

DuPont reloaded: the profitability of the Austrian banking sector and the impact of the COVID-19 pandemic

Manuel Gruber, Stefan Kavan¹

This short study follows up on our previous paper that analyzed the profitability of Austrian banks' subsidiaries in Central, Eastern and Southeastern Europe (CESEE) from 2004 to 2016 on the basis of a DuPont analysis.² Now, we not only update the time frame to include years before and during the COVID-19 pandemic (2017 to 2021), but also look at the entire Austrian banking sector. In addition, we explain trends in banks' net interest income in more detail by analyzing to what extent it depends on price and volume effects. We find that banks' return on equity dropped substantially during 2020 but bounced back to pre-pandemic levels in 2021. The obvious driver were risk costs, which spiked at first but quickly calmed down again as the impact of the pandemic proved to be less severe than originally expected. Also, banks' net interest margin was negatively affected during the pandemic, both by low interest rates and banks' shift toward lower-margin business. The future development of profitability in the Austrian banking sector is highly uncertain. But even though – like in the past few years – much will depend on external factors, including monetary, fiscal and prudential decisions as well as geopolitical developments, our analysis suggests that the Austrian banking sector is well prepared to weather these challenging times.

JEL classification: G21

Keywords: bank, profitability, Austria, CESEE, DuPont analysis, net interest income

In this short study, we analyze the relative profitability of Austrian banks both from a subconsolidated and a consolidated point of view, i.e. regarding their subsidiaries in Central, Eastern and Southeastern Europe (CESEE) in particular and Austria's banking sector in general. This study is structured as follows: Section 1 explains how our adapted DuPont analysis can be used to dissect banks' return on equity (ROE) and to highlight profit and loss drivers. In section 2, we first apply this logic to the profitability of Austrian banks' subsidiaries in CESEE for the period from 2017 to 2021, before turning our attention to the consolidated Austrian banking sector. This approach enables us to discern trends that occurred prior and during the COVID-19 pandemic. Section 3 concludes by providing a cautious profitability outlook in challenging times.

1 How does a DuPont analysis help explain banks' profitability?

A corporation's profit and loss statement can be seen as a funnel where we put in operating income at the top and then – by adding and deducting a number of components – produce a net profit at the bottom (“the bottom line”). In our case, a bank earns operating income (e.g. net interest income), then deducts operating and risk costs, makes adjustments for other profits (or losses) and pays taxes, all of

¹ Oesterreichische Nationalbank (OeNB), Financial Stability and Macroprudential Supervision Division, manuel.gruber@oebn.at and stefan.kavan@oebn.at. Opinions expressed by the authors of this study do not necessarily reflect the official viewpoint of the OeNB or the Eurosystem. Editorial close: September 20, 2022.

² For further details, see Gruber M., S. Kavan and P. Stockert (2017).

which results in a net profit (or loss). In terms of relative profitability, the net profit (or loss) is turned into a return on assets (ROA) and – after substantial leveraging – results in the bank’s return on equity (ROE).³

To identify the driving forces behind banks’ ROE, we rely on our (adapted) DuPont formula. The DuPont formula is named after the company where, in the early 20th century, a return-on-investment formula was developed that decomposes the profitability ratio “return on investment” into several subratios. For a complete introduction to the formula’s workings, please refer to our previous study.⁴ We rely, again, on the appealing simplicity of dissecting a bank’s ROE according to underlying accounting terms to explain ROE developments on the basis of their main drivers, i.e. the operating income margin (OIM),⁵ the cost-income ratio (CIR), risk costs (RC)⁶ and financial leverage⁷. The formula guiding our train of thought – where most nominators and denominators simply cancel each other out – is as follows:

$$\begin{aligned}
 RoE &= \frac{\text{net profit}}{\text{PBT}} * \frac{\text{PBT}}{\text{OP after risk}} * \frac{\text{OP after risk}}{\text{OP before risk}} * \frac{\text{OP before risk}}{\text{operating income}} * \frac{\text{operating income}}{\text{av. total assets}} * \frac{\text{av. total assets}}{\text{av. equity}} \\
 (1) \quad &= \left(1 - \frac{\text{taxes}}{\text{PBT}}\right) * \frac{\text{PBT}}{\text{OP after risk}} * \left(1 - \frac{\text{provisioning}}{\text{OP before risk}}\right) * \left(1 - \frac{\text{operating cost}}{\text{operating income}}\right) * \frac{\text{operating income}}{\text{av. total assets}} * \frac{\text{av. total assets}}{\text{av. equity}} \\
 &= (1 - \text{tax rate}) * \text{impact of other profit} * (1 - \text{RC}) * (1 - \text{CIR}) * \text{OIM} * \text{financial leverage} \\
 &= \text{OIM} * (1 - \text{CIR}) * (1 - \text{RC}) * \text{impact of other profit} * (1 - \text{tax rate}) * \text{financial leverage}
 \end{aligned}$$

where PBT is profit before tax, OP is operating profit and “av.” stands for average.

2 What drove the profitability of the Austrian banking sector from 2017 to 2021?

2.1 Profitability of Austrian banks’ CESEE subsidiaries reached pre-pandemic levels in 2021, despite margin pressure, as risk costs quickly moderated and leverage rose

In this section, we apply our DuPont logic to all subsidiaries of Austrian banks active in CESEE from 2017 to 2021, with a particular focus on the impact of the COVID-19 pandemic.⁸ The reason for starting our analysis with Austrian banks’ CESEE subsidiaries is that they contributed more than 40% to the Austrian banking sector’s overall profit over the five years analyzed, and even more than half in 2020.

³ As we use accounting terms in this short study, equity refers to the equity position on a bank’s balance sheet (and not to regulatory own funds or market capitalization). Therefore, the ROE and leverage data we present will diverge from other published OeNB data, which are calculated using regulatory (tier 1) own funds.

⁴ See footnote 2.

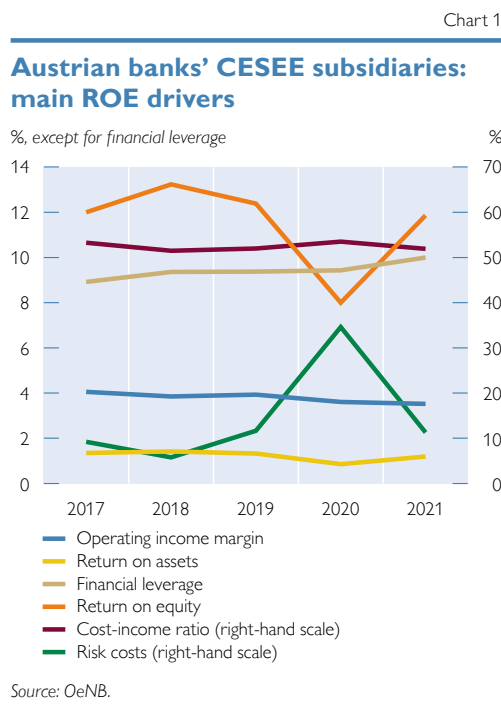
⁵ The OIM is defined as operating income over average total assets.

⁶ RC are defined as provisioning over operating profit (before risk provisioning).

⁷ Financial leverage is defined as average total assets over average equity. For the sake of simplicity, we exclude the impact of other profit or the tax rate from our analysis as they concern non-core business areas and a (mostly) external factor.

⁸ In this study, CESEE comprises a highly diverse set of countries across the region, and our sample of subsidiaries is variable (i.e. it is not adjusted for market exits, entries, mergers or acquisitions as these had little effect especially in the later years of the observation period).

We see in chart 1 that the ROE was rather stable before the pandemic (2017 to 2019), ranging between 12% and 13%, before dropping substantially to 8% in 2020 and quickly rebounding to pre-pandemic levels in 2021. Risk costs are an obvious culprit for the extreme slump observable during the first year of the pandemic, when provisioning consumed more than one-third of the operating profit (up from about one-tenth). Cautiousness was a prudent reaction by banks, as the economic consequences of the general health crisis proved difficult to assess at first. Thanks to various public and regulatory COVID-19 support measures, however, credit risks did not materialize as initially feared. Banks therefore quickly returned provisioning to low levels, similar to those before the pandemic, which boosted the recovery of profitability.



