TRIPLE A
RISK FINANCE

# The Trading Book

# FRTB Deep Dive

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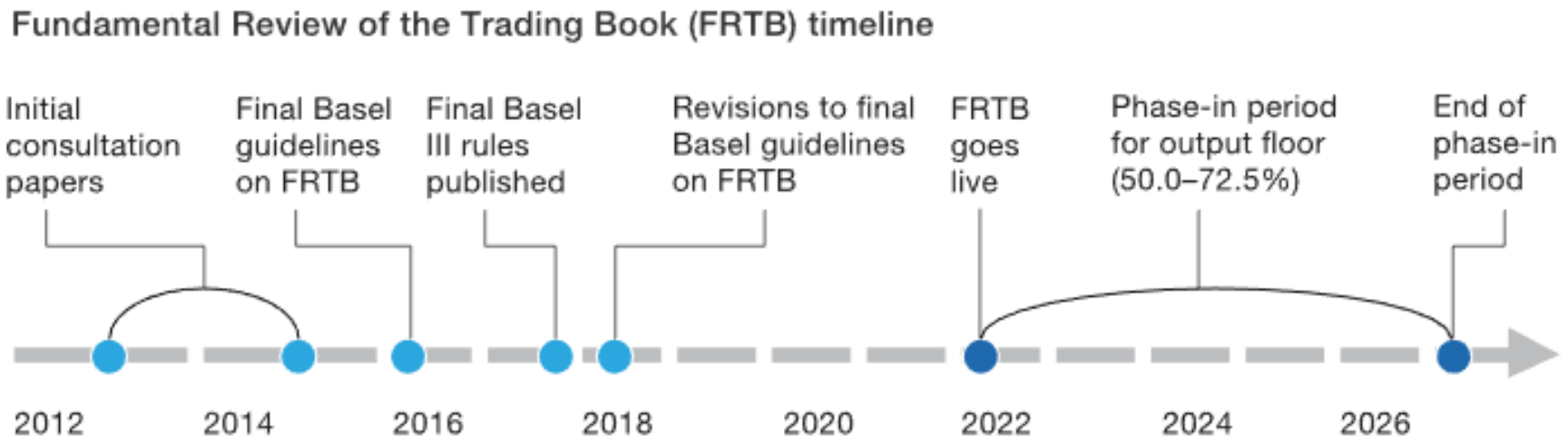
# FRTB – Prospective time lines




Source: International Monetary Funds

# FRTB – ‘the’ decision to make

Advantages Internal Model:

- Lower capital requirements than SA;
- Maintain product offering;
- Synergies with other risk through data;
- Integration with credit.

Advantages Standardized Approach Model:

- Prescribed implementation requirements;
- Lower development costs.

Why invest in the development of IMA?

