

A Comparative Study of Commercial Banks' Resilience Across Crisis Timeframe: Case of Lithuania

Research Paper

Viktorija Skvarciany*

Vilnius Gediminas Technical University, Vilnius, Lithuania, ORCID: orcid.org/0000-0001-8022-4124

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Abstract: **Research purpose.** The primary purpose of the current study is to analyse commercial banks' resilience in Lithuania in pre-, under-, and post-COVID-19 pandemic settings in order to understand if the banking sector has recovered and reached the pre-crisis level. **Design / Methodology / Approach.** The analysis involved seven commercial banks operating in Lithuania in the analysed period. In order to calculate the resilience score, the CRITIC-TOPSIS methodology was employed. The CRITIC method was used to determine the objective weights of the selected resilience criteria, while TOPSIS was used to compute the resilience scores and rank the banks. The research period covers 2019, 2021, and 2024, where 2019 is treated as the pre-pandemic phase, 2021 – pandemic onset and peak, and 2024 – post-pandemic period. **Findings.** The findings revealed that larger banks have almost recovered after the pandemic and reached the pre-pandemic resilience level. Moreover, digital banks are the most stable in the light of financial shocks and economic disruption. On the other hand, the smaller banks are still suffering from the challenges caused by COVID-19 and continue to face challenges in restoring their resilience. **Originality / Value / Practical implications.** Theoretical research on resilience indicators showed that even indirect measures of resilience could be included as criteria. This was supported by the results showing that such unusual criteria as Large Exposure Ratio are concluded to be the most weighted resilience measure, especially in post-pandemic settings. The current results might be used by policymakers and banking sector stakeholders of all the Baltic countries to better assess the current state of the banking sector and its ability to absorb financial shocks caused by different crises.

Keywords: commercial banks • resilience • COVID-19 • CRITIC • TOPSIS

JEL code: G21

Introduction

In recent decades, the banking sector has faced serious challenges caused by the crises. One such crisis is the most recent one – the COVID-19 pandemic. The pandemic brought issues not only to the healthcare system but also to the banking sector. According to Thi Hang (2023), COVID-19 reduced commercial banks' profitability, which in turn weakened their ability to contribute to the economic recovery after the crisis. Zheng et al. (2025) state that the pandemic pushed up the risk of commercial banks, which negatively impacted their stability. In fact, stability is a necessary indicator for the competitiveness of the banking sector as the competitiveness is crucial for attracting investments, and, hence, fostering the economic growth of the country. Moreover, the stability of commercial banks might influence customer trust, which, according to Al-Dmour et al. (2019), is vital for customer retention. Apart from that, the COVID-19 pandemic influenced the efficiency of commercial banks. For instance, Xie et al. (2024) claim that due to the pandemic, the average efficiency of state-owned commercial banks declined. Actually, the efficiency

* Email: viktorija.skvarciany@vilniustech.lt

of commercial banks is related to the safety and soundness of the banking system (Getinet Chane et al., 2024). In other words, a decline in efficiency might cause the instability of the whole financial system, which reduces the banks' ability to support economic recovery in post-crisis settings. Moreover, efficiency might influence credit risk, which might affect the global economy (Twum et al., 2022). Credit risk can be a cause of financial loss; it could reduce the market value of the bank's capital, make the bank's activities unprofitable or even lead to bankruptcy (Phan Thi Hang, 2023). The bankruptcy of a commercial bank is a serious problem at the country level, as it can lead to a loss of confidence in the financial system of a country, causing panic among depositors and potentially generating broader economic problems.