Apart from this obvious relationship, what story do the other main factors of the DuPont formula unveil over the observation period?

First, subsidiaries' financial leverage had been rising over the five years under consideration (especially in 2018 and 2021) from a factor of below 9 to a factor of 10. This trend, however negative from a financial stability perspective, positively affected subsidiaries' ROE.⁹ Looking beyond risk costs and leverage, the operational profitability of subsidiaries' core business comes into focus. Here, developments have been twofold: On the one hand, their CIR was fairly stable at slightly above 50%. This highlights banks' general struggle to improve cost efficiency, given that digital transformation entails both medium-term savings and short-term investments, while wage pressure was high in several countries because of tight labor markets. On the other hand, subsidiaries' operating income margin (OIM) came under pressure, in particular during the pandemic. So what caused the vital pricing engine to stutter?

First, we take a broad look at the overall trend in the OIM as depicted in chart 1. From 2017 to 2021, the OIM declined markedly from slightly over 4.0% to barely over 3.5%, with a particular downward trend setting in with the pandemic. Digging deeper, chart 2 (left-hand panel) decomposes the OIM into its main components, i.e. the net interest margin (NIM)¹⁰ as well as indicators for fees,

⁹ The ROE strongly depends on leverage (regardless of the definition of equity) and is most commonly used by shareholders. Supervisors and financial stability analysts prefer assessing a banking system's profitability by using the nonleveraged ROA.

¹⁰ The NIM is defined as net interest income over average total assets.

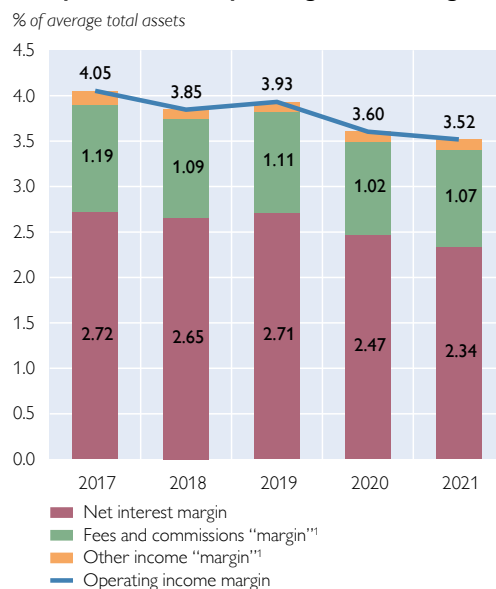
commissions and other income.¹¹ Two lessons can quickly be drawn: First, the NIM was consistently responsible for two-thirds of the OIM and, second, its decline was the primary driver of OIM degradation in 2020 and 2021. This highlights the profitability pressures banks' traditional activities had to face as expansive monetary policy cushioned the pandemic's effects for the real economy but at the same time hit banks' (pre-risk) lending margins and investment yields.¹² In addition to this external price pressure, the composition of loan books changed significantly as supply and demand dynamics favored lower-margin, lower-risk segments. Much has been written in this context about the boom in residential real estate (RRE)-secured lending to households in 2020 and 2021. However, RRE loans barely held on to their share of one-quarter of total gross loans. In fact, their boom was dwarfed by the increase in banks' business with central banks, which expanded from less than one-fifth to one-quarter of total gross loans in just two years. All in all, the first two years of the pandemic proved to be challenging for Austrian banks' CESEE subsidiaries' NIM.

We might end our analysis of relative profitability factors at this point, but we also want to provide insights into how Austrian banks' CESEE subsidiaries attempted to protect their (absolute) net interest income (i.e. their profits' cornerstone) in a time of quickly falling margins. The overall answer is straightforward,

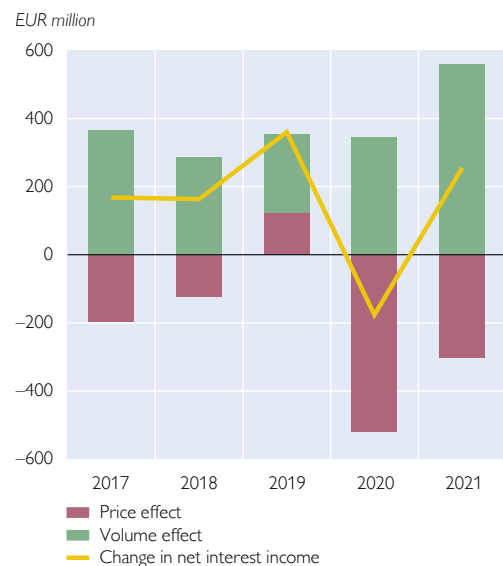
Chart 2

Austrian banks' CESEE subsidiaries

Components of the operating income margin



Drivers of net interest income



Source: OeNB.