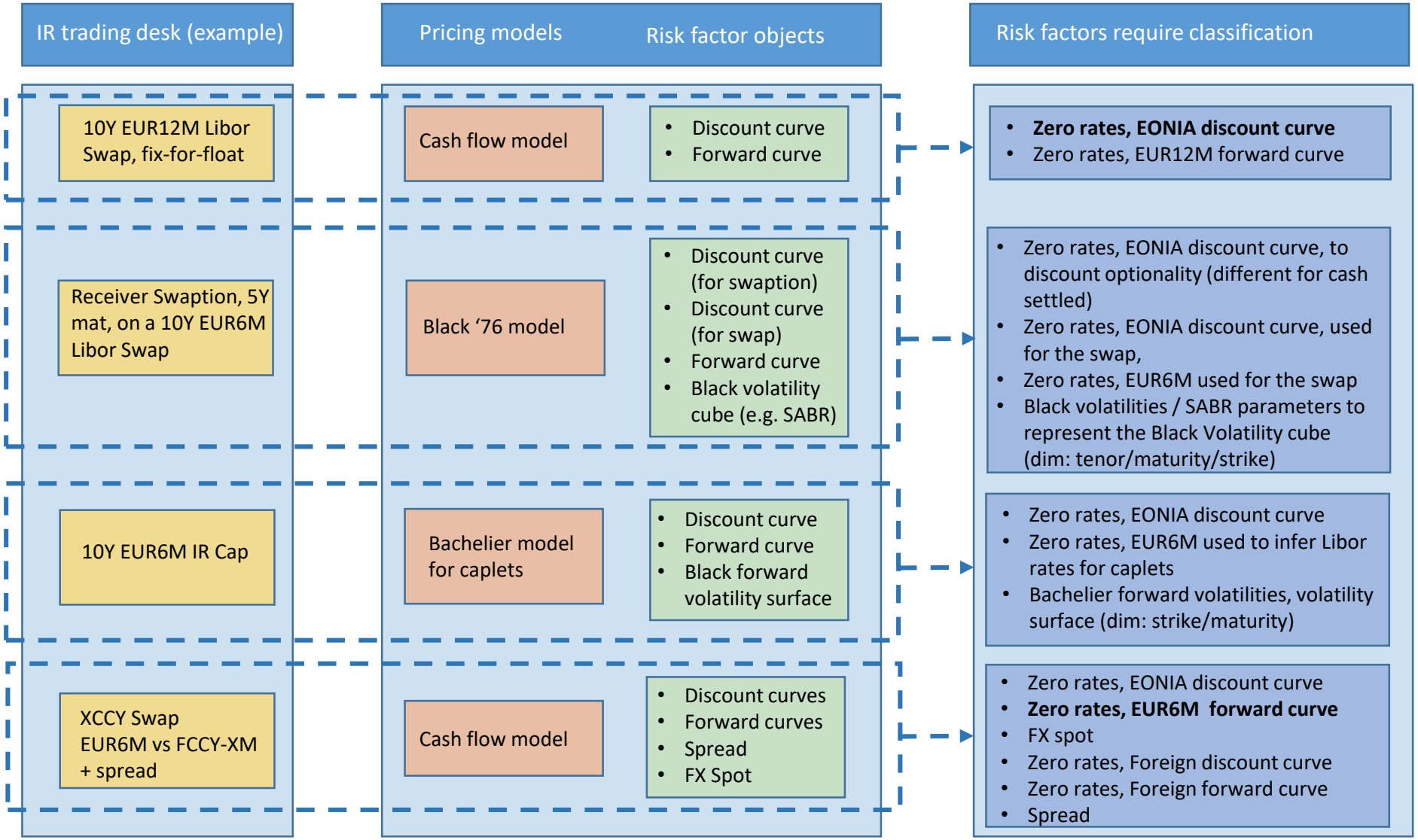
Costs lower than expected proceeds until Basel “V.”

# Enhancements of FRTB to existing risk framework

| | |
|---|---|
| Regulatory boundary between trading and banking book | • New defined list of instruments presumed to be included in the trading book or banking book. Deviation requires explicit approval from supervisor.<br>• Strict limits on the movement of instruments between the books after initial designation. Should a re-designation be approved a capital benefit will not be allowed. |
| From VaR to ES | • The new risk measure for market risk according to the FRTB is the Expected Shortfall (ES).<br>• ES is a coherent risk measure, whereas Value-at-Risk (VaR) is not, due to the missing sub-additivity feature.<br>• Banks must calibrate the ES to periods of significant market stress.<br>• This new metric will help to capture the tail risk and so maintain adequate capital during periods of significant market stress |
| Revised standardised approach | • Significant charges with introduction of Sensitivities-based methodology. |
| Inclusion of market illiquidity | • Varying liquidity horizons included in the internal models approach. Relevant for ES and Stressed ES charges.<br>• Replaces the static 10-day liquidity horizon currently assumed in the VaR framework. |
| Revised approach to approval for internal models | • Supervisors will review the use of internal models at firm-wide and desk level.<br>• More rigorous model approval process using both quantitative and qualitative test criteria.<br>• Underlying regulatory goal: align front office pricing systems with risk management models |

