



# Lion's Den 2021

## A glance into ALM Modelling at ING

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Online modelling event, 20-21 May 2021



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# Introduction

**Within ING we believe an introduction should be given with a 'personal touch' to it**

- Background:
  - Born in Groningen the Netherlands
  - Econometrics background
  - Previously worked at consultancy companies
- Currently:
  - Working @ ING
  - Living in Utrecht
  - Happily married and three kids



# Purpose of the presentation

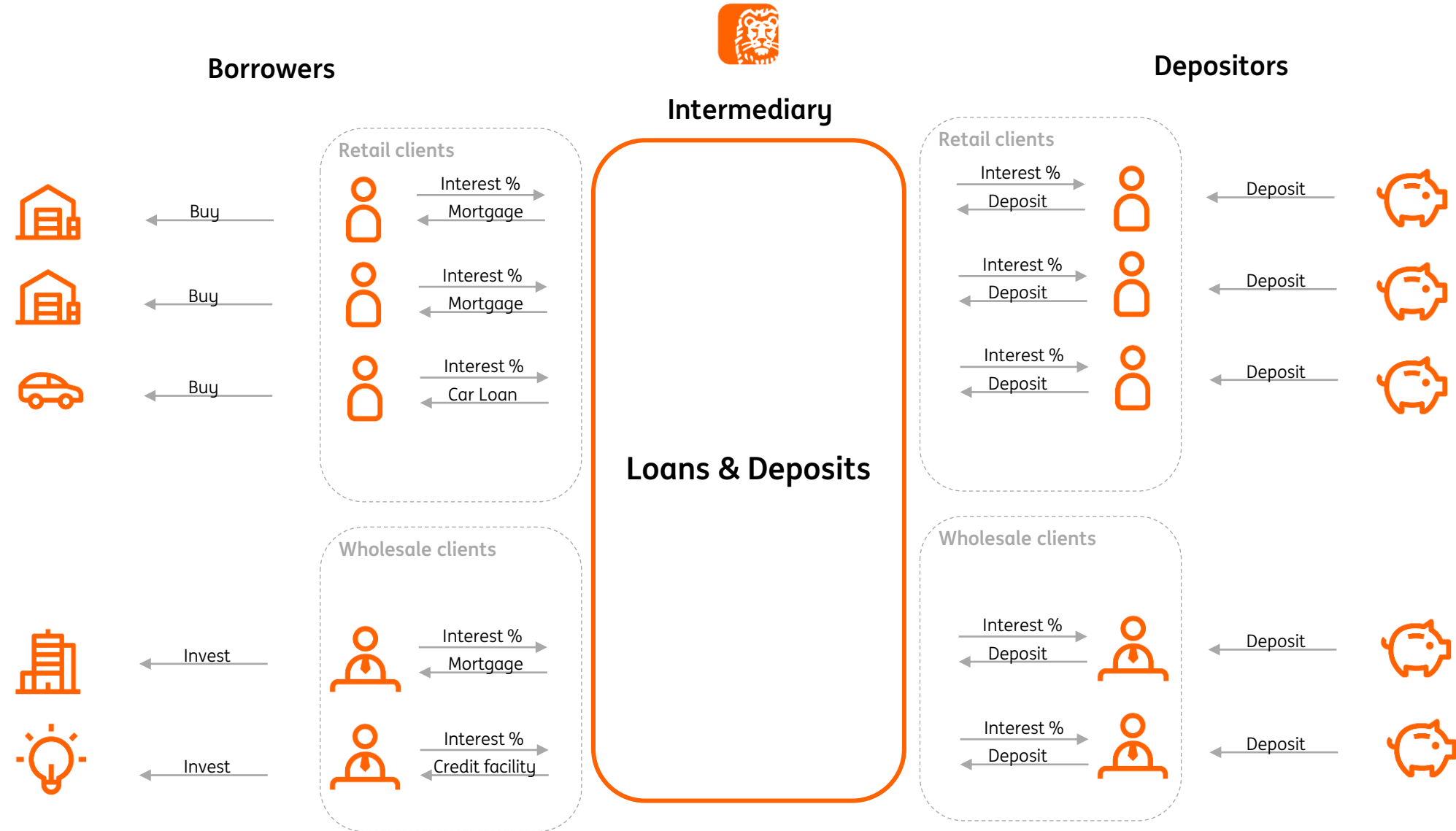
**A glance into ALM Modelling to prepare for the challenge: “Prepayment models in the context of climate risk”**

- General introduction into banking, ING and risk management
  - *Understand the context of ALM within ING*
- Glance on Asset & Liability Management – a few simple concepts and how it applies to ING
  - *Understand the role of ALM models*
  - *Understand the impact of customer behaviour*
- Wrap up – Summary & conclusion

