# Stress Testing and Macroprudential Policy: Interest Rate Risk in a Low Interest Rate Environment

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# Introduction

- Stress tests (ST) play a key role for macroprudential policy :
  - Communicating (FSR)
  - Recommending / calibrating (structural) measures (TBTF capital requirements, LTI limits)
  - Assessing adequacy of monetary policy stance
- **Methodology** design AND **scenario** design (shocks) are equally important
- Illustration: interest rate risk in current low interest rate environment
  1. **Methodology** design – first order importance of **non-linearities**
  2. **Scenario** design – coping with the **'fading affect bias'**

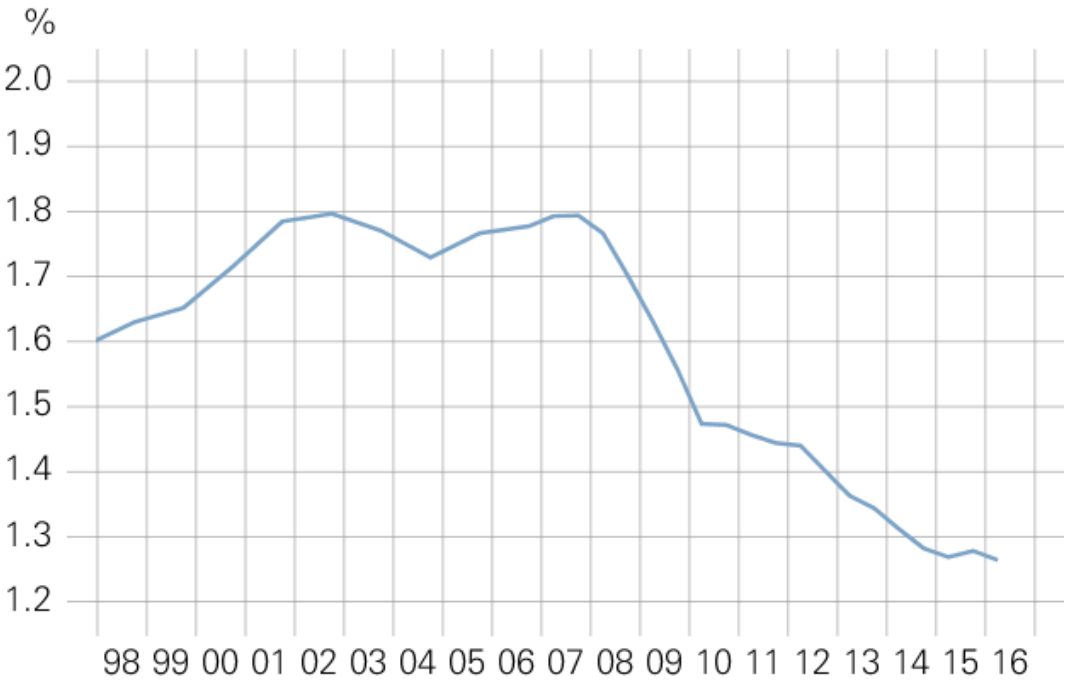
# **Methodology** – reflecting margin compression due to low/negative IR

- The conduct of macroprudential policy currently requires the ability to assess the impact of (i) low/negative IR and (ii) IR shocks on banks' earnings
- The ST methodology must be designed accordingly
- Non-linearities due to 'zero lower bound' on deposit rates have to be explicitly accounted for as this drives results (first-order importance)