Taking everything into account, the COVID-19 pandemic crisis is a serious threat to the whole financial system, which might trigger liquidity shortages, increase loan defaults, and sharp market volatility. All these can be a cause of financial instability and a threat to economic recovery. In order to avoid all the challenges mentioned above, banks ought to strengthen their resilience by enhancing their ability to absorb shocks, such as the COVID-19 pandemic. This will help them to stay strong players in the financial sector of a country by maintaining credit flow, ensuring consumer confidence by protecting their funds during the crisis. In order to ensure it, it is vital to analyse the resilience of commercial banks as the whole banking sector is a foundation of the financial system, which serves as an intermediary of the entire economy. Therefore, the current study aims at investigating the resilience indicators and calculating resilience scores of the commercial banks operating in Lithuania. The results will give valuable insight into banks' capacity to withstand economic shocks and improve their activities in a way that could help them better handle future crises.

Literature review

The resilience of commercial banks is widely analysed in the scientific literature. For instance, Oyetade et al. (2022) examined the influence of capital adequacy on the resilience of commercial banks in selected African countries. The obtained results showed that CAR increases the resilience of commercial banks. Kumar and Agrawal (2023) investigated the resilience of commercial banks of emerging economies and found that capital adequacy has an impact on off-balance sheet (OBS) activities, which are related to the overall resilience of the banks. Bastan et al. (2024) analysed the resilience of commercial banks in Iran and claimed that one of the factors for obtaining resilient banking is capital adequacy. Majid et al. (2025) stated that capital adequacy is crucial in assessing the resilience of commercial banks. The capital adequacy was used as the measure of commercial banks' resilience in the study conducted by Korzeb and Niedziółka (2020) and Cooray et al. (2025). In other words, capital adequacy is an important measure of the resilience of commercial banks, as it ensures that banks can absorb potential losses and financial shocks (Abusharbeh, 2025), and hence, leads to the financial soundness of the banking system of a country.

Suripto et al. (2023), during their investigation of commercial banks' resilience, used return on assets (RoA) as a proxy of resilience. The authors state that good RoA values tend to show strong financial performance and maintain a strong position when facing challenges. Istaiteyeh et al. (2024) found that there was a significant positive relationship between the operating efficiency ratio and RoA. In turn, bank efficiency is related to resilience as more efficient banks are usually better prepared to resist financial shocks and adapt to changing economic conditions, which accompany financial and other crises. It could be stated that RoA is a vital measure of resilience for commercial banks, especially in the crisis period.

Another indicator that is used in terms of resilience is return on equity (RoE). Saha (2021) states that companies with consistently high ROE are often seen as having a sustainable competitive advantage, which can contribute to their resilience. Banks are not an exception, as higher RoE indicates the bank's ability to generate profit, which, in turn, shows higher operational efficiency and capacity to withstand economic shocks. Apart from that, during crises such as the 2008 financial crisis and the COVID-19 pandemic, SMEs with high RoE demonstrated better resilience (Sebuwufu & Timilsina, 2023). Despite the fact that the mentioned piece of research was conducted at the SMEs level, it suggests that RoE can be a useful measure to evaluate how well companies (including commercial banks) can navigate through turbulent times. In other words, RoE is a valuable measure of resilience. By maintaining a high RoE through effective management, strategic decisions, and sustainability practices, commercial banks can enhance their resilience and attract investors even in challenging times.

Another factor of resilience is the Liquidity Coverage Ratio (LCR). Although it is not usually used, it remains crucial in seeking a higher resilience level. The LCR is a regulatory standard introduced by the Basel Committee on Banking Supervision in December 2010, aimed at enhancing the resilience of banks to short-term liquidity shocks (Mashamba & Magweva, 2019). Moreover, the authors state that compliance with the LCR led to increased stability in the banking sector, particularly in emerging markets. In turn, stability is a critical factor influencing the resilience of commercial banks. According to Hossain et al. (2018), the LCR requirement has been shown to increase the resilience of banks by ensuring they hold sufficient liquidity to manage short-term stress scenarios. The LCR requirement has influenced banks in emerging markets to increase stable retail deposits, which can enhance banking sector stability if competition for these deposits is properly regulated (Mashamba & Magweva, 2019). This shift towards more stable funding sources is crucial for maintaining resilience.