# The revised Standardised Approach or SA

# Interest Rate Trading Desk Example

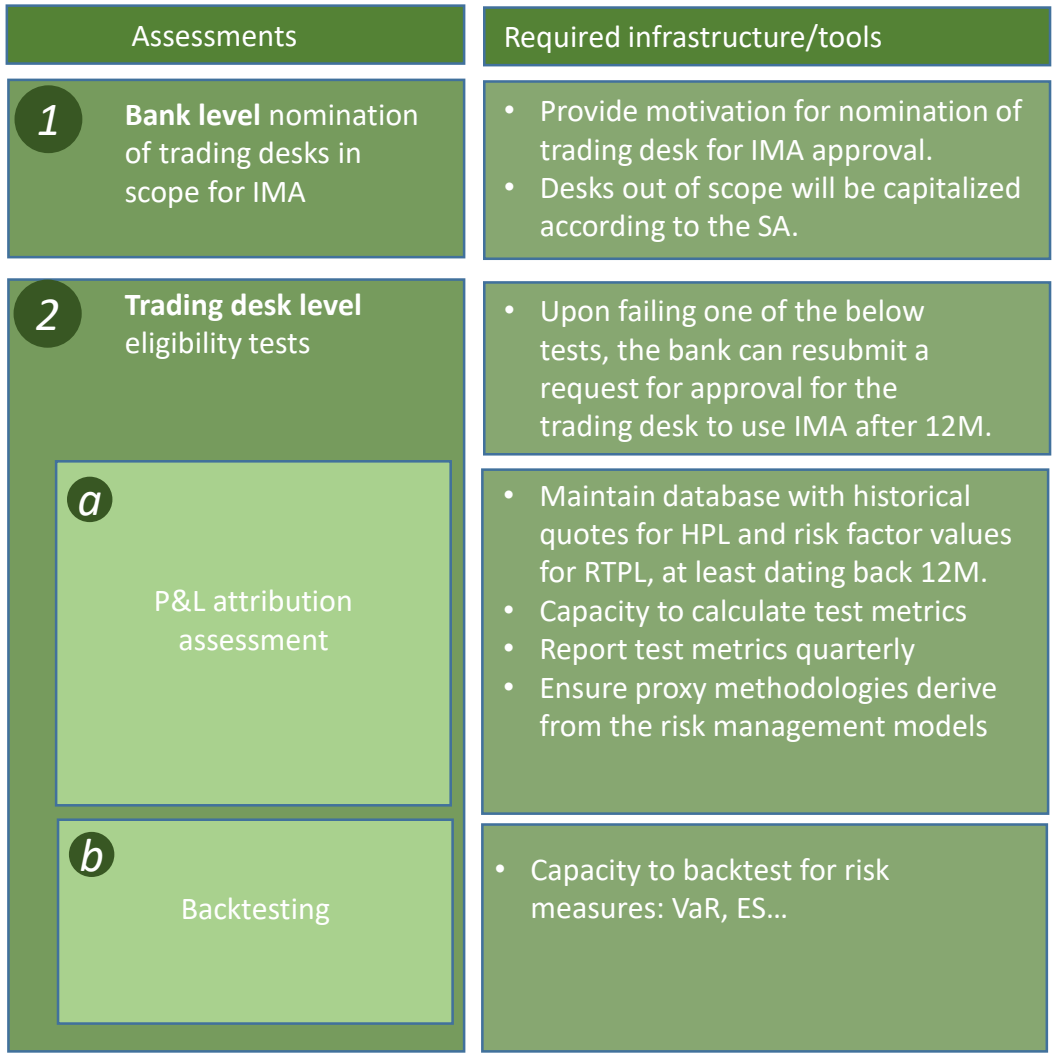


# Overview of the revised SA

| Capital charge components | Definitions |
|---|---|
| **1** Sensitivities-based charge | The bank must determine the relevant sensitivities based upon regulatory pre-defined shifts for the relevant risk factors |
| **a** Linear risk<br>• **Delta** risk<br>• **Vega** risk (options only) | • **Delta**: A risk measure based on sensitivities of a bank's trading book positions to regulatory Delta risk factors.<br>• **Vega**: A risk measure that is also based on sensitivities to regulatory Vega risk factors to be used as inputs to a similar aggregation formula as for Delta risks |
| **b** Non-linear risk<br>• **Curvature** risk | • **Curvature**: A risk measure which captures the **incremental risk** not captured by the Delta or Vega risk of price changes in the value of an option.<br>• Two stress scenarios per risk factor have to be calculated and the worst scenario loss is aggregated in order to determine curvature risk. |
| **2** Default risk charge | A risk measure that captures the jump-to-default risk in three independent capital charge computations. |
| **3** Residual risk charge | A risk measure to capture residual risk, i.e. risk which is not covered by components 1 and 2. |

# The Internal Model Approach or IMA

# Trading desk eligibility to use IMA



# Trading desk eligibility to use IMA

1 Trade desk nomination for IMA

2 Trading desk level eligibility tests
- a P&L Attrib.
- b Backtesting

## P&L attribution assessment

Aim of the P&L attribution test:

Assess the materiality of differences between bank's risk management models (Risk-Theoretical P&L) and valuation models (Hypothetical P&L) used in the front office.

Risk-Theoretical P&L (RTPL):

RTPL denotes *the daily desk-level P&L that is predicted by the valuation engine of the risk management model using all risk factors used in the risk management model*. Risk factors include here also Non-Modellable Risk Factors.

Hypothetical P&L

HPL *must be calculated by revaluing the positions held at the end of the previous day using the market data of the present day, i.e. using static positions*. Not taking into account intraday trading nor new or modified deals.

A trading desk is in the Green zone if both (i) the Spearman correlation metric is above 0.852; **and** (ii) the KS (Chi-squared) distributed test statistic is below 0.083 (14).

A trading desk is in the Amber zone if it is neither allocated to the Green or the Red zone.
- Desk still in scope for IMA and capitalized accordingly.

A trading desk is in the Red zone if the correlation metric is less than 0.75 or if the KS (Chi-squared) distributed test metric is above 0.095 (18).
- Desk falls back to SA and capitalized accordingly.

Rejection → Desk falls back to SA

# Trading desk eligibility to use IMA

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## Backtesting Assessment

Aim of the Backtesting assesment:

Assess whether the current day's static Value-at-Risk is in line with the number of negative P&L exceedances for the past 12 months.

Backtest input

Required data
- Each desk's one-day static VaR measure (calibrated to the most recent 12M data, equally weighted), i.e. VaR evaluated for yesterday's book with last year's data
- Last 12 month's one-day actual P&Ls
- Last 12 month's hypothetical P&Ls

