

Repricing of bank assets and liabilities in the current rate hike cycle: historical perspective and impact on bank profitability

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After several years of low or even negative interest rates, rates have been rising since mid-2022. While banks in Austria had been unable to pass negative interest rates on to retail deposits because they were legally required to keep these rates above 0%, the Austrian banking sector benefited from the current rate hike cycle, with banks reporting high profitability levels. Deposit margins have increased since mid-2022, as have various credit spreads (i.e. the difference between lending and deposit rates). Furthermore, banks' high profitability is also driven by historically low credit risk costs.

The average overnight deposit rate in Austria (0.69% in July 2023) is higher than the euro area average of 0.27%. For loans, and in particular for consumer loans, however, both the interest rate level and pass-through rate are also higher in Austria. This is attributable, inter alia, to the combined effect of a higher share of variable rate loans and an inverted yield curve. In sum, Austrian banks' credit spreads increased faster in the current rate hike cycle than those of banks in other euro area countries.

We find low cumulative betas (i.e. the pass-through of a reference rate to the deposit rate) for overnight deposits (16% for households in the current rate hike cycle) and higher betas for new term deposits (up to 88% for nonfinancial corporations and 65% for households). A main reason for the historically low betas observed in the current cycle is the excess liquidity in the market. Finally, we find that interest rates are passed on to deposits more slowly in times of increasing interest rates than in times of declining interest rates.

After the onset of the global financial crisis and during the low interest rate environment prevailing until mid-2022, euro area banks' cost of equity was consistently higher than their return on equity. Bank profitability increased in the current rate hike cycle, and in light of macroeconomic uncertainties and potentially rising credit risk costs, banks should use profits to further strengthen their capital position.

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Having remained at low or even negative levels for several years, interest rates in the euro area have been rising since mid-2022.² The impact and implications of the rising interest rate environment on bank profitability, deposit and lending rates have been discussed both in public and in academia. This paper analyzes the impact of rising interest rates on deposit and lending rates with regard to bank profitability, which is currently very high with increasing interest margins being the main driver. We further compare Austrian banks' interest rate pass-through to that of other euro area banks.

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² As of September 20, 2023, the deposit facility rate reached 4% and the marginal lending facility rate 4.5%.

The paper is structured as follows: In section 1, we show how Austrian banks' profitability, interest rates, deposit margins and credit spreads developed over the long term and compare the interest rate pass-through of Austrian banks with that of banks in other euro area countries. In section 2, we analyze the development of cumulative deposit betas and conduct a cross-correlation analysis between market interest rates and retail deposit rates. Finally, section 3 summarizes our key findings.

1 Interest rates and bank profitability from a historical perspective

This section describes how Austrian banks' profitability and key interest rates have developed since 2004.

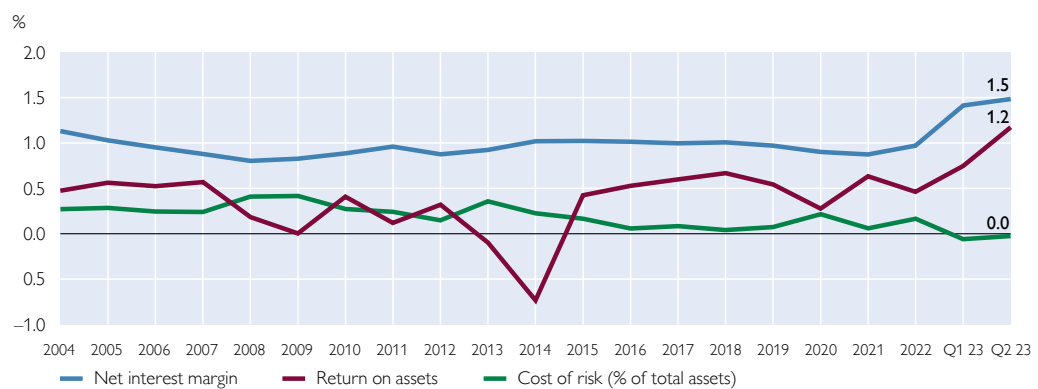
1.1 Development of interest rates and bank profitability in Austria

