d-fine

Disruptions in NMD market on the way

Data based prediction of the deposit structure in Germany and Austria

Modeling & predicting NMD volumes in D & AT

During the low interest rate environment of the last decade clients predominantly chose NMDs to park their money in Austria (AT) and Germany (D). The only slightly higher interest rates of term deposits did not really justify giving away the flexibility guaranteed by NMDs. As of November 2022, NMDs amounted to approximately 80% of the deposit volume in Austria and in Germany (see Figure 1, panels A1 & B1, respectively). However, since late summer 2022, interest rate hikes have also triggered spikes in term deposit rates. So far, the total NMD proportion has not yet fallen significantly, but our study predicts major disruptions in this market in spring 2023: Either the offered NMD rates will close the currently existing gap to term deposit rates, or clients are going to transfer significant deposit volumes from their NMDs to fixed maturity products.

The data, which are publicly available from ECB and Bundesbank, suggest that the total NMD proportion decreases with increasing gaps between NMD and term deposit rates (see Figure 1, panels A2 & B2, respectively). With increasing gap this proportion seems to approach some asymptotic NMD level. The general NMD behavior is similar in the German and Austrian market, but in the latter the NMD proportion is more sensitive to lower yield gaps so that the asymptotic NMD level is reached faster. Another observation is that the asymptotic NMD level in the Austrian market is significantly lower than the asymptotic level in the German market (30% vs. 50%). This behavior is well-described by the following function

$$\frac{V_{NMD}(t)}{V_{NMD}(t) + V_{TD}(t)} = a + b * e^{-c[r_{TD}(t) - r_{NMD}(t)]}$$

This function describes the NMD proportion as a function of the rate difference $(r_{TD} - r_{NMD})$. The parameters a, b and c can be interpreted as follows:

- a: asymptotic NMD level
- b: determines how much the NMD proportion can rise above its asymptotic level
- c>0: decay rate with which the NMD proportion approaches its asymptotic level with increasing rate gap

To determine these parameters a least square optimization can be used.

For both the German and the Austrian market three striking outliers (red circles in the panels A2 & B2 in Figure 1) are obtained that refer to the latest months in the data set (September, October, and November 2022). For these months NMD proportions remained high, although the gap between NMD and term deposit rates has already increased significantly. This observation underlines the need to incorporate the customer reaction time lag τ into the function describing the NMD proportion.

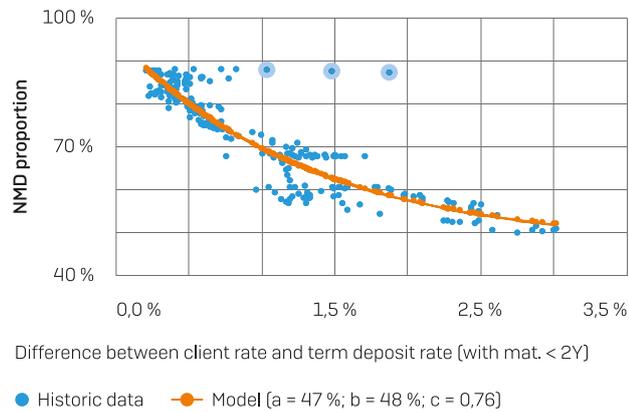$$\frac{V_{NMD}(t)}{V_{NMD}(t) + V_{TD}(t)} = a + b * e^{-c[r_{TD}(t-\tau) - r_{NMD}(t-\tau)]}$$
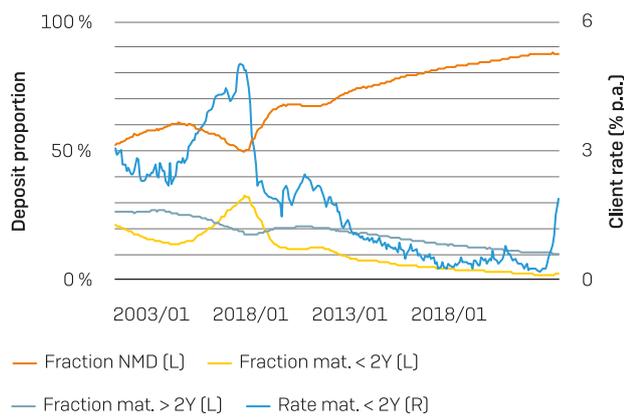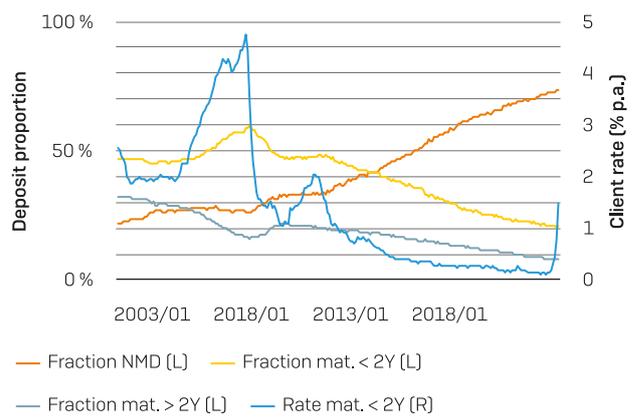
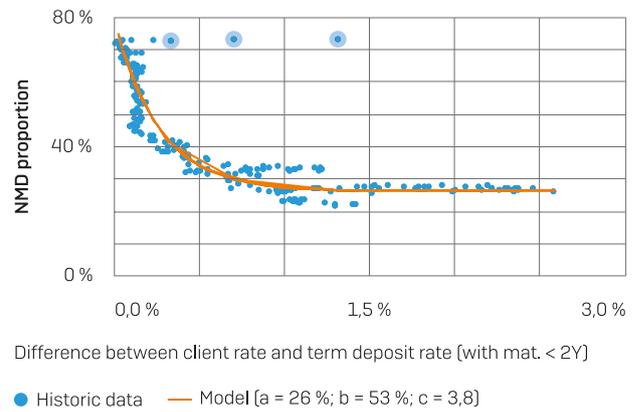**Figure 1:** Deposit markets in Germany (A1) and Austria (B1) and their respective dynamics as a function of interest rate gaps with term deposits (A2 for Germany, B2 for Austria). The red dots in A2 and B2 are outliers from the given data set and correspond to the current market situation (September, October, and November).