One more factor that could serve as a bank's resilience measure is the Large Exposure Ratio (LER). Even though the LER is not a direct measure of resilience, it has been developed "as a tool for limiting the maximum loss a bank could face in the event of a sudden counterparty failure to a level that does not endanger the bank's solvency" (Bank for International Settlements, 2025). This regulation could help commercial banks to remain stable and, according to Sanderson et al. (2025), stability is crucial for resilience as it allows banks to absorb economic shocks more effectively.

In the current study, the pre-COVID-19 performance is used as a reference baseline in order to evaluate whether Lithuanian banks have not only recovered from the pandemic shock but also have demonstrated structural resilience. This comparison helps to understand whether banks have been able to withstand new uncertainties such as geopolitical instability, policy changes and others. This will help to assess the vulnerability to future shocks, beyond simply recovering to prior levels.

To sum up, five resilience indicators have been distinguished from the literature, and they are as follows: Capital Adequacy Ratio, Return on Assets, Return on Equity, Liquidity Coverage Ratio, and Large Exposure Ratio. While four of them are commonly used, the remaining, i.e. LER, have not been used in the previous studies. Hence, its usage brings novelty to the current research in evaluating the resilience of commercial banks. Moreover, the Lithuanian banking sector has not been investigated before; hence, the obtained results may bring new insights for the policymakers of all the Baltic States, as the economies of Lithuania, Latvia and Estonia seem to be very similar. Apart from that, investigating Lithuania's experience might provide an opportunity to identify lessons that may be applicable to other similar small open economies.

Research methodology

The objective of the current study is to evaluate the Lithuanian bank's resilience to economic crises by calculating the resilience score. The present research focuses on the Lithuanian banking sector in order to provide a more context-specific analysis of resilience. One country has been chosen for preparing a more precise research, as different regulations, different regulatory frameworks, and different economic conditions of countries could influence the research results. However, despite these facts, the obtained research results could be used by other countries (especially the Baltic ones) for developing their outlines for evaluating their banking sector resilience under similar economic conditions.

The COVID-19 crisis has been selected for the research, as it is the most recent global economic crisis that has significantly influenced the banking sector. According to Jaiyeoba et al. (2024), it has impacted the efficiency and growth trajectory of the banking sector. Tomczak (2025) claims that the pandemic was one of the reasons for higher volatility and risk in the banking sector. Shivani and Agrawal (2022) stated that the overall banking sector was one of those negatively affected by the crisis. In other words, it could be stated that the COVID-19 crisis was a critical stress for all the countries' banking sectors, which is why it is crucial to analyse the resilience evolved over time and to investigate if the resilience scores have reached the pre-pandemic situation. Hence, the research period covers 2019, 2021, and 2024, where 2019 is treated as the pre-pandemic phase, 2021 – pandemic onset and peak, and 2024 – post-pandemic period. The selection of the current research period is aligned with critical phases in Lithuania's trajectory. The year 2019 serves as a baseline, representing the pre-pandemic phase when the banking sector experienced stable performance. In 2021, the onset of the COVID-19 pandemic introduced significant disruptions, providing a key point to evaluate the banking sector's resilience under stress. By 2024, the analysed sector entered a post-pandemic phase characterised by full or partial recovery.

Due to the selected period, there are several limitations of the current research. In fact, not all the banks operating in Lithuania were included in the research. This is due to the fact that during the selected period, new banks entered the market, and, hence, their information is not available for all the years. In other words, the information of all the analysed years should be the same; hence, the following banks were analysed: Revolut Bank UAB, Swedbank AB, AB SEB bankas, AB Šiaulių bankas, UAB Urbo bankas (previously Medicinos bankas), AB “Mano bankas”, and European Merchant Bank UAB. The indicators used in the study are as follows: Total Capital Adequacy Ratio, Large Exposure Ratio, Liquidity Coverage Ratio, Return on Assets, and Return on Equity. Data was retrieved from the Bank of Lithuania (Lietuvos Bankas, 2025).