¹ See footnote 11 in the main text for details on "margins."

¹¹ Dividing fees and commissions (or other, residual, income) by a banks' average total assets is not a "standard" profitability measure as fees and commissions are typically not earned on a banks' assets, but this is a necessary step to make all OIM components comparable in our analysis.

¹² During the pandemic, some CESEE central banks resorted to asset purchase programs, which put pressure on the yield earned on newly bought government securities. For Croatia and Romania, see Magyar Nemzeti Bank (2020a, p. 14), and for Hungary, see Magyar Nemzeti Bank (2020b).

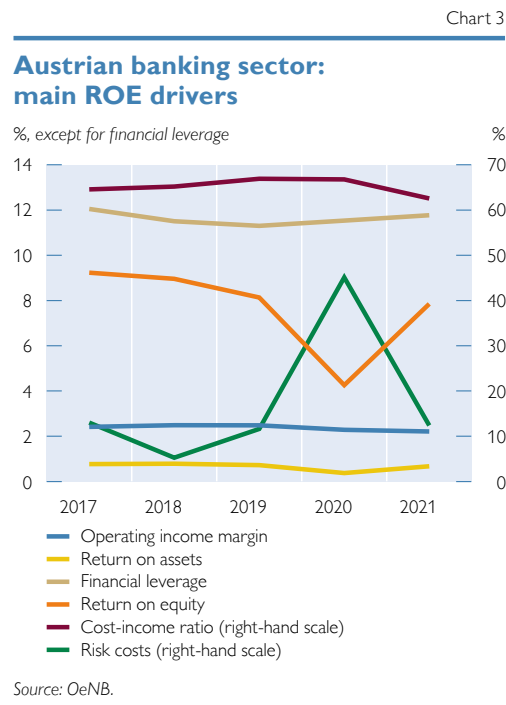
given that they recorded their highest five-year net interest income in 2021 in spite of the lowest NIM (i.e. price): Subsidiaries had to increase their average total assets (i.e. volume). This explanation can be expanded on, however, as we discern price and volume effects for each year to determine the exact underlying dynamics affecting subsidiaries' net interest income. As chart 2 (right-hand panel) highlights, rising volumes had a positive effect every year (and the highest positive effect in 2021), while price effects consistently put pressure on net interest income, in particular in 2020 (but not in 2019). This shows that Austrian banks' CESEE subsidiaries countered detrimental external price shocks and shifts in their loan books by expanding their assets year after year. This strategy raises questions about the future sustainability of profits, as trying to outgrow price pressures in potentially overheating markets (and RRE markets in particular) or relying on central bank operations might not prove sustainable in the long run.

2.2 Consolidated profitability quickly rebounded to pre-pandemic levels in 2021, but inflated balance sheet masks pressure on net interest margin

In this subsection, we apply the DuPont logic to the entire Austrian banking sector. As we identify the most important drivers influencing the sector's consolidated profitability over the last five years, our focus is on the impact of the COVID-19 pandemic.

The ROE of the Austrian banking sector shows a pattern very similar to that of Austrian banks' CESEE subsidiaries (see chart 3): It was quite stable in the years before the pandemic, ranging between 8% and 9%, before falling dramatically to 4% in 2020 and rebounding to pre-pandemic levels in 2021. Unsurprisingly, one driver of the massive decline in ROE in the first year of the pandemic were, again, risk costs, which quadrupled from a low level of slightly less than EUR 1 billion in 2019 to EUR 3.7 billion in 2020. This substantial increase absorbed nearly half of the sector's operating profit, which had remained stable in the turbulent year of 2020.¹³ In 2021, the Austrian banking sector's profitability recovered quickly: Like for banks' CESEE subsidiaries, credit risk did not materialize to the extent originally feared thanks to swift support measures, and banks were able to reduce their risk costs to pre-pandemic, i.e. low, levels.

