

# Asset and liability management with ultra-low/negative interest rates The perspective of a Swiss bank – an illustrative example<sup>1</sup>

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## Market environment

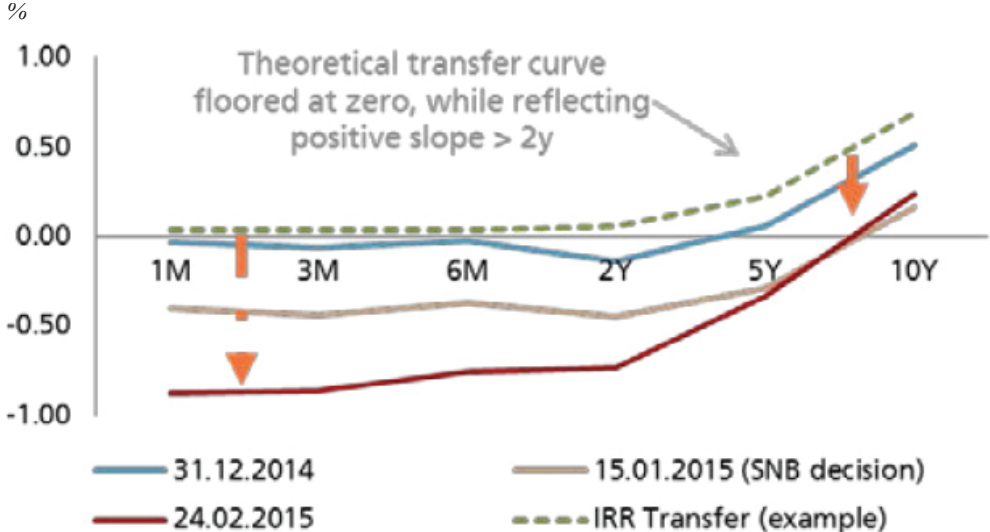
In 2014 fixed income markets saw a huge curve-flattening globally on disinflation concerns and a “hunt for yield”. This could be well observed in forward curves showing incredibly low outright yields, e.g., the 5-year, 5-year CHF forward rate fell from 2.60% in January 2014 to a new low of 0.42% in January 2015, and is now standing at 0.75%. The 5-year, 5-year EUR forward curve dropped from 3.20% to 1.20% in 2014.

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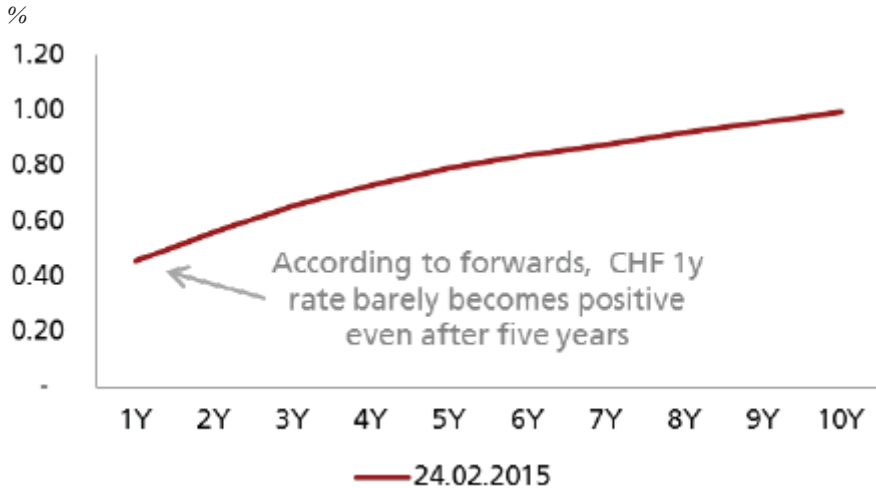
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Chart 1: CHF rates development



Source: Bloomberg, UBS.