After a long period of very low interest rates and weak profitability, the Austrian banking sector benefited from the current rate hike cycle, with Austrian banks reporting increasing profitability levels. Both the aggregated net interest margin (NIM) (1.5%) and the aggregated return on assets (ROA) (1.2%) of the Austrian banking sector have reached their highest levels since 2004,³ as chart 1 shows. This improvement in bank profitability can be attributed mainly to rising net interest margins. Retail deposits and other deposit rates tend to be sticky. Consequently, when market interest rates rise, deposit rates do not increase at the same pace as lending rates, thus leading to an improvement of banks' net interest margins and, consequently, profitability. (English et al., 2018; Demirgüç-Kunt et al., 1999; Säskilähti, 2018) The second main driver of banks' high profitability are historically low credit risk costs, which currently stand at around 0% (chart 1).

Before the financial crisis, which started in 2007, interest rates in Austria had been on the rise since late 2005 when the European Central Bank (ECB) started to raise its policy rates as the economy was booming and risks to price stability increased. During the financial crisis, the ECB cut its policy rate to 1% while guar-

Chart 1

Annualized net interest margin, return on assets and cost of risk in Austria since 2004

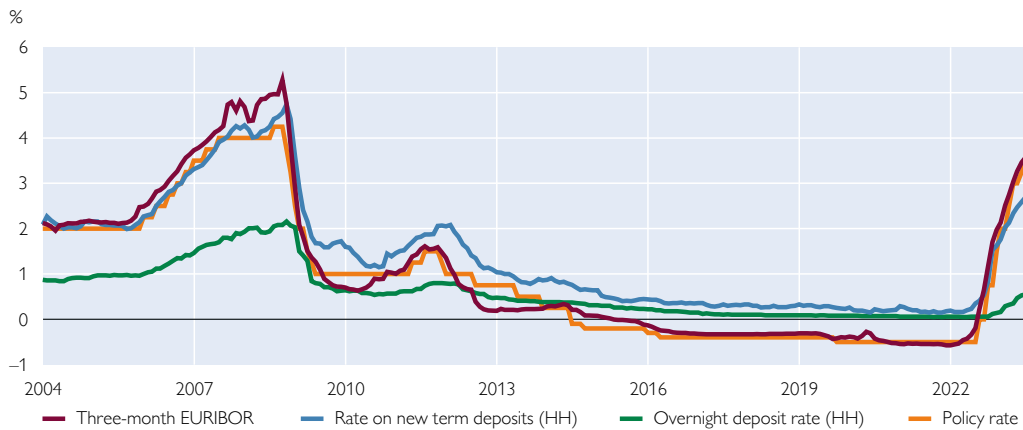


Source: OeNB.

³ All ratios mentioned in this paper are annualized and based on unconsolidated banking data. Interest rates are unconsolidated and include direct cross-border business of Austrian banks as well as business of foreign banks and branches in Austria.

Chart 2

Interest rates in Austria since 2004



Source: ECB, Bloomberg.

Note: HH = households.

anteeing banks almost unlimited access to liquidity as long as they had sufficient eligible collateral (Stark, 2009). The period from 2009 to 2022 was characterized by decreasing interest rates in the euro area – the three-month EURIBOR fell from over 5% to approximately –0.5% and the average overnight deposit rate declined from slightly over 2% to 0.1%. Rates remained at low levels until July 2022 when the ECB decided to raise its rates to counteract rising inflation. Importantly, current deposit rates should be analyzed in light of the excess liquidity existing in the market and the adverse impact on deposit competition (Agénor and El Aynaoui, 2010).

In the following, we will analyze the development of interest rates, spreads and deposit betas since the beginning of the current rate hike cycle as well as from a longer historical perspective and draw conclusions regarding bank profitability.

