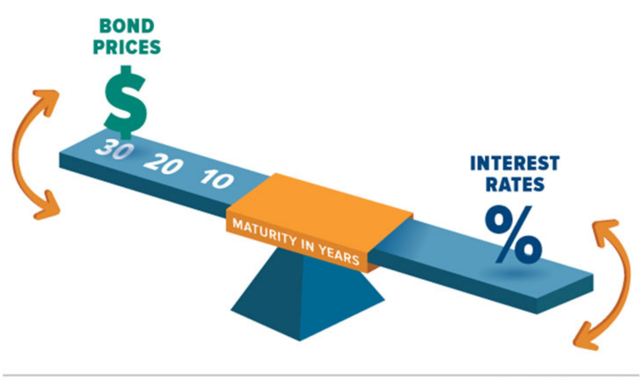
# INTEREST RATE RISK

- Bond Prices and Interest Rates are Inversely Related
  - If i rises, price falls
  - If i falls, price rises

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# DURATION GAP

- **Driving Question**
  - What is the impact of changing rates on the economic value of equity?
    - Assets = Liabilities + Equity
    - Assets – Liabilities = Equity
    - ΔAssets – ΔLiabilities = ΔEquity

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# DURATION GAP

- **Driving Question**
  - What is the impact of changing rates on the economic value of equity?
    - If rates ↑, →:
      - Value of Assets ↓ & Value of Liabilities ↓
      - → ΔEconomic Value of Equity ???
    - If rates ↓, →:
      - Value of Assets ↑ & Value of Liabilities ↑
      - → ΔEconomic Value of Equity ???
    - Answer depends on Duration of Assets and Duration of Liabilities

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## DURATION GAP & EVE

- Positive DGAP
  - Indicates that assets are more price sensitive than liabilities, on average.
    - Thus, when interest rates rise (fall), assets will fall proportionately more (less) in value than liabilities and EVE will fall (rise) accordingly.

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## DURATION GAP & EVE

- Negative DGAP
  - Indicates that weighted liabilities are more price sensitive than weighted assets.
    - Thus, when interest rates rise (fall), assets will fall proportionately less (more) in value that liabilities and the EVE will rise (fall).

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# DURATION GAP & EVE

DGAP Summary

| DGAP | Change in Interest Rates | Change in Economic (Market) Value Assets | | Liabilities | | Equity |
|---|---|---|---|---|---|---|
| Positive | Increase | Decrease | > | Decrease | → | Decrease |
| Positive | Decrease | Increase | > | Increase | → | Increase |
| Negative | Increase | Decrease | < | Decrease | → | Increase |
| Negative | Decrease | Increase | < | Increase | → | Decrease |
| Zero | Increase | Decrease | = | Decrease | → | None |
| Zero | Decrease | Increase | = | Increase | → | None |



# GAP VS. DURATION GAP

- GAP
  - Focus is on changes in Net Interest Income
- Duration GAP
  - Focus is on changes in Economic Value of Equity