Chart 2: CHF yield curve in 5 years according to current forward rates

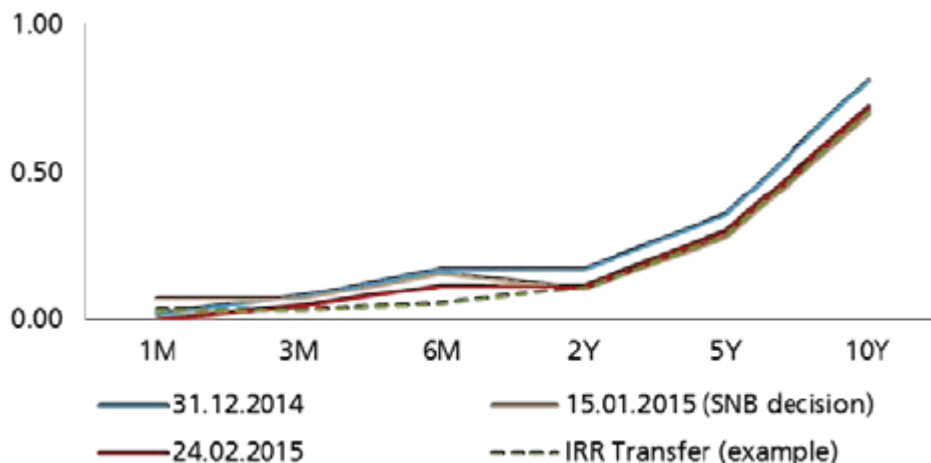


Source: Bloomberg.

With the SNB's decision on January 15, 2015 to remove the EUR/CHF exchange-rate floor, CHF rates have steepened in 2015 with the SNB taking the short end to significantly negative levels. The euro curve flattening of 2014 has largely remained.

*Chart 3: Euro rates development*

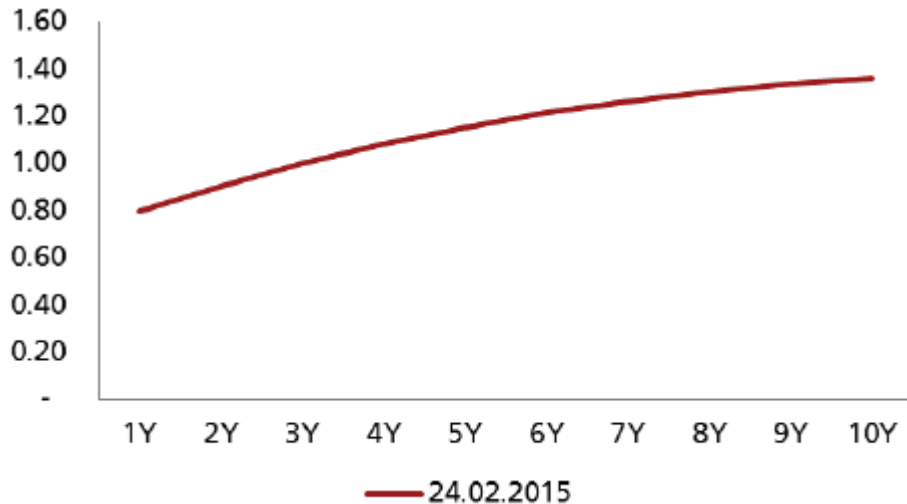
%



Source: Bloomberg, UBS.

*Chart 4: Euro yield curve in 5 years according to current forward rates*

%



Source: Bloomberg.

One could conclude that CHF and EUR rates curves seem to be pricing in a Japan-like outcome in Europe, but it is more the case that markets are characterized by global lowflation. Consensus has made a systematic error with inflation fore-

casts as the sources of inflation have reverted to being global. The systematic error is shown by the fact that the US and other economies' employment numbers continued to improve, but inflation has not increased. It seems that the recovery from balance sheet recession led to a slower growth (lower inflation) environment than expected, whereas employment has recovered. Another influential factor was the oil price keeping inflation rates low. In particular the euro area is characterized by competitive deflation with inflation turning negative year on year. This is driven by the decision to encounter the financial crisis with austerity resulting in a deflation of wages and increased competitiveness. Also, China's economic growth is slowing down with concerns remaining around the credit boom driven by housing and other investments. Last but not least, the global commodity demand is decreasing, with the Baltic Dry Index reaching historic lows in mid-February 2015.