1.2 Development of deposit margins and interest rate spreads in Austria

Since mid-2022, the deposit margins of Austrian banks have increased significantly (chart 3). Before 2022, the interest rate environment was characterized by negative deposit margins (indicating that the three-month EURIBOR and the deposit facility rate were lower than overnight and term deposit rates, respectively).⁴ Since the beginning of the current rate hike cycle, deposit margins have surged to record levels.

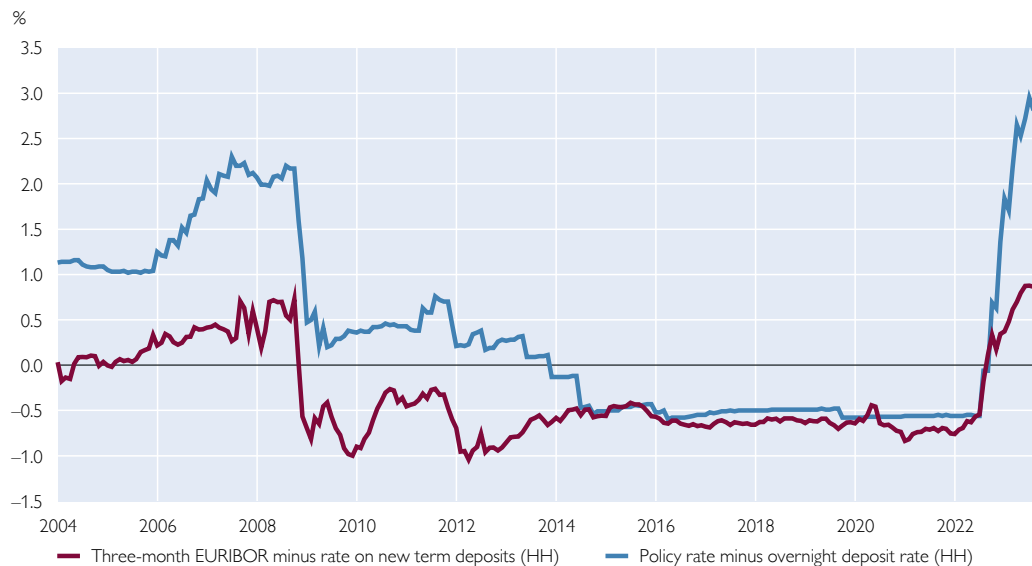
As of end-July 2023, Austrian banks paid on average 281 basis points less than the deposit facility rate on overnight deposits and 86 basis points less than the three-month EURIBOR on new term deposits, which constitute the highest margins for both overnight and term deposits in the period under review.⁵

⁴ This is also attributable to the fact that, by legal requirement, household deposit rates in Austria must not drop below 0%.

⁵ In this paper, we define the ECB policy rate as the rate for main refinancing operations (MRO) until May 2014 and the deposit facility rate (DFR) from June 2014.