As with the CESEE subsidiaries in section 2.1, we now look at the other underlying drivers of Austrian banking sector profitability. We find that lever-

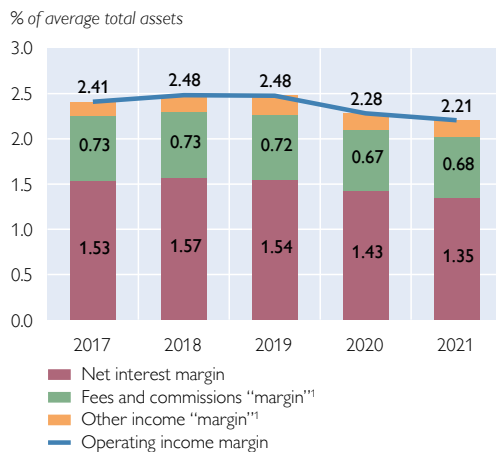


¹³ For further information on this detail, which is counter-intuitive at first glance, please refer to OeNB (2021, p. 37ff).

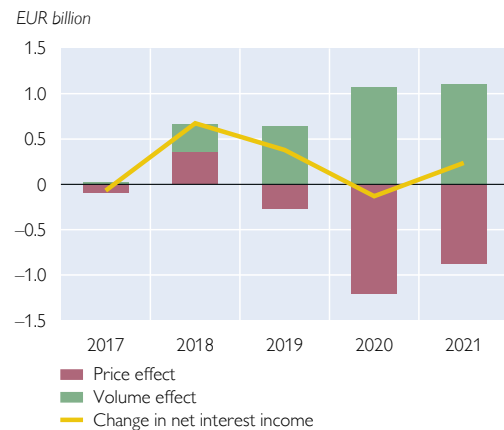
Chart 4

Austrian banking sector

Components of the operating income margin



Drivers of net interest income



Source: OeNB.

¹ See footnote 11 in the main text for details on "margins."

age shows a slightly U-shaped trend, as it declined somewhat to reach its minimum factor of 11 in 2019, before increasing back to its starting factor of 12. Overall, therefore, leverage played a marginal role in the development of the Austrian banking sector's ROE. What is more important, however, is the question of how the operating profitability of banks' core business developed. First, the CIR fluctuated at a high level (between 60% and 70%), indicating a persistent cost efficiency issue in the sector. Second, the OIM showed a downward trend from the beginning of the pandemic, declining from 2.5% in 2019 to 2.2% in 2021. Thus, the picture is very similar to that of Austrian banks' CESEE subsidiaries. A decomposition of the consolidated OIM into its main components (see chart 4, left-hand panel) reveals that it is heavily dependent on the NIM, which accounts for almost two-thirds of the OIM, and that the 20 basis points decline in the NIM observed between 2019 and 2021 was the main cause of the deterioration of the OIM. As mentioned in section 2.1, extraordinary monetary policy operations proved to be challenging for banks' NIM since they put pressure on pre-risk lending margins and investment yields after a prolonged period in which interest rates had already been low. We might assume that this circumstance left a dent in net interest income, but quite to the contrary: The Austrian banking sector not only compensated for this margin pressure but, in 2021, even recorded its highest absolute net interest income in the period analyzed. As we have already seen for Austrian banks' CESEE subsidiaries, this was only possible through the fast expansion of average total assets (in terms of volume), which in this case was fueled mainly by extraordinary monetary policy operations, such as the ECB's targeted longer-term refinancing operations (TLTROs).¹⁴ Like chart 2 (right-hand panel) in section 2.1, chart 4 (right-hand panel) depicts the yearly price and volume effect on net interest income – in this

¹⁴ From end-2019 to end-2021, the share of deposits with central banks in banks' total assets almost tripled from 5% to 14%. For details on Austrian banks' extensive use of central bank operations, see OeNB (2022a, p. 44–45).

case for the Austrian banking sector. We find that increasing volumes had a positive impact on banks' net interest income in every year under observation, while price effects were negative almost across the board, with particularly noticeable effects during the pandemic in 2020 and 2021.