# **Methodology** – reflecting margin compression due to low/negative IR

**INTEREST RATE MARGIN**

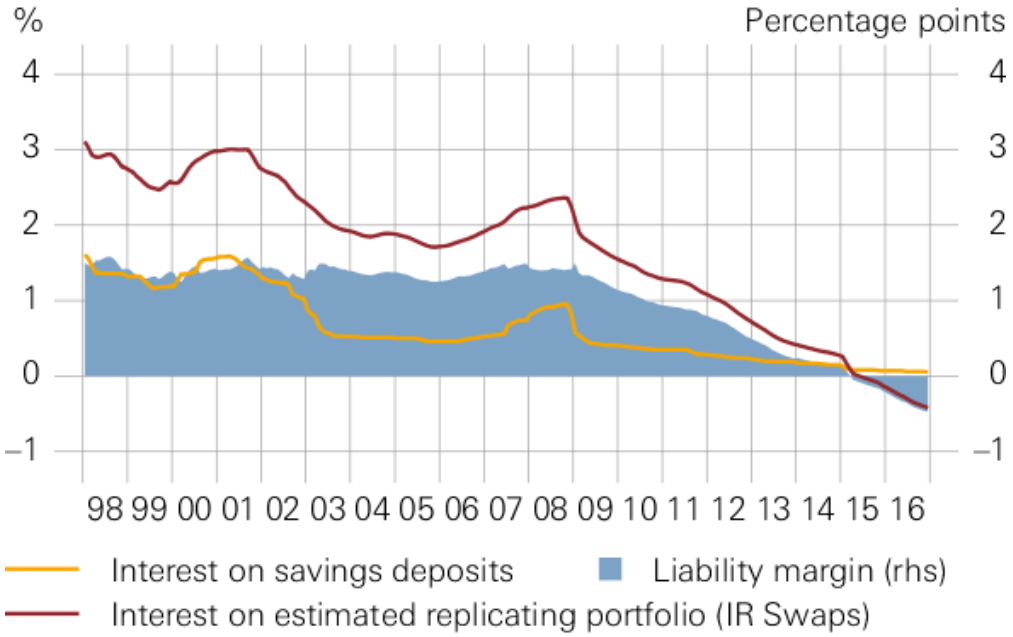
Weighted average of domestically focused banks in Switzerland




Source: SNB

**LIABILITY MARGIN ON SAVINGS DEPOSITS IN SWITZERLAND (APPROXIMATION)**

Month-end values

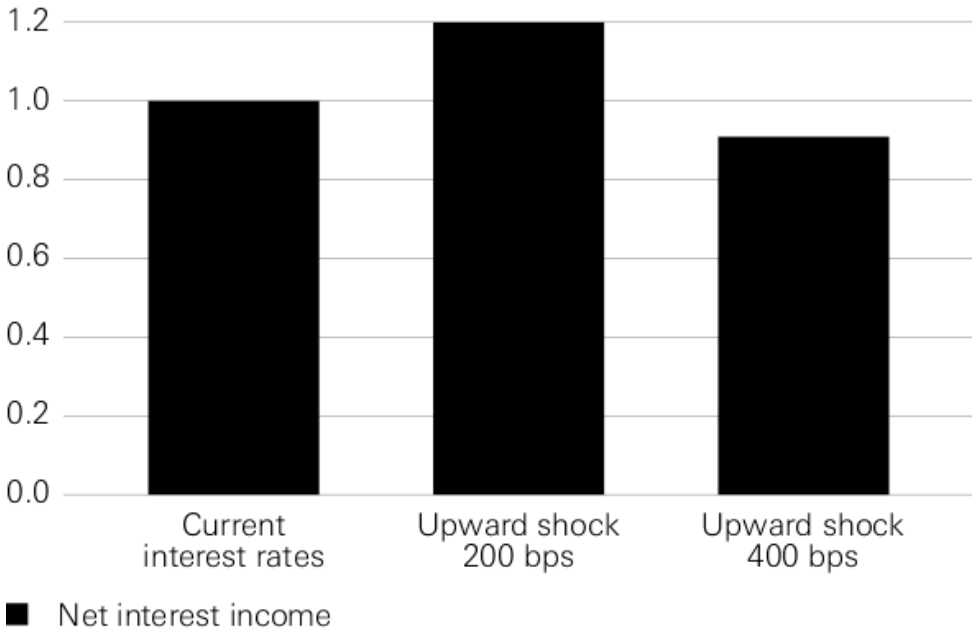



Sources: SNB, Bloomberg, author's calculation.