Based on this extended regression function we find that the regression's error is minimized by a reaction time lag of τ =5M (see figure 2, panel C). With this optimal reaction lag, the model predicts major changes in the overall deposit structure within the next months: Either NMD volumes (figure 2, panel D) will fall significantly, or the gap between the currently offered NMD rate (on average 0.12% in AT and 0.01% in D) to the 2Y-term deposit rate (on average 1.38% in AT and 1.37% in D) will close.

These events will make customer deposits a much more expensive or scarcer funding source for banks with possible consequences for the overall business strategy.
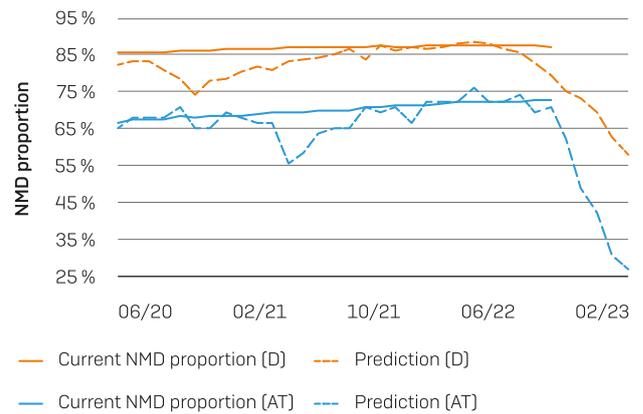
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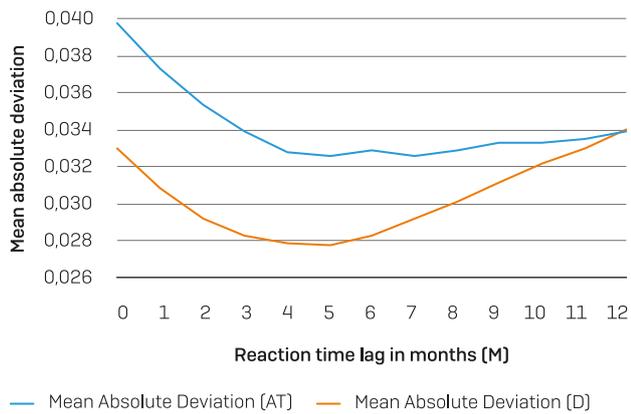
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Figure 2: Optimal reaction time (C) that minimizes the regression's error is approximately 5 months for both markets AT & D. Given this reaction lag, NMD volumes are predicted to fall significantly by Spring 2023 (D).

Authors

Dr Arnd Hübsch
Principal and Expert for Asset Liability Management
d-fine GmbH, München
arnd.huebsch@d-fine.de

Dr Konstantinos Xylouris
Manager and Expert for Asset Liability Management
d-fine AG, Zürich
konstantinos.xylouris@d-fine.ch

Dr Lukas Fertl
Consultant and Expert for Statistical Data Analytics
d-fine GmbH, Wien
lukas.fertl@d-fine.at

d-fine