# Covid-19 impact on the profitability of the EU27 banking sector

Péter Juhász – Tahir Mammadov

*Due to COVID-19, economic activity decreased considerably all across Europe. Our paper reviews the various pandemic effects and changes in the European banking sector. Using a dataset merged from four different secondary databases, we created a panel of country-quarters with 513 items covering the period 2016 Q1 – 2020 Q3 including the effects of the first wave of the pandemic. Correlation analysis revealed that during the pandemic, the connectedness of the banking system to the macroeconomy increased, and that the open economies had a more stable banking system. Performance fluctuations on the national banking system level increased, and banking performance became more closely linked to quarterly GPD growth. Covid-19 had a significant adverse effect on the banking sector's profitability on top of the standard macroeconomic fallbacks. Data also underpin that the countries where citizens had stronger trust in their government (political system, legal system, police) suffered less due to the Covid-19 crisis than other EU27 members. High-trust EU27 countries lost less in GDP, import, export, and banking profitability during the first wave of the pandemic. However, this might be partly also a result of some cultural characteristics linked to geography.*

## 1. Introduction

The Covid-19 pandemic outbreak in early 2020 hit national economies heavily all over the world. Initially, it seemed that the banking sector in more developed countries would suffer less due to their preparedness for online transactions and electronic payments, and because most banking jobs can be performed very well from home. Later in the year, however, financial institutions also started to feel the adverse effects. Surprisingly, we find massive variance in banking profitability even among the EU27 countries.

Our paper investigates what factors might have contributed to those differences and whether the Covid-19 pandemic might have any unique effects on banking profitability on top of weakening national economies. We also assumed that direct Covid-19 effects like the number of diagnosed cases and excess mortality could have an immediate significant impact on the banks return on equity (ROE) ratios. As citizens' trust in their government may contribute to the upholding of lockdown rules and thus minimise pandemic effects, we also tested whether countries with higher trust levels had seen less of the drawbacks of the crisis

## 2. Literature review

Due to the very different structure of national economies, their level of dependence on foreign financing and the various government reactions to the pandemic, firms worldwide have seen very diverse changes and tendencies in their performance. In the case of China, small and medium-sized companies and firms operating in the most affected industries like tourism, notably airlines, showed a significant decrease in their financial performance. At the same time, the number of new loans and credits issued to these types of firms decreased considerably (Rababah et al., 2020). Stock market volatility, economic policy uncertainty, a significant decrease in the primary commodity prices, such as crude oil, were noted in particular in the US (Jeris–Nath 2021). In their wavelet approach study, the authors found the return of bank indices heavily driven by Covid-19 cases, and it was more sensitive to US Covid-19 cases than the rise of global Covid-19 cases.

Banks tightened their credit policy and faced increased write-offs. However, the COVID-19 effect varied across institutions. It seems that the extent Covid-19 hit certain banks would be connected to their earlier financial status. Korzeb and Niedziółka (2020) analysed the 13 largest Polish banks and concluded that end of 2019 return of equity (ROE), non-performing loans, and 2017–2019 write-offs were strongly connected to the cost of risk (CoR) in the first quarter of 2020. Based on their analysis, large and medium-sized banks with sound economic and financial vitals and low funding costs followed a conservative credit and provisions policy. So, write-offs concerning specific exposures are not likely to emerge. On the other hand, though, small banks with poor profitability, low levels of regulatory capital, and a high cost of funding were more severely hit by the pandemic.

In similar research conducted by Hardiyanti and Aziz (2021), a significant positive impact of the Covid-19 pandemic on the number of non-performing loans has been noticed for conventional banks in Indonesia. The level of non-performing loans in the national banking industry increased from 2.53% in December 2019 to 2.7% in February 2020. Many small and medium-sized banks ended up in bankruptcy due to bad credit in Indonesia.

Ari et al. (2020) defines dealing with NPLs and designing effective NPL resolution policies for the post-Covid-19 period as crucial for achieving economic recovery in the EU. In comparison with the great financial crisis, the authors found that European banks entered the Covid-19 crisis with higher capital ratios but less profitability and higher public debt, making NPL resolution more challenging.

The European Banking Authority evaluated the situation of banks during the pandemic as being better than during the global financial crisis in 2008-2009 (EBA 2020). According to their results, the liquidity coverage ratio and the common equity tier 1 ratio were well above the regulatory requirements. However, profitability and operating expenses were noted as the main concerns of the banks. The increasing trend in the number of non-performing loans was also projected to continue for the near future. The paper also identified a considerable level of deterioration in the funding conditions of banks. They underlined that about 20 per cent of securities issued by banks would mature in the next six months, and an additional 10 per cent would mature just within one year (EBA 2020).

In response to the Covid-19 pandemic, different types of containment and mitigating measures have been introduced by many governments around the globe. However, central banks have the highest exposure to the risk and need to take prompt actions during the crisis period. Although during the Great Financial Crisis, the ECB showed extremely cautious gradualism, in response to the Covid-19 crisis, the ECB demonstrated immediate intervention to decrease uncertainty and provide stability (Morelli–Seghezza 2021).