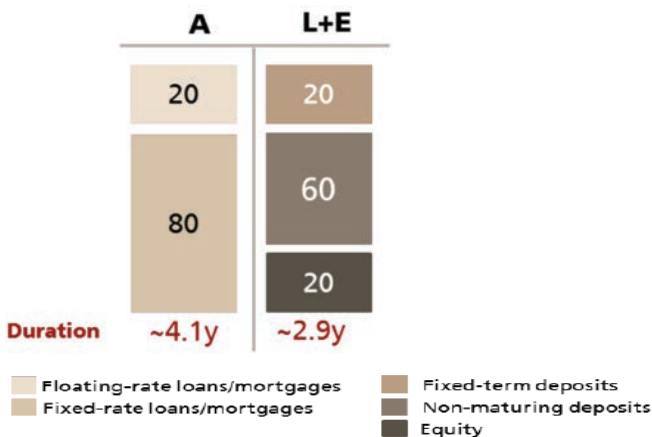
Within this context, unprecedented central bank easing has continued. Since January 2015, over 20 independent central banks have eased their policy with Egypt, Turkey, Botswana, Israel, China, India, Australia, Singapore, Pakistan, Indonesia, Canada and Peru being amongst them. The European, Swiss, Danish and Swedish central banks have even imposed negative rates. However, with central banks having significantly expanded their balance sheets, the scope for potential policy mistakes has increased greatly.

## Illustrative balance sheet structure of a Swiss bank

Below an illustrative example is shown of how a typical bank's balance sheet might have looked like before the advent of the persistently low rates environment a few years ago.

*Chart 5: Higher percentage of fixed-term deposits and short-/mid-term mortgages*

CHF billion



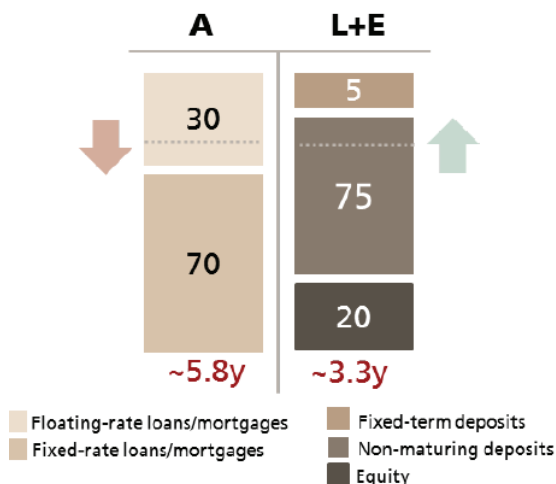
Source: Illustrative example prepared by UBS.

On the asset side, a mixture of floating-rate/short-term and fixed-rate loans/mortgages is assumed, CHF 20 billion and CHF 80 billion, respectively. On the liability side, a fair amount of fixed-term deposits (clients were still receiving a decent level of rates back then) and probably a larger amount of non-maturing deposits (current, transaction, savings accounts, etc.) is assumed, CHF 20 billion of term deposits and CHF 60 billion of non-maturing deposits. In addition, we assume CHF 20 billion of equity.

Since the low interest environment started in 2009, an increasing number of clients have been incentivized to move from fixed-term into non-maturing deposits and from mid-term into longer-term mortgage products. Recent central bank decisions have further intensified this development. Consequently, the interest rate risk structure of the balance sheet will have significantly changed.