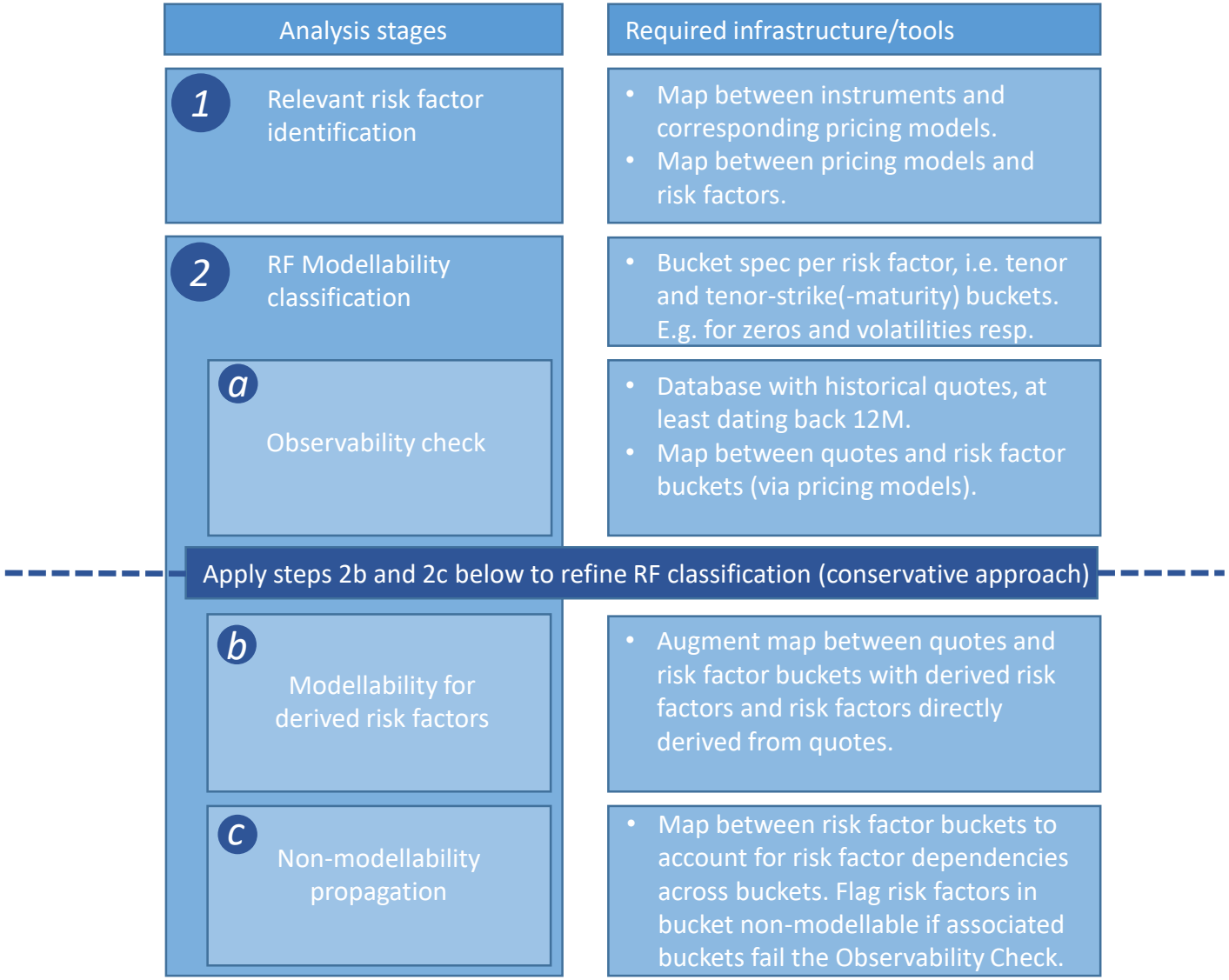
Backtest procedure

At the trading desk level calculate the 1-day static value-at-risk
- i. at the 97.5$^{th}$ PCTL, and
- ii. at the 99$^{th}$ PCTL of the most recent 12 month's business days

If the trading desk experiences
- i. more than 12 smaller P&L values (actual or hypothetical P&L) than the 99$^{th}$PCTL, or → Desk falls back to SA
- ii. more than 30 smaller P&L values (actual or hypothetical P&L) than the 97.5$^{th}$ PCTL in the most recent 12-month period → Desk falls back to SA

Caveats
- The desk's positions must continue to be capitalized using the SA until de desk no longer exceeds the above thresholds over the prior 12M.
- Severe fluctuation in portfolio composition can result in failure