Chart 3

Deposit margins in Austria since 2004

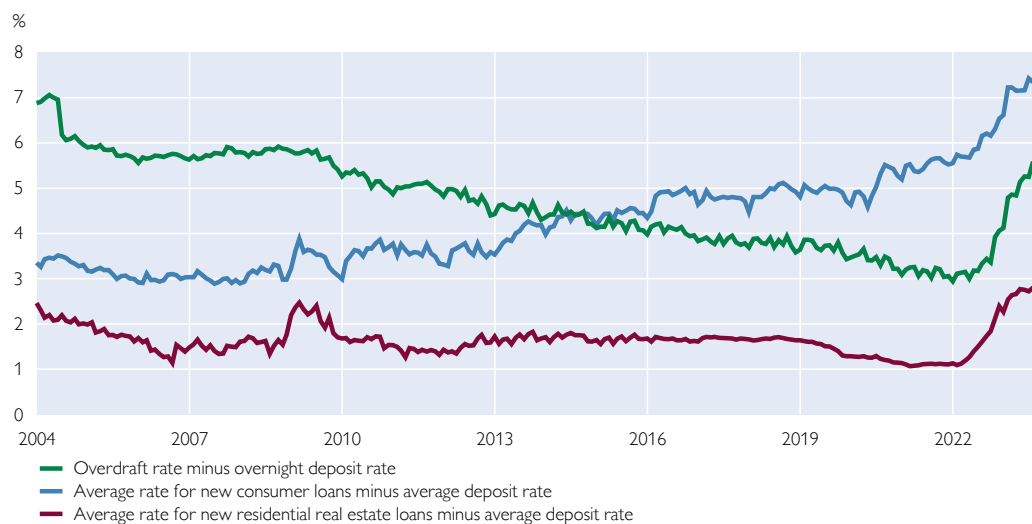


Source: ECB, Bloomberg.

Note: HH = households.

Chart 4

New business (households): credit spreads in Austria since 2004



Source: ECB.

With regard to the impact of rising rates on bank profitability, the development of deposit rates should be analyzed in relation to the development of lending rates and the resulting overall impact on the respective spreads. Since the beginning of the current rate hike cycle, spreads between deposit and lending rates have increased significantly, as shown in chart 4. The interest rate spreads for both new consumer loans and new residential real estate (RRE) loans are currently at their

highest levels since 2004.⁶ Similarly, the spread between the average overdraft rate and the overnight deposit rate has increased sharply since the beginning of 2022.

While chart 4 focuses on interest rates of newly granted loans, chart 5 shows the development of interest spreads with regard to total outstanding volumes and compares the difference between average lending rates and average deposit rates. Austrian banks benefited from the current rate hike cycle, with deposits repricing at a much slower pace than loans, leading net

interest margins and therefore profitability to increase to high levels. The most important drivers are the sharp increase in consumer loan rates and the slow repricing of overnight deposits. As chart 1 shows, historically low credit risk costs further contributed to the high profitability of Austrian banks.

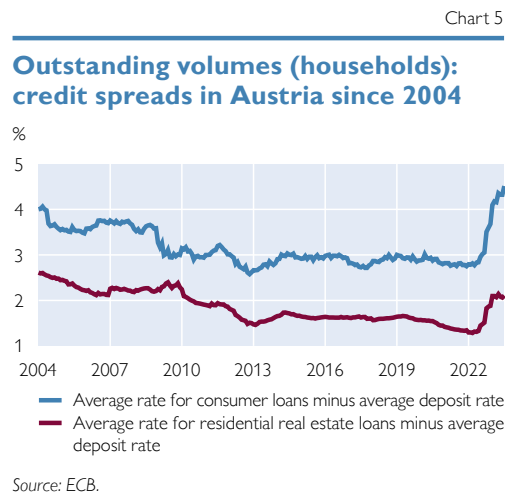
1.3 Comparison of Austrian and euro area interest rates

Deposit rates are well below current market rates, and repricing has been especially slow for overnight deposits. Comparing Austrian banks with banks from other euro area countries, Ferstl et al. (2023) showed that Austrian banks are characterized by a higher pass-through rate than their euro area peers, both for overnight and term deposits. At 0.69%, the average overnight deposit rate in Austria is higher than the euro area average of 0.27% (while term deposits were approximately at the same level as in July 2023). Term deposit rates increased at a faster pace and were at the same level in Austria (2.85%) and the euro area (2.83%) in July 2023.