In order to calculate the resilience score, the MCDM (Multi-Criteria Decision-Making) methodology has been applied. The CRITIC method was used to assign the objective weights to the selected criteria, the TOPIS method was used to calculate the resilience scores themselves, and based on them, to rank the selected banks.

The CRITIC (Criteria Importance Through Intercriteria Correlation) method approach is described in the following steps (Amusan et al., 2024; Mitra, 2022).

Step 1: Construction of the decision matrix $X = [x_{ij}]_{m \times n}$, where $i = 1, \dots, m, j = 1, \dots, n$, representing the performance of different alternatives (banks) with respect to selected criteria:

Step 2: The normalisation of the decision matrix:

$$r_{ij} = \frac{x_{ij} - x_j^{\min}}{x_j^{\max} - x_j^{\min}}, \quad i \in \{1, 2, \dots, m\}, j \in \{1, 2, \dots, n\}, \quad (1)$$

where m represents the number of alternatives (banks), n represents the number of criteria, $x_j^{\max} = \max(x_{ij}, j = 1, 2, 3, \dots, n)$ and $x_j^{\min} = \min(x_{ij}, j = 1, 2, 3, \dots, n)$.

Step 3: Calculation of the standard deviation σ_j of each criterion r_j .

Step 4: Calculation of the correlation of every pair of normalised criteria and construction of the symmetric matrix with elements R_{ij} .

Step 5: Determination of conflict measure between criteria:

$$\sum_{j=1}^n (1 - R_{ij}) \quad (2)$$

Step 6: Determination of information amount C_j released by the j -th criterion:

$$C_j = \sigma_j \sum_{j=1}^n (1 - R_{ij}) \quad (3)$$

Step 7: Determination of the weights w_j of the criteria:

$$w_j = \frac{C_j}{\sum_{j=1}^n C_j} \quad (4)$$

Since the weights to the criteria are assigned, the resilience scores are calculated using TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) methodology, which is described in the following steps (Lachgar et al., 2025; Vrat, 2025):

Step 1: Construction of the decision matrix $A = [a_{ij}]$, where $i = 1, \dots, m, j = 1, \dots, n$ (i represents the alternatives, and j represents the criteria).

Step 2: The normalisation of the decision matrix:

$$n_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^m a_{ij}^2}}, \quad (5)$$

where n_{ij} represents the normalised value.

Step 3: Calculation of the weighted normalised decision matrix:

$$v_{ij} = n_{ij} \cdot w_j, \forall i, j \quad (6)$$

where: v_{ij} represents a normalised weighted value.

Step 4: Determination of the positive ideal and negative ideal solutions:

The positive ideal solution is represented by A^+ : $A^+ = (\max_i v_{ij} \mid j \in J), (\min_i v_{ij} \mid j \in J')$ (7)

The negative ideal solution is represented by A^- : $A^- = (\min_i v_{ij} \mid j \in J), (\max_i v_{ij} \mid j \in J')$ (8)

where J and J' denote the sets of benefit (maximising) and cost (minimising) criteria, respectively.

Step 5: Calculation of the separation measure from the positive ideal solution D_i^+ and a negative ideal solution D_i^- :

$$D_i^+ = \sqrt{\sum_{j=1}^n (v_{ij} - A_j^+)^2}, \forall i \quad (9)$$

$$D_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - A_j^-)^2}, \forall i \quad (10)$$

Step 6: Determination of the relative closeness C_i of alternative i to the ideal solution:

$$C_i = \frac{D_i^-}{D_i^+ + D_i^-}, \forall i \quad (11)$$

The C_i scores are treated as resilience scores, and alternatives (banks) are ranked according to these scores.

Research results

The first step of the research covered the weight calculation of the distinguished criteria. The weights were calculated for all the research years (i.e. for each separately). The results are provided in Table 1.