**General introduction**

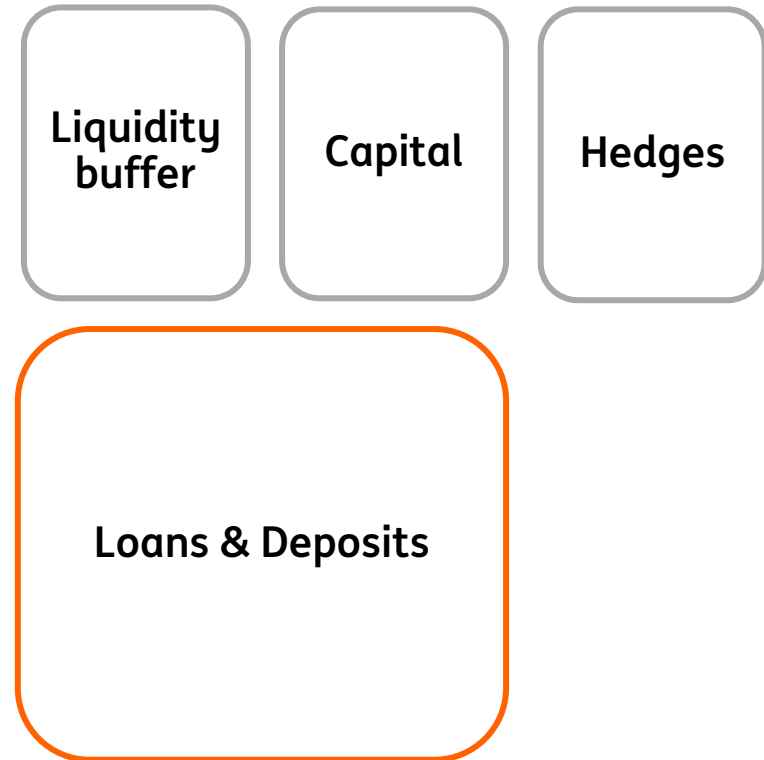
**Banking, ING and Risk Management**

# ING has a typical intermediary role between depositors and borrowers



# We need to safeguard ING's financial health

- Top 3 financial risks
  - Borrowers cannot repay their debt (credit risk)
  - Depositors withdraw their money (liquidity risk)
  - Market rates change over time (market risk)
- Safeguard financial health:
  - Hold capital to cover for the credit losses
  - Hold a liquidity to anticipate withdrawals
  - Use derivatives to hedge for market rate changes



# Market interest rates can change over time



# Financial health means stable margins for ING

Within ALM we manage the interest rate risk to obtain stable margins and NII for ING

Liquidity, capital & hedges	Liquidity 200 bn	Equity 50 bn
	Trading 50 bn	Professional funding 200 bn
Loans & Deposits <ul style="list-style-type: none"><li>▪ 40 mio. customers</li><li>▪ 40 countries</li><li>▪ Net interest income: 12 bn</li><li>▪ Margin: <math>12 \text{ bn} / 650 \text{ bn} = 1.8\%</math></li></ul>	Lending assets 650 bn  (Mortgages: 380, Personal: 20, Corporate: 250)	Customer deposits 650 bn  (400 savings, 250 current accounts)