The overall picture of the Austrian banking sector was thus very similar to that of its CESEE subsidiaries.

3 Challenging outlook for Austrian banks as geopolitics, inflation and monetary tightening fundamentally change business environment

Analyzing banks' profitability has several dimensions beyond absolute profits and ROEs for shareholders as it is equally important to understand the underlying drivers of these figures, especially when shocks such as a pandemic occur. For the Austrian banking sector and its subsidiaries in CESEE, we find that their ROE dropped substantially during 2020 but bounced back to pre-pandemic levels in 2021. The obvious driver behind this movement were risk costs that spiked at first, but then quickly calmed down as the impact of the pandemic proved to be less severe than originally expected due to various support measures. Importantly, we also find that the CIR was no decisive factor, while banks' NIM was negatively affected both by the low interest rate environment and banks' shift to lower-margin business (e.g. RRE-secured lending and TLTROs).

Based on our analysis of the past five years, what is the medium-term outlook for the sector's profits? Unfortunately, any forecast at this point is clouded by extreme uncertainty. Nonetheless, we end this study by putting forward our cautious thoughts, relying once again on the main profitability drivers identified in our DuPont analysis:

- (1) The Austrian banking sector's (absolute) operating income continues to depend strongly on net interest income, despite growing fees and commissions. This is one of the areas that should be watched closely as the very low interest rate environment in the euro area and in CESEE is coming to an end and RRE is becoming less and less affordable for borrowers. On the pricing side, banks' NIM is likely to rise, as higher rates directly affect the large stock of variable rate loans (especially in Austria¹⁵) as well as new business, while deposit rates may experience a slower upward adjustment. Regarding credit growth, the outlook is more difficult as the demand for loans is negatively affected by higher rates, but inventory build-ups (aimed at dealing with supply bottlenecks) and high inflation may actually increase the demand for, and the nominal value of, loans.¹⁶ Overall, we expect the rise in the NIM to overcompensate potentially lower lending growth.
- (2) Banks' CIR has been highlighted as a potential area of improvement for years, as Austrian banks keep struggling – despite consolidation efforts, the reduction of branch offices and the push toward digital transformation – to meaningfully enhance their operating efficiency. Cost-cutting in an inflationary environment may prove particularly difficult, and much will depend on upcoming wage negotiations and the clearing of supply bottlenecks.

¹⁵ For example, the share of variable rate loans extended by Austrian banks to Austrian households was more than 60% of the outstanding loan volume as of mid-2022.

¹⁶ See OeNB (2022b).

- (3) Relative risk costs dropped to their pre-pandemic, i.e. low, level in 2021, while nonperforming loan ratios of just 1.8% as of mid-2022 are at historic lows on both the consolidated and the CESEE subsidiary level. Banks' past efforts to clean up their loan portfolios will prove helpful now as the end of the very low interest rate environment, the outbreak of war in Ukraine and high inflation will call these moderate levels into question (despite public measures to dampen inflationary pressures). As economic and geopolitical uncertainties are high, risk provisioning is likely to rise again.
- (4) Although they were not at the core of our analysis, fiscal measures may become an issue. Some European governments currently discuss "windfall taxes" on banks,¹⁷ while at the same time lowering banking customers' default risks by establishing new fiscal safety nets. Political attempts to shield the real economy from the cost-of-living and cost-of-production crisis may therefore have multiple and partly opposing effects on banks' profitability, and the resulting balance is still unknown.
- (5) While this means blurring the lines between regulatory own funds and accounting equity, we would like to point out that higher capitalization levels in place since the global financial crisis have substantially reduced financial leverage. More recently, however, leverage has been slightly on the rise again (see charts 1 and 3). Numerous factors may play a role in this context over the medium term. After the recovery from the pandemic's initial impact, several European supervisors tightened capital buffer requirements again,¹⁸ and decreased risk weights have become a focus of supervision,¹⁹ which may lead to higher capital requirements for banks. Given that the course of the pandemic and of the war in Ukraine are highly uncertain, however, capital buffers may also be released again. Furthermore, banks' strong asset growth, which was partly fueled by expansive monetary policy (e.g. via TLTROs, but also the RRE lending boom), may go into reverse as central banks return to more normalized operations and residential real estate becomes less affordable for borrowers.