# IMA Risk factor analysis



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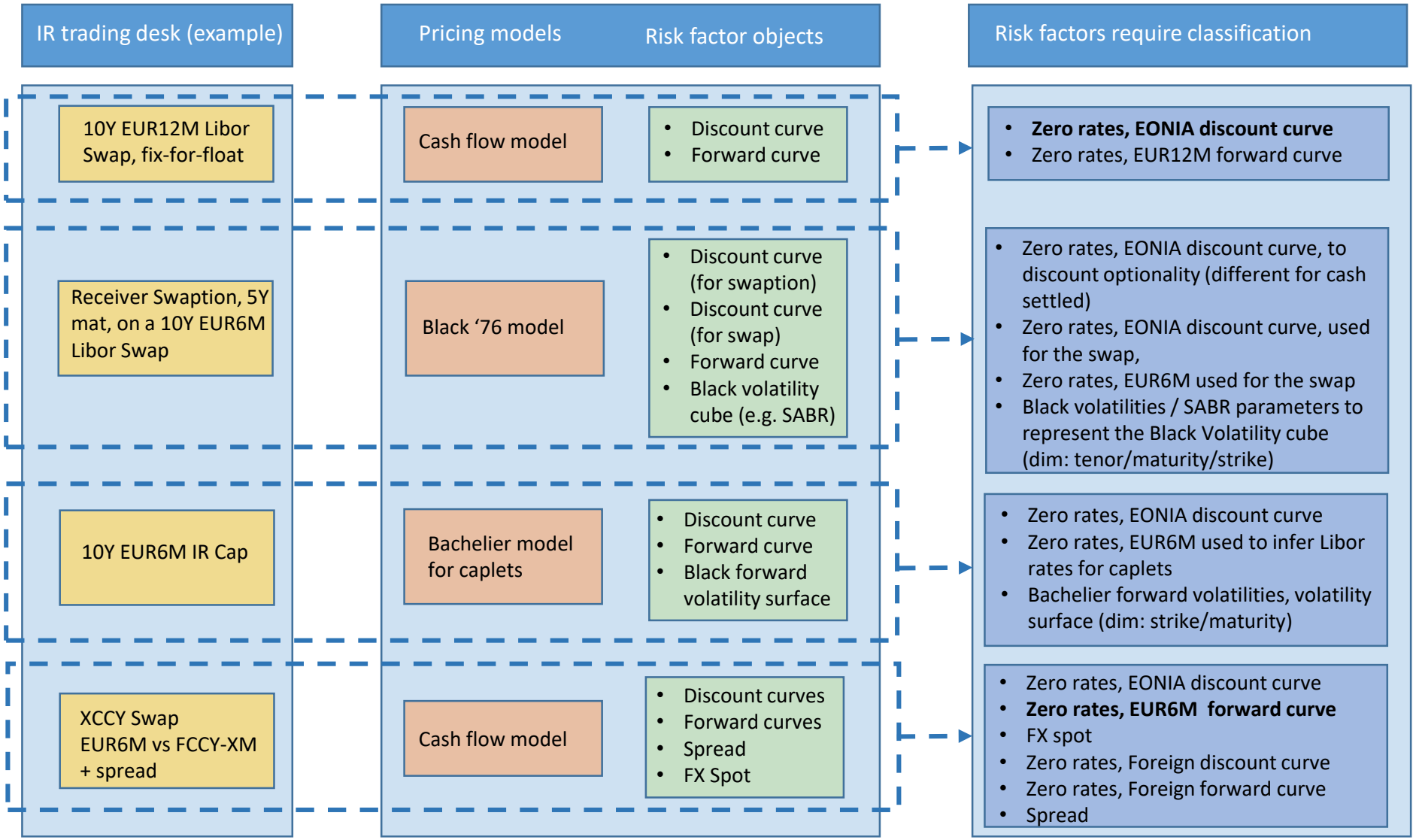

# Thank you

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