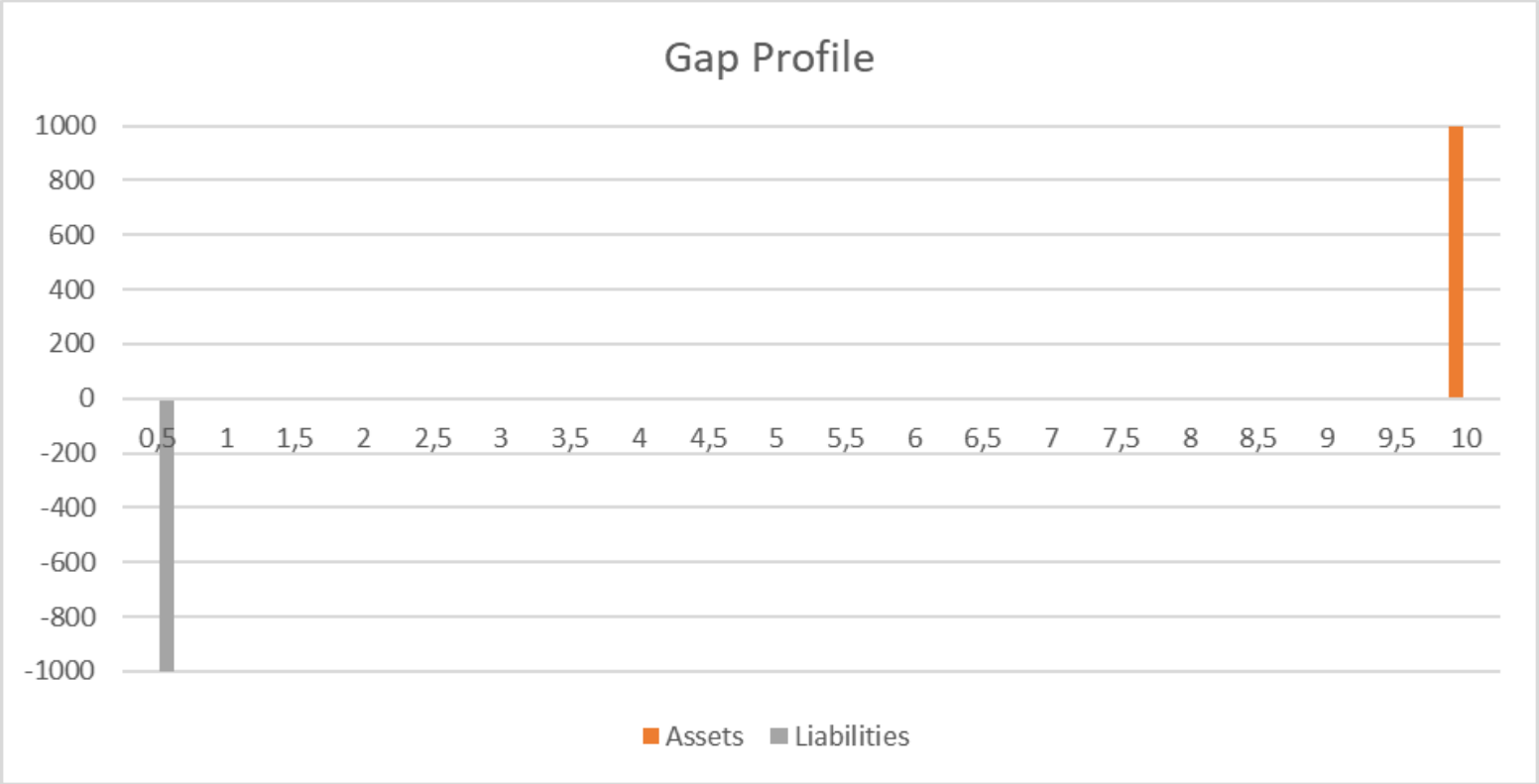
# Glance on Asset & Liability Management

a few simple concepts and how it applies to ING

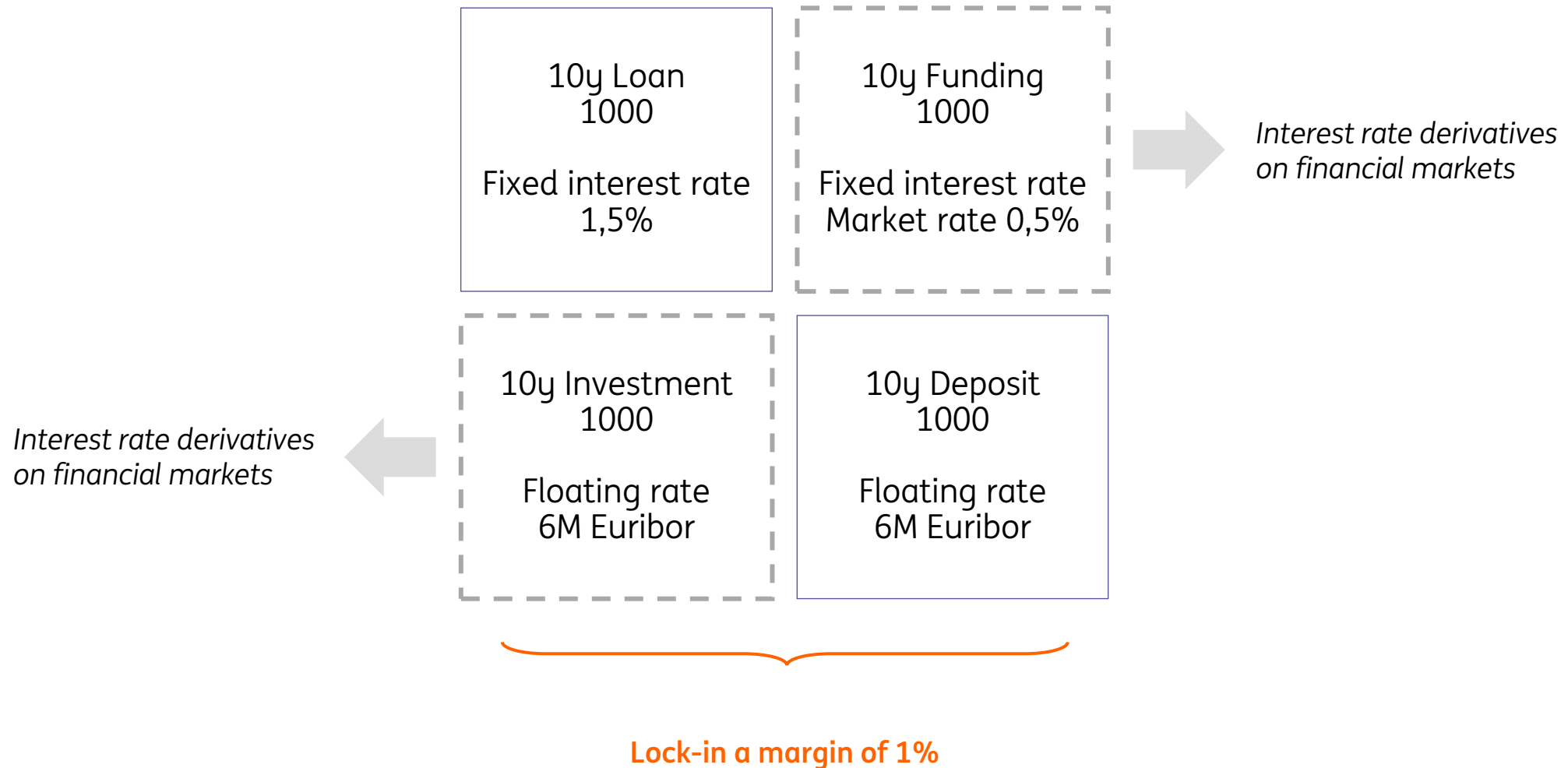
# Concept 1: Margin instability and its consequences on the margin