Given that several black swan events humbled eager forecasters in recent years, we deem predicting Austrian banking sector profitability no easy feat, either. From a financial stability point of view, it is comforting that the sector appears generally well prepared to weather a multitude of new challenges, given its (still) record-low nonperforming loans ratio as well as several lines of defense in terms of capitalization and coverage (with provisions and collateral).²⁰ For Austrian banks, much will – as in the past few years – depend on external factors, including monetary, fiscal and prudential decisions as well as geopolitical developments. After years of extraordinary circumstances, a gradual normalization would constitute a silver lining that allows banks to adapt their business models to a new normal, earn

¹⁷ See e.g. *The Financial Times* (2022).

¹⁸ See e.g. *Financial Market Stability Board* (2022a).

¹⁹ *Austria's Financial Market Stability Board* (2022b) e.g. points out that "risk weights for mortgage-backed loans and corporate loans have decreased to levels that are very low by historical standards" and the *Czech National Bank* (2022) states that "[l]owered risk weights in the loan portfolios of banks applying the IRB approach also remain a source of systemic risk."

²⁰ For the latest profitability trends covering the first half of 2022, please refer to the recent developments section in *Financial Stability Report 44*.

risk-adequate returns in a sustainable manner and thereby foster financial stability in Austria and in their CESEE host markets.

References

- Czech National Bank. 2022.** Provision of a general nature II/2022 of 16 June 2022 on setting the countercyclical capital buffer rate for the Czech Republic No. II/2022. <https://www.cnb.cz/en/financial-stability/macprudential-policy/the-countercyclical-capital-buffer/provision-of-a-general-nature-on-setting-the-countercyclical-capital-buffer-rate/Provision-of-a-general-nature-II-2022/>.
- Financial Market Stability Board. 2022a.** 33rd meeting of Austria's Financial Market Stability Board. Press release. September 12. <https://fmsg.at/en/publications/press-releases/2022/33rd-meeting.html>.
- Financial Market Stability Board. 2022b.** Recommendation FMSB/3/2022: guidance on applying the countercyclical capital buffer (CCyB). <https://fmsg.at/en/publications/warnings-and-recommendations/2022/recommendation-fmsb-3-2022.html>.
- Gruber, M., S. Kavan and P. Stockert. 2017.** What drives Austrian banking subsidiaries' return on equity in CESEE and how does it compare to their cost of equity? In: Financial Stability Report 33. OeNB. 78–87. https://www.oenb.at/dam/jcr:9db5243d-0f41-4868-b371-3237f77cf969/08_Gruber_Kavan_fsr33.pdf.
- Magyar Nemzeti Bank. 2020a.** Monetary policy instruments of the Magyar Nemzeti Bank during the COVID-19 crisis: Liquidity, safety, flexibility. <https://www.mnb.hu/letoltes/jegybanki-eszkozatar-2020-covid19-en.pdf>.
- Magyar Nemzeti Bank. 2020b.** Press release on the Monetary Council meeting of 7 April 2020. <https://www.mnb.hu/en/monetary-policy/the-monetary-council/press-releases/2020/press-release-on-the-monetary-council-meeting-of-7-april-2020>.
- OeNB. 2021.** Financial Stability Report 41. https://www.oenb.at/dam/jcr:3d331797-69a0-43d2-8c68-954b350afcdb/PB_FSR_41_screen.pdf.
- OeNB. 2022a.** Financial Stability Report 43. https://www.oenb.at/dam/jcr:37563fdb-f9d8-4a90-b6ff-aab8cab2cb8c/PB_FSR_43.pdf.
- OeNB. 2022b.** Erhöhter Bedarf an kurzfristiger Finanzierung bei österreichischen Unternehmen in Folge des Ukraine-Kriegs. Press release. July 19. <https://www.oenb.at/Presse/Pressearchiv/2022/20220719.html> (in German only).
- The Financial Times. 2022.** Spain hits banks and utilities with windfall tax. July 12.