*Chart 6: Higher percentage of non-maturing deposits and longer-term mortgages*

CHF billion



Source: Illustrative example prepared by UBS.

Along with the structural changes on the balance sheet, there will be a bar-bell on the asset side, with an increased demand for floating-rate mortgages. Within the portfolio of fixed-rate mortgages, clients are assumed to have an increased preference to lock in longer tenors once longer-term rates have fallen far enough. On the deposit side, less and less clients are willing to invest in term deposits at low rates and would begin to “park” their excess cash in non-maturing accounts to “sit out” the period of low rates. Therefore, without appropriate steering, negative or low

interest rates can significantly influence the long-term structure of the balance sheet.

Chart 7 shows a likely duration structure of the example-bank's balance sheet before the extended period of low and further falling rates sets in. The duration of the fixed-rate mortgages would be, say, around five years on average. Further, it is assumed that the floating-rate/short-term loans or mortgages have an average interest rate duration of around six months and that is about the same average duration for the fixed-term deposits.

*Chart 7: Higher percentage of fixed-term deposits and short-/mid-term mortgages*



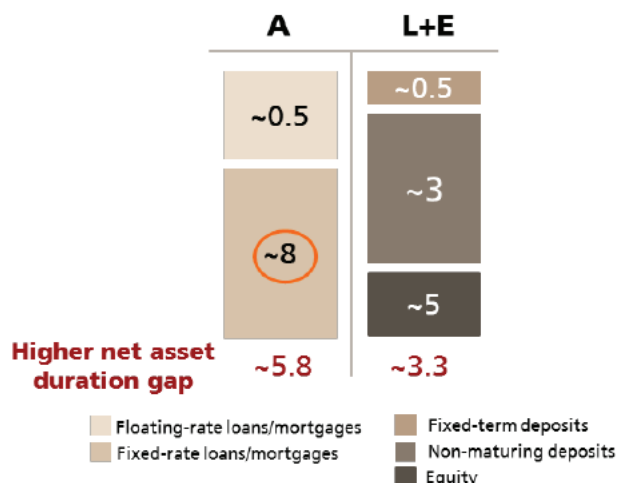
Source: Illustrative example prepared by UBS.

Ideally, the balance sheet will exhibit a very high degree of natural duration netting capacity with any imbalance economically hedged with the external market via fixed versus floating interest rate swaps. The higher the imbalance between asset and liability duration, the higher the reliance on the external market to enable hedging of inherent interest rate risk.

The next chart shows the implications for interest rate risk management after the extended period of persistently low interest rates. By this time the duration of the fixed-rate mortgages would have increased to, say, 8 years from 5 years on the initial balance sheet.

*Chart 8: Higher percentage of non-maturing deposits and longer-term mortgages*

years



Source: Illustrative example prepared by UBS.

Although the volume of fixed-rate mortgages has dropped due to shifts into floating-rate mortgages, the average duration of the asset side will have increased to nearly 6 years compared to around 4 years initially. While the volume of the non-maturing deposits will have increased in the low-rates environment, it is assumed that their effective interest rate duration will have remained the same, at around 3 years.

However, the average duration of the liability side will have increased from the higher proportion of non-maturing deposits versus (shorter-duration) term deposits. To complete the picture, a target duration of the bank's equity to be 5 years is assumed, while any interest rate hedges the bank may have put on to reach this target duration are ignored.