	<div>10y Loan 1000  Fixed interest rate 1,5%</div>	<div>10y Deposit 1000  Floating rate 6M Euribor</div>	
<div>Scenario 1 6M Euribor remains at 0.5%</div>	<div>Years Income loan Cost deposit Net income Margin</div>	<div>123 151515 555 101010 1%1%1%</div>	<div>1% margin</div>
<div>Scenario 2 rates rise 1%</div>	<div>Income loan Cost deposit Net income Margin</div>	<div>151515 151515 - - - 0%0%0%</div>	<div>0% margin</div>
<div>Scenario 3 rates drop 1%</div>	<div>Income loan Cost deposit Net income Margin</div>	<div>151515 -5-5-5 202020 2%2%2%</div>	<div>2% margin</div>

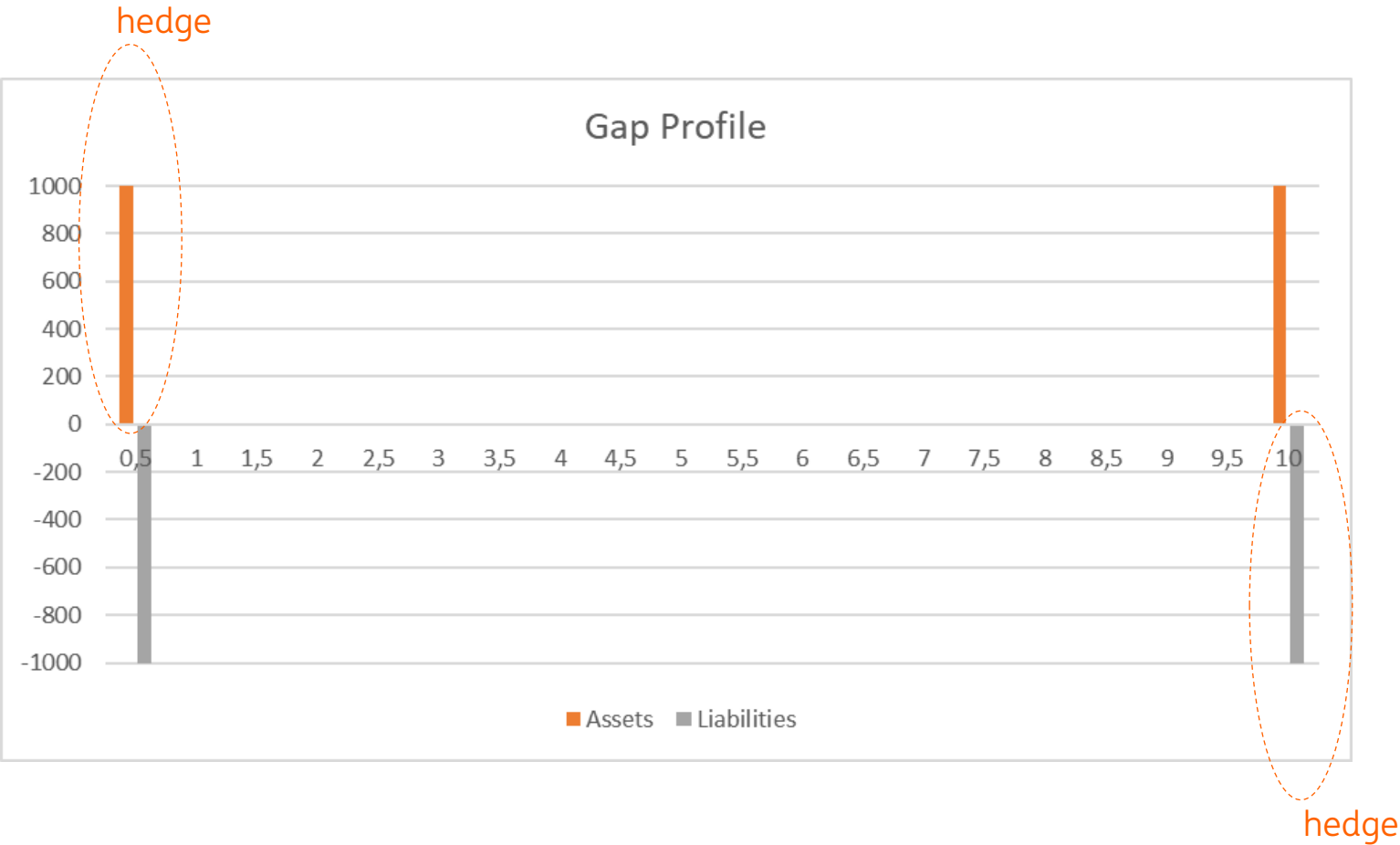
# Concept 2: Gap profile to identify margin (in)stability