However, when looking at the asset side, we also see that the interest rate level and the pass-through rate for lending are higher for Austrian banks, which is especially true for consumer loans. The average rate for newly granted consumer loans is higher in Austria (8.71%, which is also the highest figure in the observation period) than in the euro area (7.78%). At 4.17%, the average rate for RRE loans in Austria is also higher than the euro area average of 3.79%. Furthermore, the pass-through of rising rates to loans was faster in Austria than the euro area average. When comparing the pass-through rates of Austrian banks with the euro area average, it is important to highlight that the share of newly granted RRE loans with variable interest rates is significantly higher in Austria (50% in July 2023)⁷ than in the euro area (19%). Variable rate loans traditionally make up a relatively large proportion of total loans in Austria (Gnan et al., 2019). Given the currently inverted yield curve, this higher share of loans with variable interest rates therefore might explain the higher pass-through rate Austrian banks recorded on the asset side.

⁶ The average deposit rate is calculated as the volume-weighted average rate of outstanding overnight and term deposits.

⁷ Share of new variable rate loans in total loans for house purchase (floating rate or initial rate fixed for a period of up to one year). In Austria, the outstanding volume of RRE loans with variable interest rates stood at 41.7%, with fixed rates coming to 6.4% and partly fixed and partly variable components to 51.8% as of June 2023.



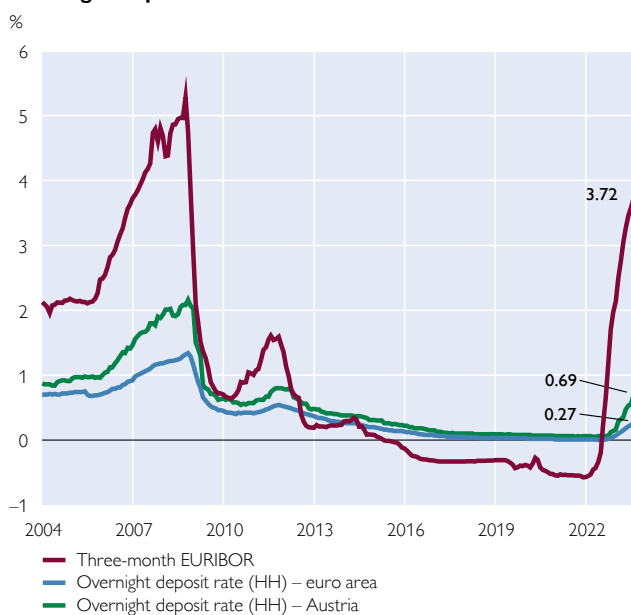
Overall, Austrian banks' credit spreads widened faster during the current rate hike cycle than those of banks in other euro area countries as a stronger increase in lending rates more than offset the higher pass-through in deposit rates.

The following charts compare the development of deposit and lending rates of Austrian banks and of other euro area banks:

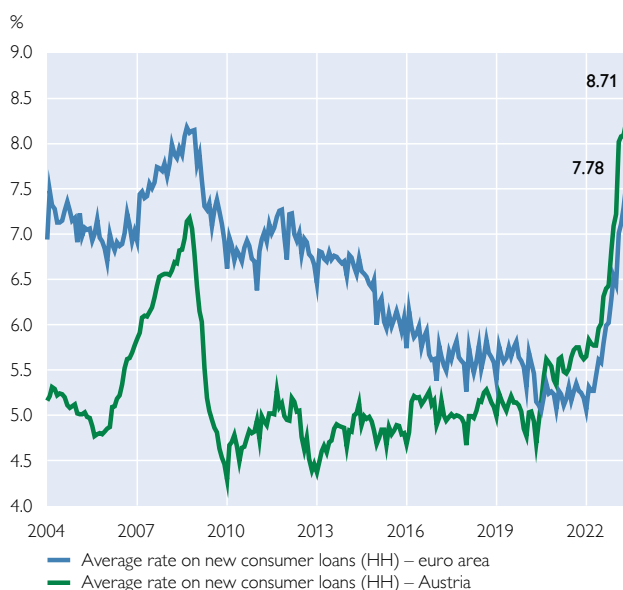
Chart 6

Deposit and lending rates in Austria and the euro area since 2004

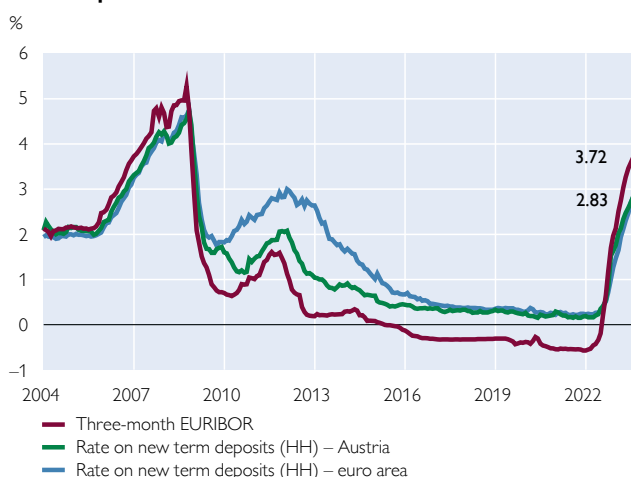
Overnight deposits: Austria vs. euro area



Consumer loans: Austria vs. euro area



Term deposits: Austria vs. euro area



Residential real estate loans: Austria vs. euro area



Source: ECB.

Note: HH = households.

2 Interest rate pass-through

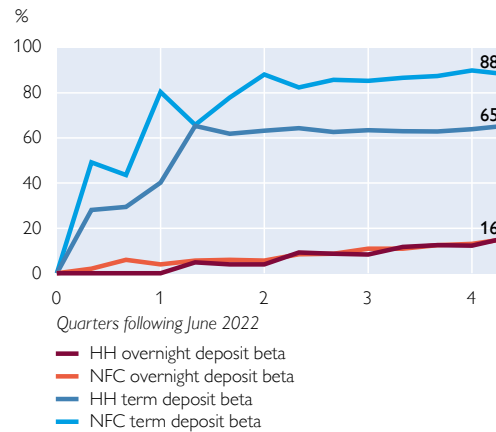
2.1 Comparison of deposit betas

Deposit betas measure the pass-through of monetary policy rates to bank deposit rates. They show what portion of an interest rate increase is passed on to deposit rates (Kang-Landsberg, 2023). We calculated deposit betas for term deposits based on the three-month EURIBOR and for overnight deposits based on the deposit facility rate (DFR).⁸ As chart 7 shows, we find low pass-through rates for overnight deposits both for households and nonfinancial corporations (NFCs) – 15% and 16%, respectively. Regarding term deposits, NFCs exhibit a substantially higher beta (88%) than households (65%), which can be partly attributed to their greater bargaining power. On the other hand, NFCs were affected by negative interest rates on their deposits during the negative interest rate environment until 2022.

When we compare the current rate hike cycle with the interest rate increase in the pre-financial crisis period, we see that the cumulative betas for both overnight and term deposits are significantly lower now than in the period before the financial crisis. From the beginning of the fifth quarter of the current rate hike cycle, the overnight deposit beta in Austria has remained low, at 16% (chart 8). This con-

Chart 7

Deposit betas for Austrian households and nonfinancial corporations during current rate hike cycle (starting June 2022)

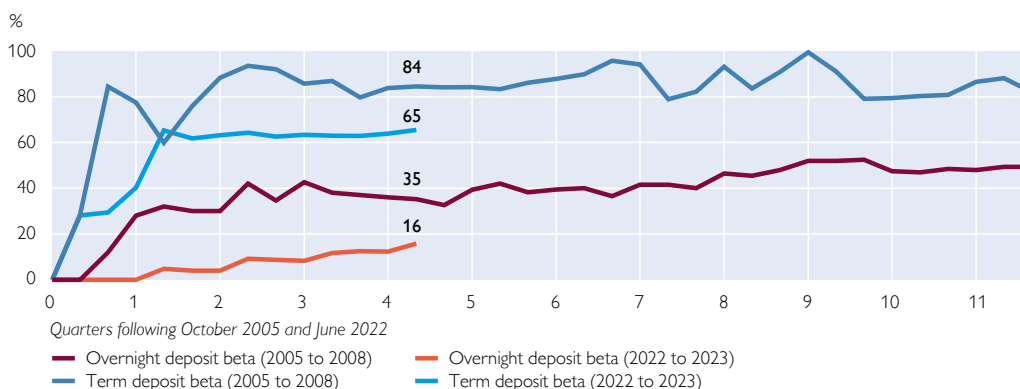


Source: ECB, authors' calculations.