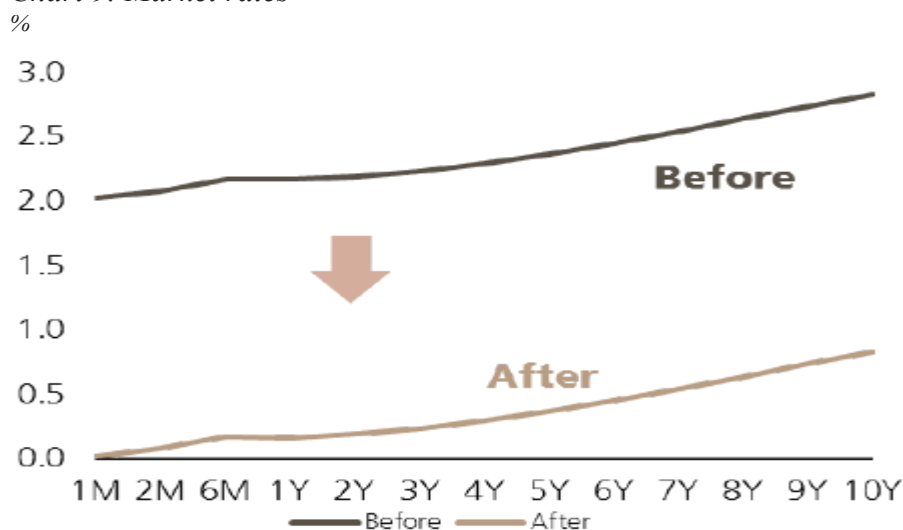
Initially, the example bank was running an additional gap of approximately 1.2 years over its target duration (4.1 years assets versus 2.9 years liabilities). The result from the downward shift in rates is an extended asset duration gap, to 2.5 years (5.8 years versus 3.3 years) – despite a lengthening of average deposit duration, since the asset duration has increased by even more. In other words, low rates will have induced a higher interest rate duration imbalance and therefore an increased reliance on the external market to hedge the inherent interest rate risk in the balance sheet. The next section describes the scenario analysis which was

performed to assess the consequences of this induced structural shift on the bank's earnings profile.

## Scenario analysis

We assume a starting yield curve at 2% and higher, which corresponds with the initial balance sheet we showed before.

*Chart 9: Market rates*



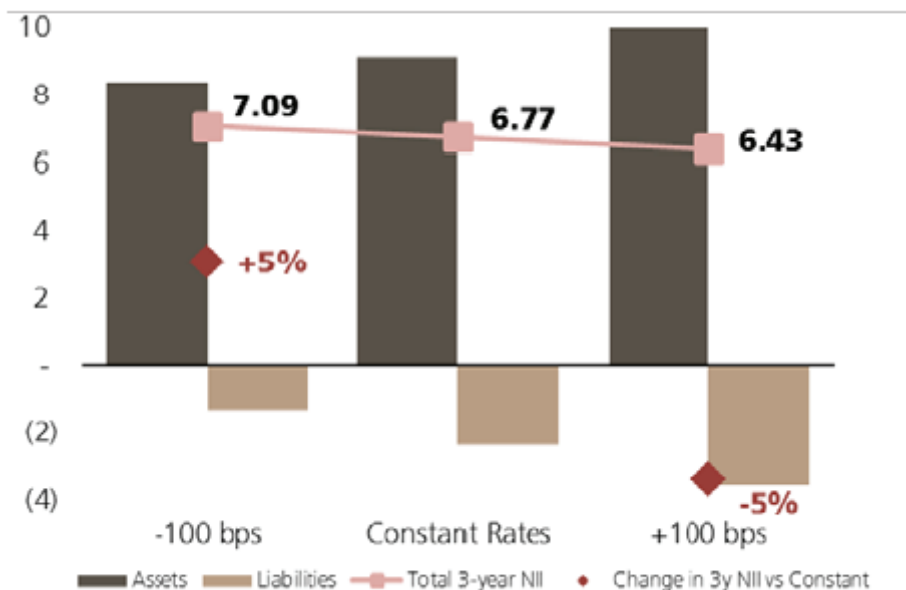
*Source: Illustrative example prepared by UBS.*

Then, after rates have continually fallen over an extended period of time, we arrive at a lower yield curve, where the short-end is barely above zero. The whole curve has effectively fallen by 200 basis points in parallel compared with the initial situation (“Before”).