# Concept 3: Hedging to obtain margin stability



# Concept 3: Hedging to obtain margin stability



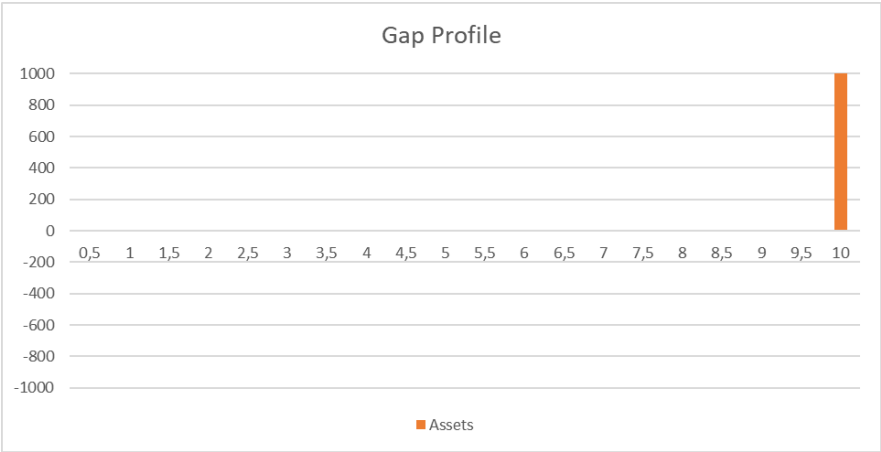


# Concept 4: Client behaviour and how it can affect the margin

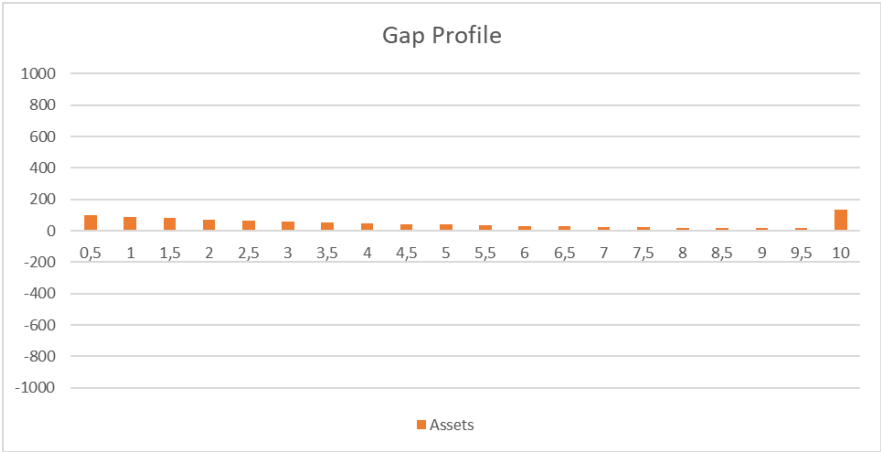
10y loan  
1000  
Fixed interest rate  
1%