# **Methodology** – reflecting margin compression due to low/negative IR

**SIMULATED NET INTEREST INCOME**

Domestically focused banks in Switzerland; 5-year horizon




Source: SNB

**SIMULATED NET INTEREST INCOME**

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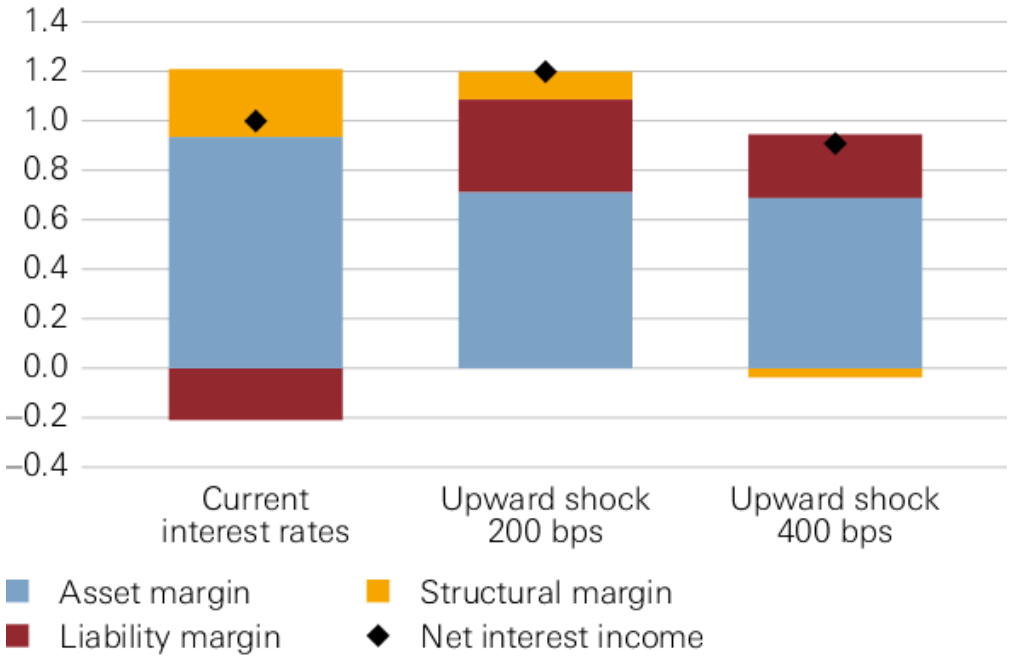



Source: SNB

# **Methodology** – reflecting margin compression due to low/negative IR

- **Objective**: reliable simulation of IR (shock) impact on net interest income

- **Approach:**
  - Separate modeling of assets and liabilities
  - Explicitly account for
    - repricing maturity structure
    - IR margins across products
    - shifts across products at renewal

- **Data**: Granular cash-flows (B/S positions and linear derivatives) according to repricing maturities

# **Scenario design** – coping with the 'fading affect bias'

- 'Fading affect bias':  information regarding (negative) emotions tends to be forgotten relatively quickly
- Stress scenarios design for macroprudential purposes should account for this *fading affect bias*
- Failing to do so might lead to flawed macroprudential policies and put financial stability at risk
- In the current environment: particularly relevant regarding the design of IR risk/shocks scenarios

# **Scenario design**: fading affect bias - a personal note

# **Scenario design**: fading affect bias - subprime crisis

2006

'We are one of the **best-capitalized** financial institutions in the world' (UBS, Annual report)

'We (…) adopt a **cautious approach to any risks that cannot be sensibly evaluated or priced**' (Ibid)

'The ratings of UBS AG reflect (…) its **very low risk profile** and **strong economic** and regulatory **capital** positions' (Moody's)

2008

'(…) **the main risk management instrument** of the Group Executive Board **was stress testing** (…) in hindsight, **the stress scenarios used by UBS were too optimistic**' (SFBC – UBS Subprime Report)

'(…) **More aggressive parameters in the risk measurement models** that might have anticipated such a dislocation **had been discarded as unrealistic'** (Ibid)

**'The real shocks proved to be far greater than any shocks anticipated** by the stress tests performed by UBS **on the basis of historical statistics**' (Ibid)

'UBS's **risk exposure should not normally exceed its risk capacity** but in the extremely difficult market conditions that persisted throughout 2008, **this relationship has not held'** (UBS, Annual report).