Then the Net Interest Income (NII) profiles of both balance sheets were calculated, i.e., how the (cumulative) 3-year NII would look like assuming a static balance sheet for 3 years. The scenarios assumed are: Constant rates (the center column), and then under an immediate parallel rates shock of –100 basis points (left-hand column) and +100 basis points (right-hand column).



*Chart 10: 3-year net interest income profile: Before  
 CHF billion*

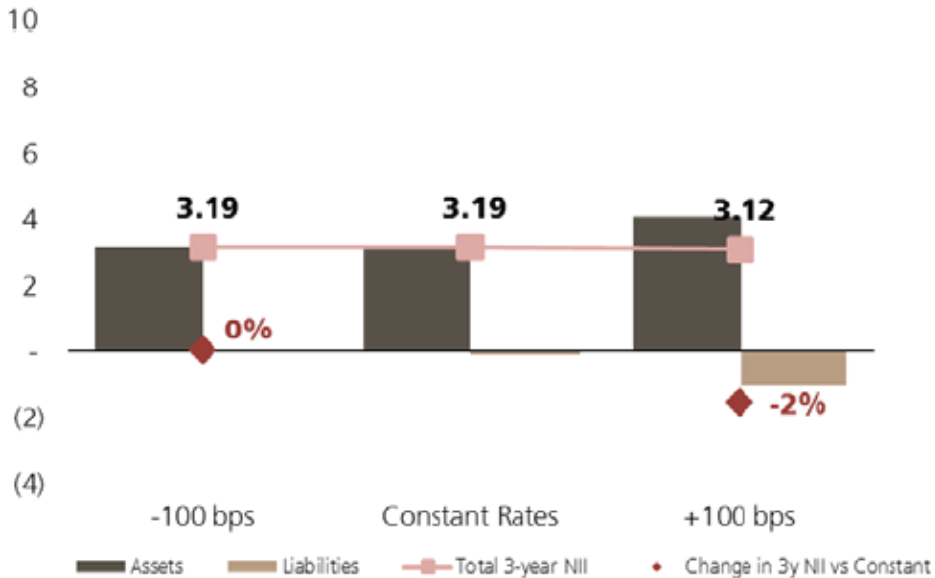


Source: Illustrative example prepared by UBS.

The 3-year NII under constant rates is CHF 6.8 billion, implying a 2.3% net interest margin (NIM). This improves under a –100 basis points shock by +5% to CHF 7.1 billion (left column), as the deposits re-price (downwards) quicker than the mortgages. The reverse holds under the up-shock of +100 basis points: the 3-year NII drops by 5%.

In the “After” interest rate environment, following the extended period of falling/low rates, the “base-case” 3-year NII under constant rates has practically been halved, to CHF 3.2 billion. This implies only a NIM of 1.1% per annum (NIM 1.1% p.a. = 3.2bn/3y/100bn).

*Chart 11: 3-year net interest income profile: After*  
 CHF billion



Source: Illustrative example prepared by UBS.