Expected **prepayments**:  
10% per year

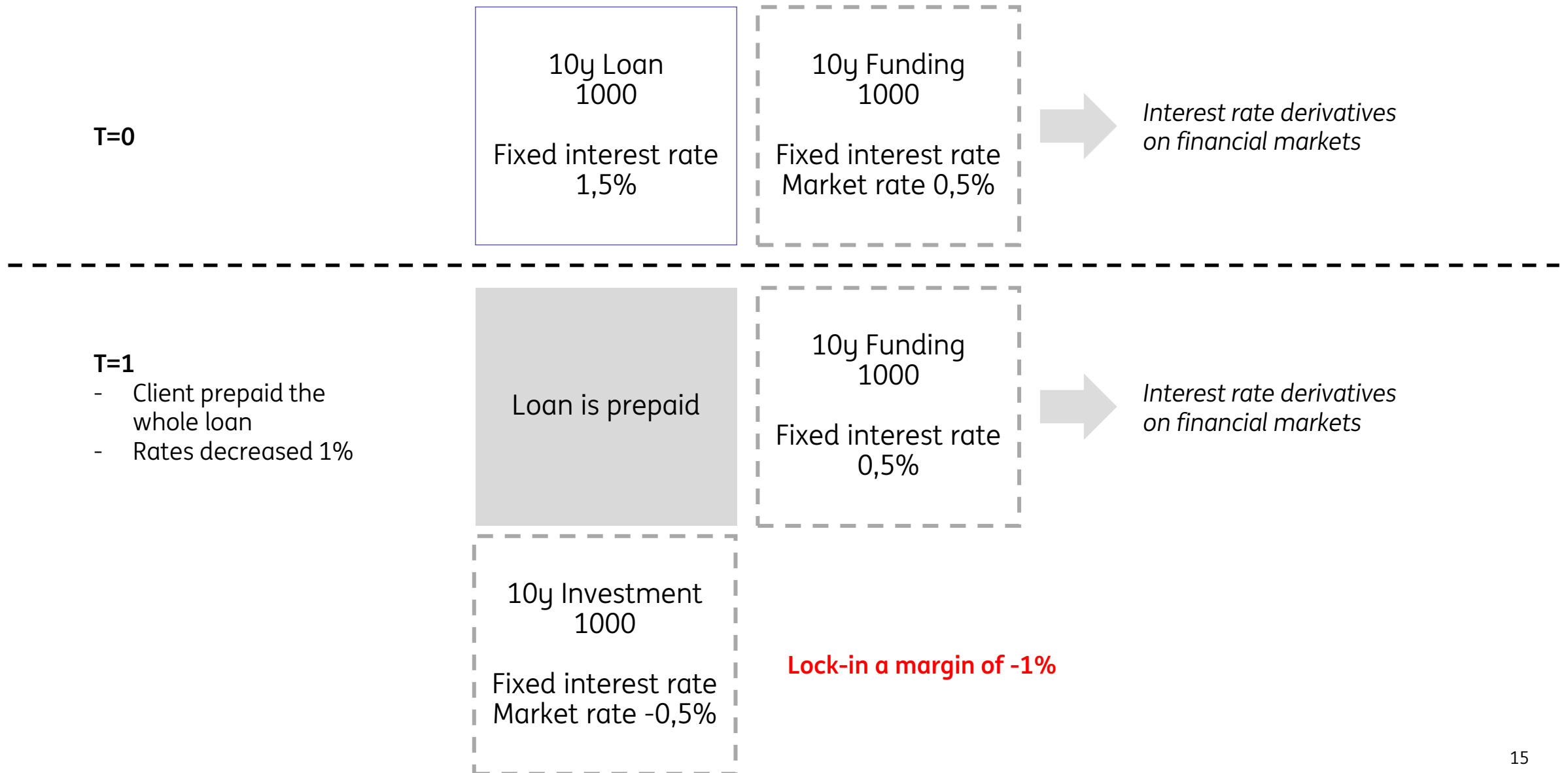
Contractual



Expected

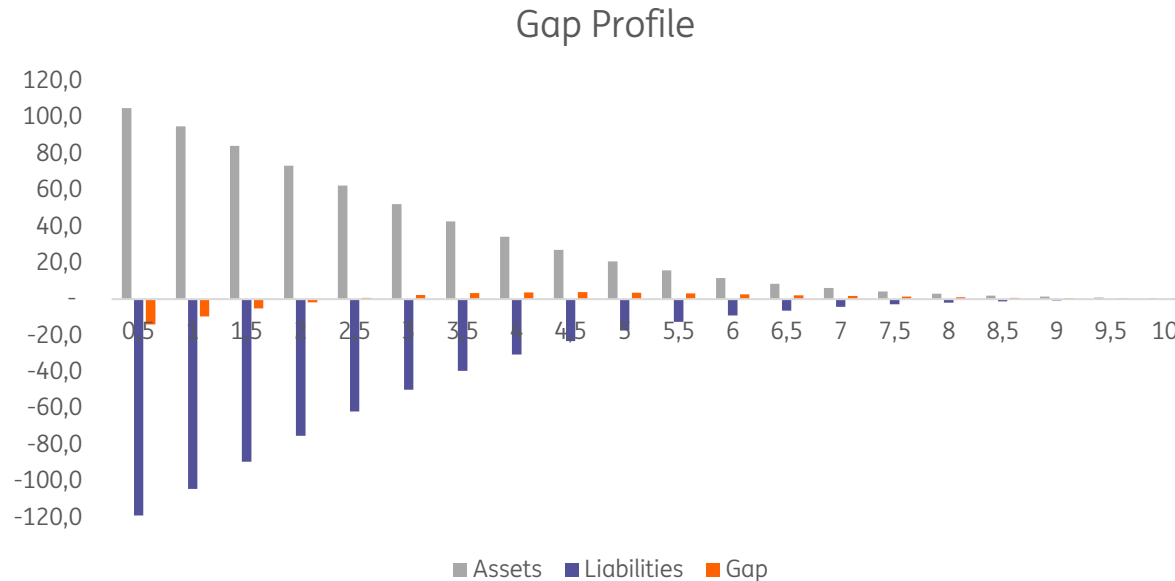


# Concept 4: Client behaviour and how it can affect the margin



# We can never hedge all the risks