# **Scenario design**: fading affect bias - subprime crisis

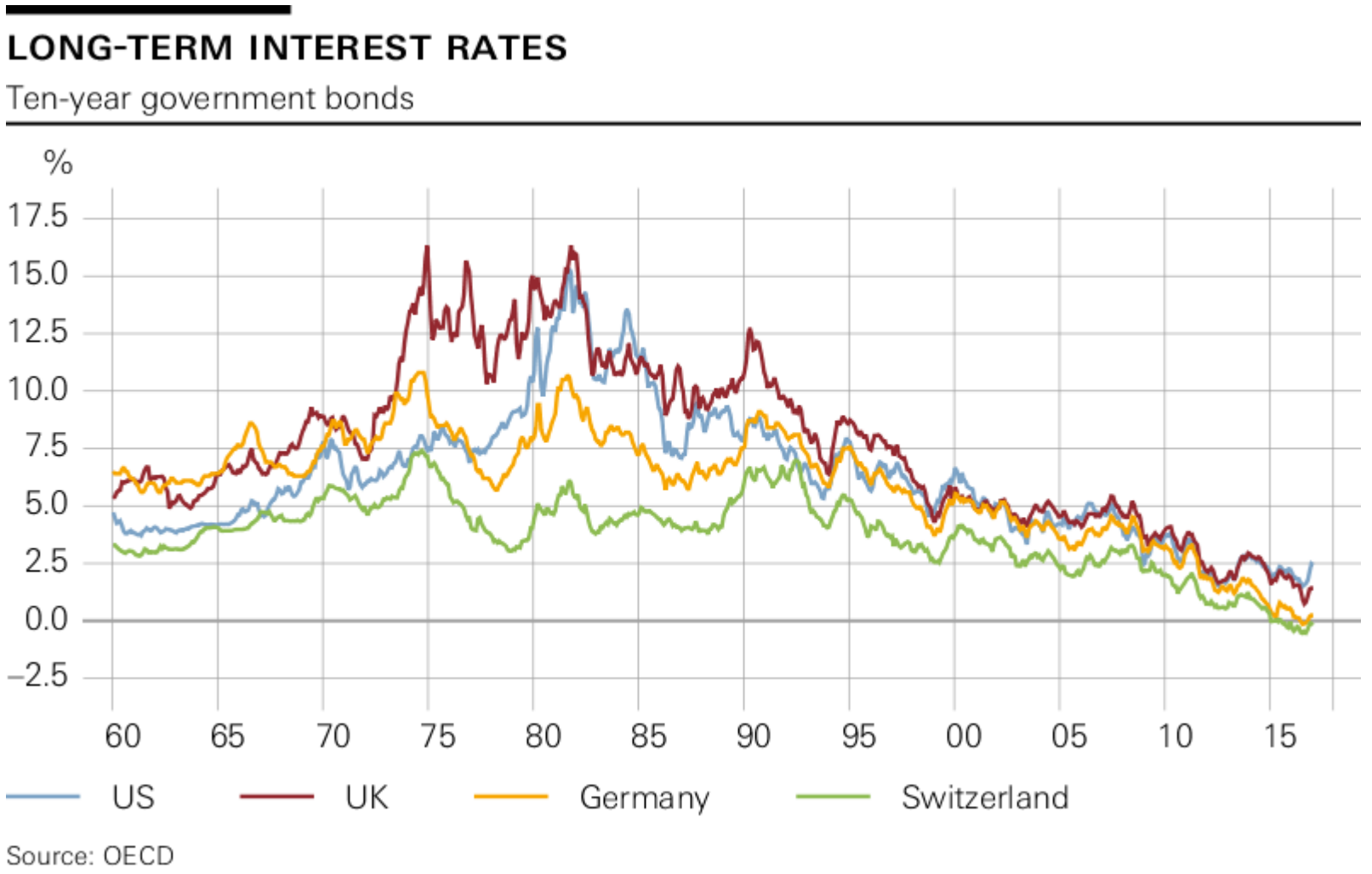
2013: '**UBS hätte nicht gerettet werden müssen**', (O. Grübel, UBS CEO 2009-2011)

2015: '**Unnecessary higher capital requirements** (…) will not only have an impact on the Swiss financial center, but more importantly, the associated costs will negatively impact the Swiss economy' (UBS Statement, Bloomberg/Reuters)

2017: 'European banks - and recently, some policymakers - have argued [Basel III] will force some banks to significantly increase their capital at a time when they are already subject to headwinds such as historically low interest rates and low profitability' (FT, Basel postpones bank reform vote amid policy differences, January 2017)

➡ **Fading affect bias : Acceptance regarding severity of stress scenarios and (hence) regarding adequate resilience rapidly decreases after stress events**

# **Scenario design:** IR shocks for ST – precautionary principle



# **Scenario design:** IR shocks for ST – precautionary principle

- Scenario design is of first order importance for macroprudential policy
- Calibration of IR shocks in ST plays a key role in this context
- Acceptance of IR shocks/levels considered adequate in recent past is decreasing : materialization of **fading affect bias** or **fundamental** and **long-lasting** economic drivers at play?
- Assuming lower IR shocks/levels in ST used for macroprudential purposeshave far reaching and **hard to reverse** implications on banks' and households' exposure to IR shocks
- Hence, from a macroprudential policy perspective:
  - Relative cost of type I error (erroneously betting on permanently low IR) plead against discounting past shocks/levels
  - Burden of the proof should lie with the proponents of weaker assumptions (precautionary principle)