Note: HH = households; NFC = nonfinancial corporations.

Chart 8

Betas for Austrian households during current¹ and pre-financial crisis² rate hike cycles



Source: ECB, authors' calculations.

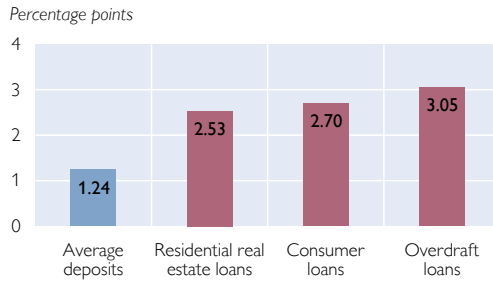
¹ June 2022 to July 2023.

² October 2005 to November 2008.

⁸ We calculated cumulative deposit betas for term deposits as the change in interest expense on deposits relative to the change in the three-month EURIBOR and for overnight deposits relative to the change in the DFR.

Chart 9

Household deltas for loans and deposits during current rate hike cycle (starting June 2022)



Source: ECB, authors' calculations.

trasts with the 35% beta observed for the same period in the 2005–2008 cycle. Hence, the deposit betas in the current rate hike cycle are relatively low, also from a historical point of view. A main reason for these historically low betas is that the excess liquidity in the market, which is also driven by monetary policy and the low interest rate environment, leads to reduced competition for bank deposits (Agénor and El Aynaoui, 2010).

Examining the absolute change in interest rates for total deposits⁹ and loans, we find a significantly larger increase in lending rates, since mid-2022, than in deposit rates. As chart 9 shows, the average deposit rate (defined as the weighted average of overnight and term deposits) went up by 124 basis points, while lending rate increases ranged from 253 basis points (RRE loans) to 305 basis points (overdrafts). Lending rates, however, might also rise with expectations of rising credit risk.

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2.2 Cross-correlation analysis of market interest rates and retail deposit rates

Following the approach of de Bondt (2005), we conducted a cross-correlation analysis between the market interest rate (one-month EURIBOR)¹⁰ and retail deposit rates (overnight deposit rate and rate for new term deposits). Our goal was to identify differences in the repricing of bank deposits in different interest rate environments (rising interest rate environment vs. decreasing rate environment).

First, we separately calculated the cross-correlation coefficient for rising and decreasing interest rate environments,¹¹ excluding the low interest rate environment between 2012 and 2022 from our analysis. Second, we calculated the cross-correlation coefficient across different time lags to identify the period within which changes in the market interest rate showed the closest similarity to changes in deposit rates.¹² Third, we identified the lag with the highest correlation coefficient and the corresponding coefficient for Austria and for the euro area (see table 1 and table 2).

During times of increasing interest rates, we find a lower correlation and pass-through of interest rates than in times of decreasing interest rates. This is consis-

⁹ Overnight deposits account for 67% of total deposits in Austria, compared to 77% in the euro area as of July 2023.

¹⁰ We also conducted a cross-correlation analysis with the three-month EURIBOR and the €STR/EONIA rate, finding similar results. When the €STR/EONIA is used as a reference rate for overnight deposits, the result for Austria is even more pronounced, with a coefficient of 0.38 (lag 4) in an increasing rate environment and 0.63 (lag 0) in a decreasing rate environment.