perfectly

When applying the concepts to whole ING balance sheet we get something like this



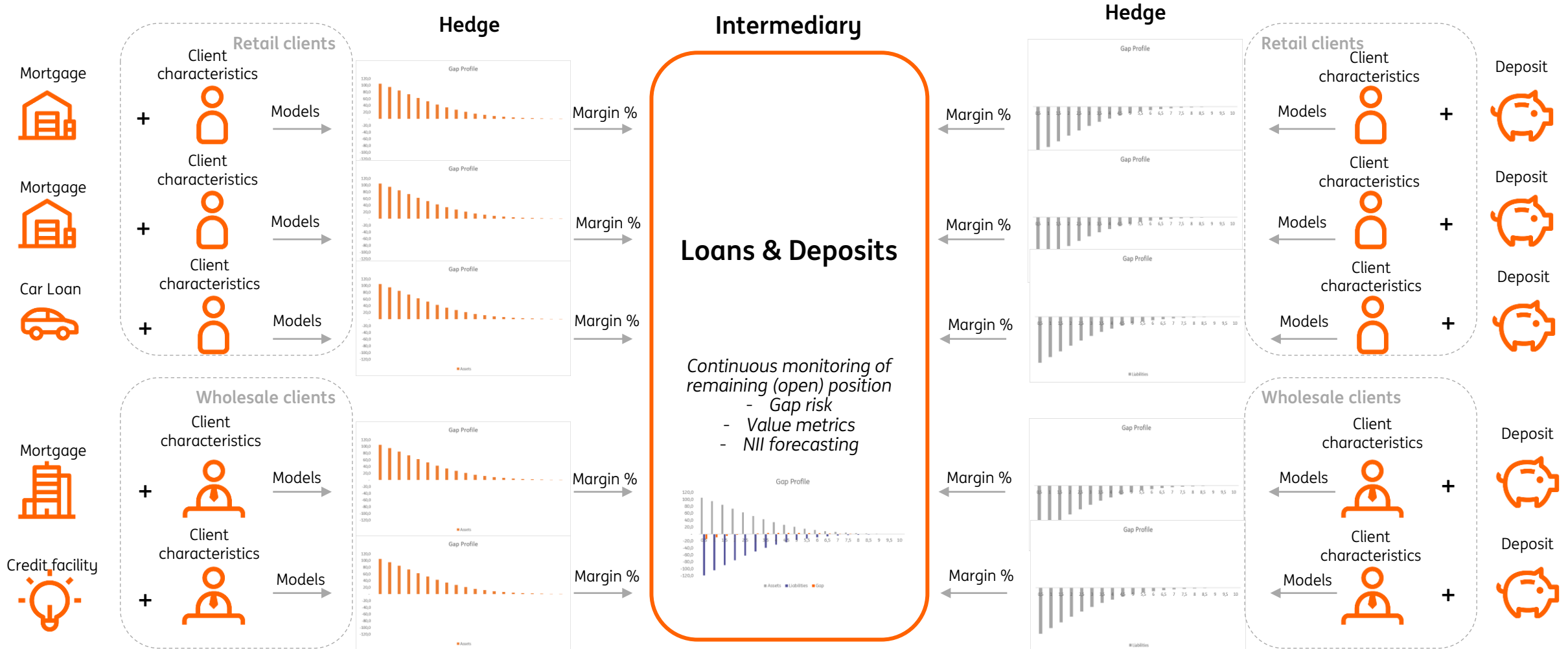
Because of the changing behaviour in different interest rate environments, we will never be able to hedge all the risks