From Table 1, it can be seen that in the pre- and under-COVID-19 pandemic, the Total Capital Adequacy Ratio had the highest weight. However, in the post-pandemic period, its result has significantly changed. This could be due to the fact that regulatory and market attention has shifted towards other dimensions of bank resilience. The most important criterion in 2024 became Large Exposure Ratio, even though, as was mentioned above, it is not a direct measure of bank resilience. The Large Exposure Ratio is a vital regulatory tool for ensuring stability and, hence, the resilience of commercial banks. In fact, it might help to mitigate systemic risks, which could influence the whole financial system of a country. In other words, it could be stated that including this criterion in the resilience score's calculation was vital in order to come to a broader understanding of resilience.

Liquidity Coverage Ratio was ranked as the second important criterion before and during the pandemic; however, after the pandemic, the results dropped, and the indicator remained in fourth place. However, the weights were very similar during the whole analysed period, so it might be stated that this ratio has a significant impact on the final resilience scores.

Return on Assets has similar weights during the analysed years, which shows that it is a stable indicator of resilience. The weights of Return on Equity are higher during the pandemic and in the post-pandemic period; however, the weight of the mentioned indicator in the pre-pandemic era is much smaller. This might be due to the fact that the attention paid to this indicator in the non-crisis period was not so significant, as the economic conditions were quite stable and profitability was not considered a key factor of resilience.

The Total Capital Adequacy Ratio was one of the most vital resilience indicators in 2019 and 2021, i.e. before the crisis and during the shock. However, its weight significantly decreased in the post-crisis period. This could be explained by the fact that after the crisis, the focus was shifted to other performance indicators.

In other words, it could be stated that the results are almost similar in pre- and during-pandemic conditions and have changed in the post-pandemic world. It might be explained by the fact that the priorities of the commercial banks have changed due to the experienced shock, and banks have had to adapt their strategies to ensure resilience.

Table 1. The weights of the selected commercial banks' liquidity indicators.

Criteria	Weight	Rank
2019		
Total Capital Adequacy Ratio	0.2826	1
Large Exposure Ratio	0.1652	4
Liquidity Coverage Ratio	0.2134	2
Return on Assets	0.1791	3
Return on Equity	0.1596	5
2021		
Total Capital Adequacy Ratio	0.2355	1
Large Exposure Ratio	0.1974	3
Liquidity Coverage Ratio	0.2005	2
Return on Assets	0.1777	5
Return on Equity	0.1888	4
2024		
Total Capital Adequacy Ratio	0.1864	3
Large Exposure Ratio	0.2534	1
Liquidity Coverage Ratio	0.1833	4
Return on Assets	0.1787	5
Return on Equity	0.1982	2

Source: author's calculations.

In order to understand the resilience level of commercial banks operating in Lithuania, the resilience score was calculated and provided in Table 2.

As can be seen from Table 2, the resilience scores in 2021 dropped significantly compared with 2019. This means that the resilience of the analysed banks decreased due to the economic shock brought by COVID-19. For instance, Kryzanowski et al. (2023) found that non-performing loan (NPL) ratios increased during the crisis, which, in turn, might have affected the overall resilience. The pandemic led to changes in credit standards and a reduction in loan demand, particularly in European countries (Karkowska, 2023). This aspect may have led to the changed resilience scores, as decreased borrowing activities could have affected the overall profitability of the bank. Kędzior and Słomiany (2024) stated that the global recession, high inflation rates, and increased unemployment due to the pandemic negatively affected the financial situation of bank customers, leading to reduced loan demand and increased financial risks, which, in turn, may lead to decreased resilience of commercial banks.