¹¹ Rising interest rate environment: April 2004 to November 2008, April 2010 to July 2011 and March 2022 to August 2023. Decreasing interest rate environment: January 2003 to March 2004, September 2008 to March 2010 and August 2011 to August 2012.

¹² For example, lag 1 indicates that the highest correlation was observed after one month.

tent with observations that bank profitability benefits during the first phase of a rate hike cycle due to a slower repricing of deposits and relatively benign credit cycles.

For overnight deposits and term deposits in Austria and the euro area, the correlation coefficient is lower in a rising rate environment than in a decreasing rate environment. Additionally, in a rising interest rate environment, the time lag with the highest correlation is higher for overnight deposits than for term deposits. We conclude that the highest correlation occurs later in a rising interest rate environment than in a decreasing rate environment and that the interest rate pass-through takes place at a later point in time in a rising interest rate environment. Overall, interest rates are passed on to deposits more slowly (longer lag) and to a lesser extent (lower coefficient) during times of increasing interest rates than during times of decreasing interest rates.

3 Summary and conclusions

After several years of low and even negative interest rates, the Austrian banking sector has benefited from the current rate hike cycle: Austrian banks have been reporting high profitability levels and the sector's aggregated net interest margin and aggregated return on assets have reached their highest levels since 2004, at 1.5% and 1.2%, respectively, while credit risk cost is historically low.

Austrian banks' deposit margins have increased significantly since mid-2022. At the end of July 2023, Austrian banks paid on average 281 basis points less than the deposit facility rate on overnight deposits and 86 basis points less than the three-month EURIBOR on new term deposits. Similarly, various credit spreads have increased in the current rate hike cycle. Both the spreads for new consumer loans and new residential real estate loans (relative to average deposit cost) are currently at an all-time high.

The average overnight deposit rate in Austria (0.69% as of July 2023) is above the euro area average of 0.27%, while Austrian term deposit rates are approximately at the same level as the euro area average. We find that both the interest rate level and the pass-through rate for lending are higher in Austria, which can be explained, inter alia, by the fact that the share of variable rate loans in Austria is higher while the yield curve is currently inverted. In sum, Austrian banks' credit spreads increased faster in the current rate hike cycle than those of other euro area banks.

We find low cumulative betas for overnight deposits for households (16%) and nonfinancial corporations (15%) in the current rate hike cycle and higher betas for new term deposits (88% for nonfinancial corporations and 65% for households). A

Table 1

Cross-correlation analysis for Austria

	Increasing interest rate environment		Decreasing interest rate environment	
	Lag (months)	Coefficient	Lag (months)	Coefficient
Households' overnight deposits	4	0.41	1	0.63
Households' term deposits	1	0.45	1	0.86

Source: Bloomberg, authors' calculations.

Table 2

Cross-correlation analysis for the euro area

	Increasing interest rate environment		Decreasing interest rate environment	
	Lag (months)	Coefficient	Lag (months)	Coefficient
Households' overnight deposits	3	0.27	1	0.79
Households' term deposits	1	0.65	1	0.83

Source: Bloomberg, authors' calculations.

comparison of the current rate hike cycle with the pre-financial crisis period shows that the cumulative beta is lower during the current rate hike cycle for both overnight and term deposits. Among the main reasons for the historically low betas observed in the current cycle are the excess liquidity in the market and its impact on deposit competition. Finally, we conducted a cross-correlation analysis to identify differences in the repricing of bank deposits in different interest rate environments. We find that interest rates are passed on to deposits more slowly and to a lesser extent in times of increasing interest rates than in times when interest rates are going down.

After the onset of the global financial crisis and during the low interest rate environment that prevailed until mid-2022, euro area banks' cost of equity was consistently higher than their return on equity (Altavilla et al., 2021). Bank profitability increased in the current rate hike cycle. In light of macroeconomic uncertainties and potentially rising credit risk costs, however, banks should use their profits to further strengthen their capital position.

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