That is why we continuously measure & manage the remaining risks in terms of earnings (NII) and value (NPV at Risk, BPV at Risk, etc)

**Wrap-up**

**Summary & Conclusion**

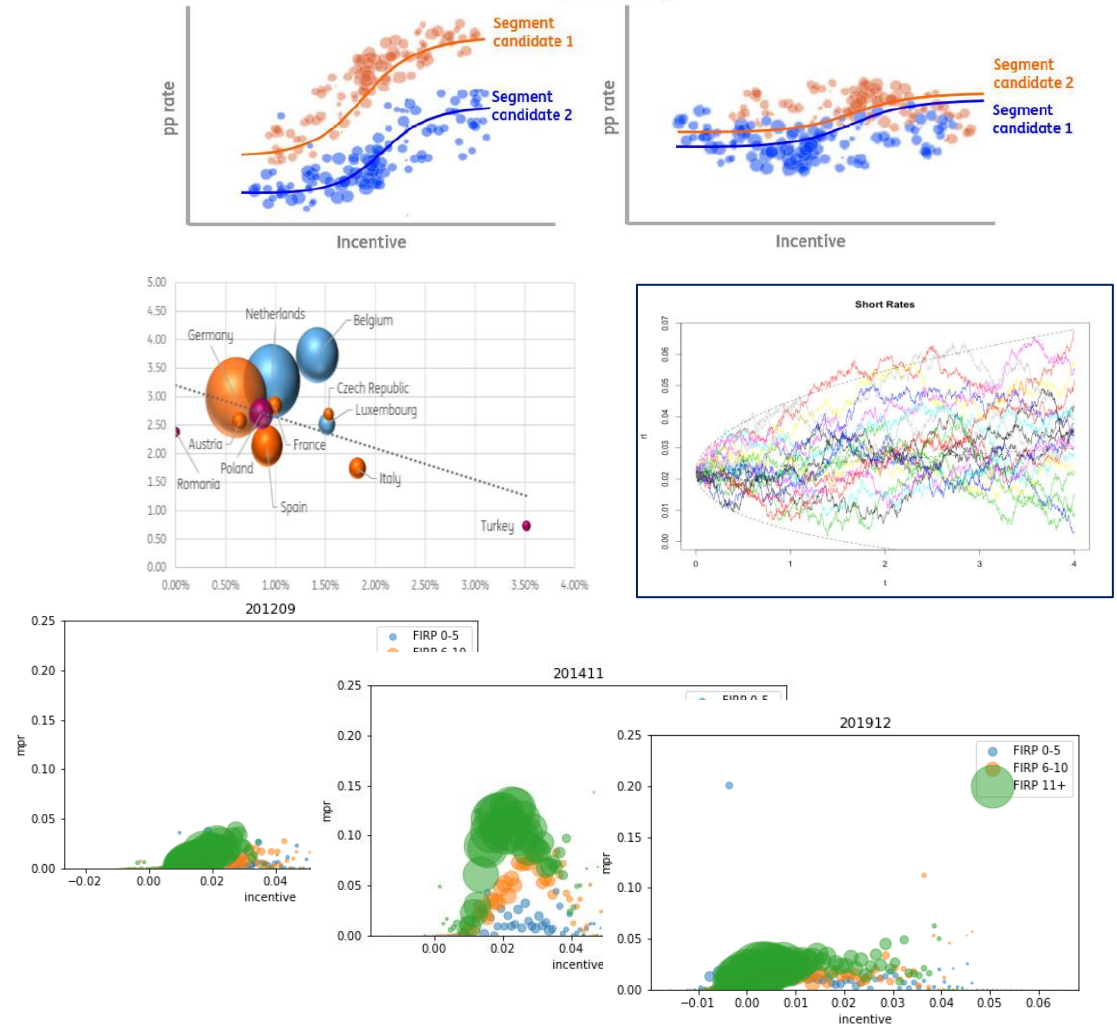
# Market risk models play a central role in ING





# ING has the ambition to develop the best possible models

- ALM models are at the heart of ING
  - Large balance sheet & client behaviour
  - Lots of stakeholders (external regulator, treasury, finance, business & local teams, validation, etc.)
  - Lots of impact areas (product offered, pricing, external hedges, etc.)
- We need the best models & modellers
  - Be able to use advanced modelling techniques
  - Trade-off between adding complexity vs. adding value
  - Be able to explain it simple and convincing language





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