Looking at the results of 2024 (Table 2), it can be concluded that only two banks, i.e. AB SEB bankas and Swedbank AB, have reached the pre-pandemic resilience level (the resilience score is even slightly higher). This means that only two of the seven analysed banks have recovered after the pandemic. The two mentioned banks are the biggest banks among the ones analysed. So, their faster recovery is quite predictable, as, according to Augeraud-Véron et al. (2025), larger banks with better capital buffers experienced a faster recovery from pandemic-induced shocks, particularly post-vaccination. Mikłaszewska and Wachtel (2023) supported this fact, claiming that extensive public interventions and fiscal policies helped mitigate the negative impacts of the pandemic on the financial sector, aiding in the recovery of larger banks.

Smaller banks might have faced significant challenges in recovering from the pandemic, and their resilience remains limited (especially as it could be seen in the example of European Merchant Bank, UAB). In fact, smaller banks struggled with attracting and retaining deposits compared to their larger counterparts (Sharma, 2024). This could have influenced their resilience by reducing their ability to absorb economic shocks. Moreover, small banks often have challenges such as limited financial resources (Nimas Melenia Mutiara Akbary et al., 2025), which, as was mentioned before, could be a cause for unsuccessful absorbing financial shocks, which, in turn, might negatively influence their resilience.

In order to see a big picture of the analysed periods, the resilience scores are depicted and provided in Figure 1.

The result provided in Figure 1 proves once more that only big banks, such as Swedbank AB and AB SEB bankas, have reached a pre-pandemic level regarding resilience scores. Still, the banks did not show the overall stability, unlike Revolut Bank, UAB, which could be considered the soundest one. This could be explained by the

Table 2. Resilience scores of the analysed commercial banks (Source: author's calculations)

Commercial bank	Resilience score	Rank
2019		
AB "Mano bankas"	0.5502	6
AB SEB bankas	0.5709	4
AB Šiaulių bankas	0.5754	3
European Merchant Bank, UAB	0.4396	7
Revolut Bank, UAB	0.5697	5
Swedbank AB	0.5979	2
UAB Medicinos bankas	0.6138	1
2021		
AB "Mano bankas"	0.4663	4
AB SEB bankas	0.4605	5
AB Šiaulių bankas	0.4993	2
European Merchant Bank, UAB	0.1270	7
Revolut Bank, UAB	0.5249	1
Swedbank AB	0.4120	6
UAB Medicinos bankas	0.4727	3
2024		
AB "Mano bankas"	0.3466	6
AB SEB bankas	0.5717	3
AB Šiaulių bankas	0.5126	4
European Merchant Bank, UAB	0.0806	7
Revolut Bank, UAB	0.5791	2
Swedbank AB	0.6243	1
UAB Medicinos bankas	0.3659	5