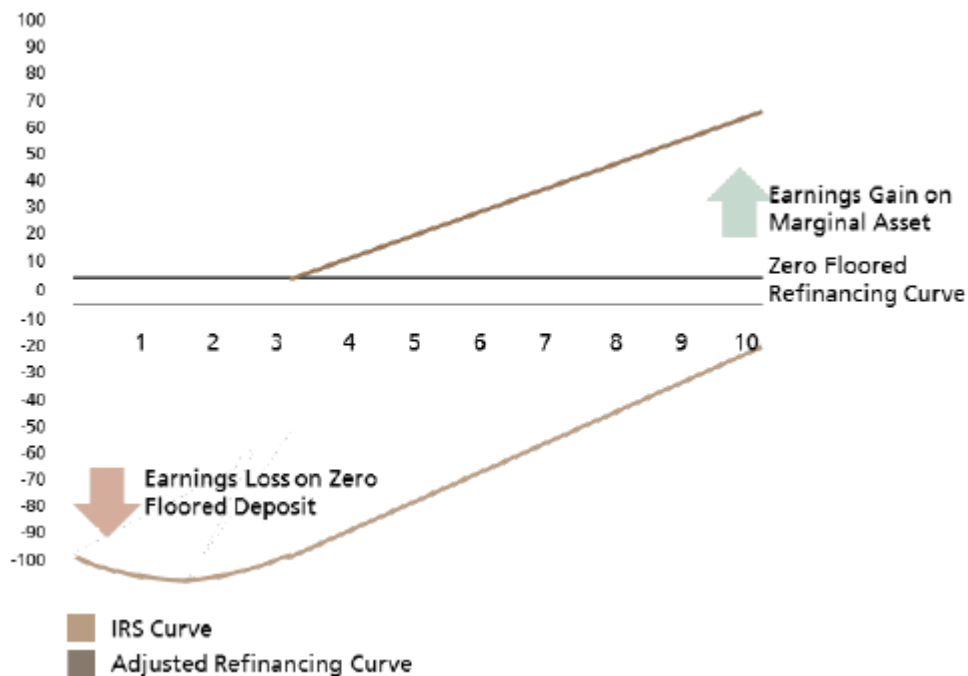
In effect, the example bank’s overall margin has become compressed. While it can still earn the same margin on its mortgages versus market rates, it can no longer earn the same margin on its deposits since the client deposit rates are being pushed against the zero floor.

Also, there is no more NII upside if rates fall further (downside NII sensitivity ~0%). In fact, the NII still drops under an immediate rates rise, but only by 2% under the +100 basis points scenario. The reason for this is that the balance sheet duration profile has lengthened. Interestingly, the “Before” situation appeared to benefit from falling rates (NII +5%) in the –100 basis points scenario, but in the “After” situation, where rates have in fact dropped, the NII result is worse than the “Before” situation. This is because the +5% NII benefit versus “Before” assumes the same balance sheet with no structural change and the “After” situation is such that all of the existing long-term loans have already re-priced at new (low) level of rates.

## Mitigation measures

As a retail bank cannot, at least initially, charge customers negative rates for short-term or non-maturing deposits, it is forced to disconnect economically from the external market. The larger this disconnect, the less utility the external market provides in managing its balance sheet mismatch between the asset and liability duration inherent in its product offering. The bank has little choice but to manage the client's demand for duration to the extent that it is willing to invest its zero floored deposit base at a particular return. This can only be done by the bank reflecting the minimum term premium it is willing to accept for investing its non-maturing deposits and equity in its asset offering. Even if a zero or negative expected economic return was acceptable to a bank, the effects on its earnings in the short term would be severe. The potential asset duration overhang that required hedging externally would accrue highly negative initially (potentially for three years) completely eroding the margin on its asset offering.

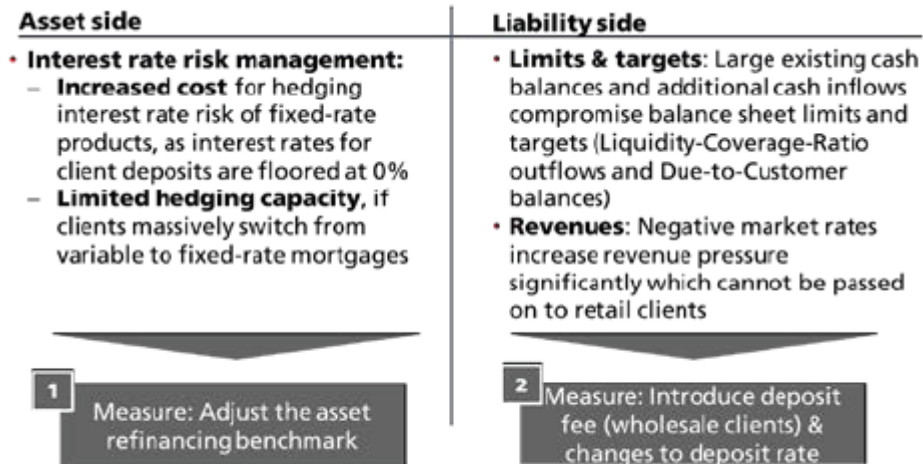
*Chart 12: Minimum term premium for offering maturity transformation basis points*



Source: Illustrative example prepared by UBS.