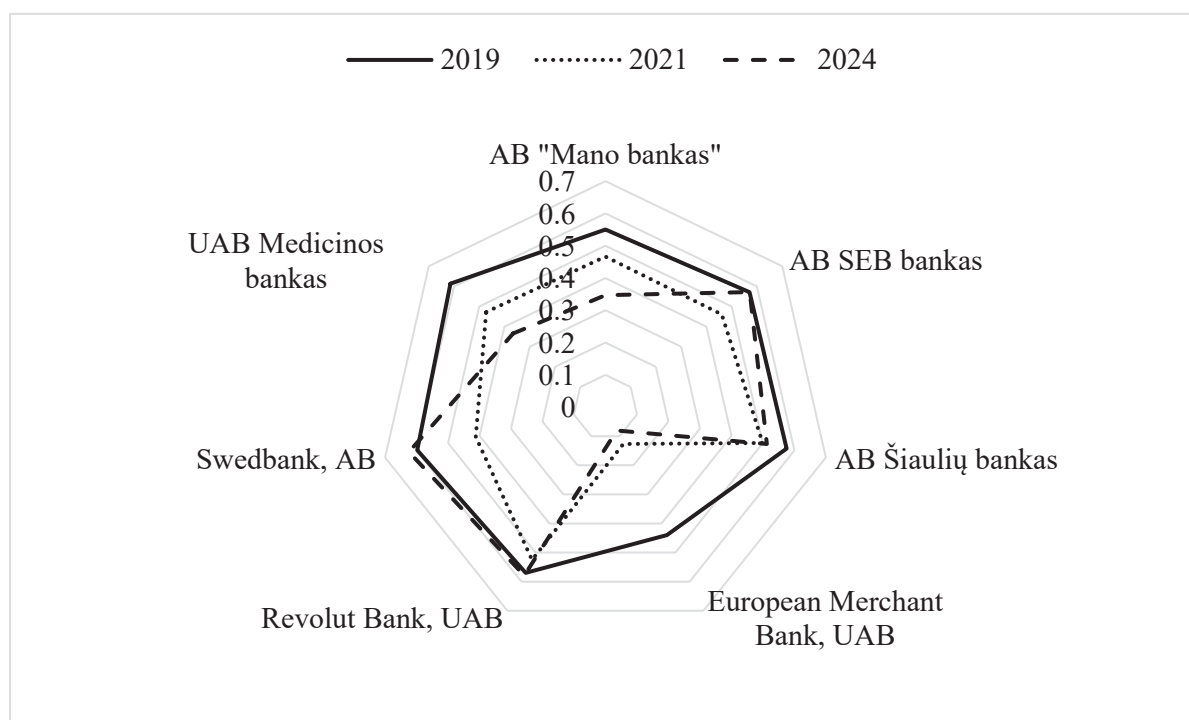


Figure 1. Resilience scores of the analysed commercial banks by years. (Source: created by author.)

fact that Revolut Bank, UAB, is treated as a digital bank. Given Revolut Bank, UAB's digital-first approach, it likely benefited from the accelerated shift towards digital banking. The pandemic gave a background to the strategies that suggest adapting to the new digital landscape, and Revolut Bank, UAB, had already mastered these trends.

To sum up, it could be stated that large banks have recovered after the pandemic, unlike small banks. Moreover, banks, which perform their daily activities in digital mode, suffered the least from the crisis.

Conclusions

For assessing the level of resilience of commercial banks operating in Lithuania in pre-, during, and after pandemic settings, five indicators were selected. They are as follows: Total Capital Adequacy Ratio, Large Exposure Ratio, Liquidity Coverage Ratio, Return on Assets, and Return on Equity. The selection of the mentioned indicators is backed up by scientific literature and statistics provided by Lietuvos Bankas (2025). The banks analysed in the research were Revolut Bank UAB, Swedbank AB, AB SEB bankas, AB Šiaulių bankas, UAB Urbo bankas (previously Medicinos bankas), AB "Mano bankas", and European Merchant Bank UAB. The selection of banks is supported by the provided information as well. However, at present, there are more banks, but only the mentioned ones were operating during the analysed period.

For obtaining the resilience scores, the CRITIC-TOPSIS approach was used. The CRITIC methodology was employed in order to assign the weights to the selected criteria, while TOPSIS was used for the calculation of the resilience scores. The results showed that larger banks' resilience scores have reached pre-pandemic levels and were even slightly higher. This indicates a robust recovery and proves that larger banks are more eager to adapt to and absorb economic shocks. Moreover, digital banks, like Revolut Bank, UAB, showed the ability to more easily accept new conditions suggested by the crisis, like the COVID-19 pandemic, and to stay stable. This ability underscores the strategic advantage of the digital infrastructure for remaining resilient during the economic disruption period. However, smaller banks have not reached pre-pandemic resilience scores, which means that talk of recovery is premature. This highlights the need for targeted support and ongoing monitoring of the resilience indicators. For instance, for smaller banks, a "lighter touch" regulatory approach could be implemented. This could include encouraging investment in digital infrastructure by, for example, offering subsidies or grants that might help smaller banks to adopt innovative technologies, which are essential for enhancing resilience, improving risk management, and ensuring efficient service delivery during economic disruptions.

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