A further and far more important consequence of not reacting in such a fashion is that client preference would naturally be to extend the duration of their borrowings to the furthest available tenor as they have the security of not paying negative rates on their savings. In such an environment, dynamic margin management becomes a key measure to steer the structure of the balance sheet and to avoid large duration gaps in the balance sheet.

*Chart 13: Margin management becomes a key driver*



Source: UBS.

If clients are not willing to pay the minimum term premium, the average duration of the asset side would be expected to fall and potentially de-lever to the extent that competitors have a lower minimum. Essentially, given the lack of the market’s capacity to re-price, the more banks will wish to move to a more short-term product offering to ensure non-economic or negative outcomes. Potential measures for the asset side could be to re-benchmark the asset refinancing curve to reflect the breakeven of offering maturity transformation, potential adding of limitations to offerings of longer tenors and the insurance that documentation risk is well reviewed, controlled and updated where necessary.

To protect from unwanted excess deposit inflows, interest rates for client deposits are generally floored at zero. Further measures for the liabilities side could be the introduction of deposit fees for wholesale clients, reduction of client rates across the retail offering, creation of alternative product offerings geared towards increasing the utility of the deposit base in order to improve the liability structure and to reduce unwanted balances. The latter could be further supported through a sound “Due to Customers Framework”, which sets Liquidity Coverage Ratio outflow targets and

off-balance sheet product alternatives. Competitor monitoring is key with regards to all measures.

## Further challenges

Margin pressure could be further intensified by a number of regulatory initiatives, e. g., the BCBS (Basel Committee on Banking Supervision) task force on Interest Rate Risk in the Banking Book (IRRBB) and Basel 3 regulation on the Leverage Ratio Denominator (LRD), Liquidity Coverage Ratio (LCR) and “too big to fail”/ subsidiarization requirements.

A BCBS task force on IRRBB was mandated to update the existing guidance on interest rate risk regulation, which dates back to 2004. The current regulatory guidance advocates a Pillar 2 capital treatment of IRRBB by requesting from banks to have enough regulatory capital to support it. No direct capital charges specifically for IRRBB are required. The task force is now exploring options for direct CET1 capital underpinning of IRRBB. The main motivation appears to be: (i) Prevention of potential regulatory arbitrage between Banking Book & Trading Book; and (ii) concerns regarding the impact of rising rates on banks’ balance sheets. The industry (IIF & EBF working groups) sent a detailed response expressing concerns to the BCBS Task Force in August and then on proposed draft QIS templates in December 2014. Recent updates show that the industry response was duly acknowledged by the BCBS.

In addition to this, new LRD rules translate into additional capital requirements at banks. LRD rules have been established long before central banks flooded markets with cash. However, regulators have so far shown little to no understanding for banks’ request to at least exempt cash at central banks held for LCR purposes from LRD. Basel III client deposit modelling rules lead to additional consumption of LRD due to the obligatory build-up of high-quality liquid assets (HQLA).

Last but not least, subsidiarization is further increasing cost driven by unfavorable LRD rules. The requirement for legal entity specific LCR and Net Stable Funding Ratio (NSFR), whilst not immediately binding, would reduce flexibility for a consolidated bank to run a more efficient liquidity position and buffers at a local level required to manage volatility. Further consequences are increased trapped liquidity and complexity through intercompany relationships and rulings.

The overall market and regulatory environment keeps the job of Treasurers continuously challenging.