In their research, Guth et al. (2020) find the effectiveness of these measures in the Austrian economy during the first wave of the pandemic. The authors suggested that while the mitigating measures only partly offset the economic shock caused by Covid-19, they played an essential role in lowering insolvency rates both on an aggregate and in the hardest-hit sectors. Furthermore, an indirect impact of the mitigating measures has explicitly been noticed in the banking sector capitalisation in Austria. The research findings revealed that the Austrian banking system remained well-capitalised despite the expected increase in insolvencies.

The positive results of central bank action to stabilise financial conditions, providing access to credit and liquidity, were also underlined by Mosser (2020). However, this research also suggested that central bank policy can only impact the situation indirectly, and there is still a considerable risk to the economy and financial system. The prompt response from central banks can only address the crisis challenges for the short term. For deleveraging the economy and increasing economic activity, the inclusion and confidence of other fiscal authorities are essential for long-run economic stability.

In their study, Rizwan et al. (2020) find an initial sharp increase in systemic risk in most Covid-19 affected countries. However, by the end of April 2020, the situation changed positively, which could be the result of policy responses. Wullweber (2020) believes the COVID-19 crisis has proved that financial markets in their current form cannot serve as a firewall against economic downturns. Due to the crisis remedies, the demand and supply of credit become once again determined by central banks that are not very successful in stabilising the financial markets. He underlines the rush for safety when the crisis started, which was later followed by a run for liquidity. This process caused a downward price and liquidity spiral, resulting in widespread insolvency.

The importance of robust risk management practices and well-established risk management cultures within financial institutions was analysed once again during the Covid-19 pandemic. Falzon-Vella (2020) proved the positive relationship between a higher level of risk management and better bank performance through return on assets (ROA) and annual returns during the prolonged crisis period of 2008–2011. However, the study results also underlined that, unlike in a single-wave crisis period, more robust risk management practices do not benefit from superior bank performance and market rewards during a multiple-wave crisis period (Falzon-Vella 2020).

Schildbach (2020) underlines that European banks suffered more due to the first wave of COVID-19 than their US counterparts. The 20 major EU banks saw their revenues drop by 5% (US: 2%) in a year on year comparison during the first half of 2020. It was loan loss provisions that more than tripled that had the most significant effect on profitability.

Deloitte (2020) carried out research in August 2020 in the CEE banking sector. They asked 69 banks' chief risk officers and heads of work departments across twelve countries to find that new loan disbursement was expected to fall and credit standards to tighten over the year. Managers also predicted that costs associated with restructuring and workouts would rise.

After the end of the third quarter, KPMG (2020) found that expected credit losses (ECL) caused the profitability of the EU banks to fall. In their sample, the average change of ECL compared to the comparative quarter in 2019 were 600% in Q1, 400% in Q2, and 40% in Q3. In addition, payment holidays and other COVID-19 borrower relief programmes also produced fallouts in incomes.

When judging the European banks' total 2020 performance, the IMF (Aiyar et al., 2021) found that financial institutions remain broadly resilient to the shock despite the significant fall in capital ratios. They highlight that good policies are needed to substantially weaken the link between the macroeconomic shock and the banks' capital. They also propose that the regulators address structurally low bank profitability. As impairments and provisions materially lower the return on assets, banks have a limited ability to restore capital buffers. As the recent investment in digital technologies is likely to increase expenses over the short term, banks have to improve their cost structure radically and look for non-interest incomes. Further domestic and cross-border consolidation of the sector could improve efficiency and aid in a better allocation of holding capital and liquidity.

Regardless of good or bad times in financial markets, the investor profile defines investment strategies. Ilie (2020) finds the financial market volatility to be very high during the Covid-19 pandemic. The study projected that due to the market's high volatility, the investors with less risk appetite would follow less risky stocks, even if the earning opportunities are very high. In the study of 13 Canadian financial institutions, Tullo (2020) defines the Covid-19 as the most significant non-financial risk (NFR) crisis of our times. The paper suggests that integrating NFR management into their business strategies and enterprise resource management system will be the best practice for Canadian financial institutions.

The Covid-19 pandemic created uncertainties in the economy, politics, and financial markets, and challenged the traditional way of making financial transactions. One of the most Covid-19 affected aspects of the banking industry was the nature of financial transactions. Despite the disruption in economic activities, Weimert and Saiag (2020) find a sharp increase in the volume of online transactions. Their findings also revealed a 50 per cent decrease in the overall spending in Western European countries. In addition, Google and Apple have reported significant increases in the overall number of payments and users of their X-pay digital solution (Weimert and Saiag 2020). However, the pandemic also invited several new competitors to the market. As a result, the quality and availability of such services increased significantly compared to the pre-pandemic period.

To sum up, it seems to be clear that, due to the Covid-19 pandemic, banks faced not only classic problems linked to the general economic downturn that decreased asset quality but also saw several new direct banking effects emerging, raising their costs and risks. In that respect, the current pandemic-caused crisis is more complex for the financial system than the earlier economic downturns were.

## 3. Data and methodology

Our study focuses on the national banking performance of the EU27 countries during the period 2016 Q1-2020 Q3. To set up our database, we collected secondary data from several data providers. The national level banking system quarterly ROE (Return on Equity) data for the EU27 countries originates from the European Central Bank (ECB, 2021) official website. (Figure 1) We used the Organisation for Economic Co-operation and Development database (OECD, 2021) to collect data on quarterly changes of import, export, and GDP growth datasets for different countries. Covid-19 cases and excess mortality data during 2020 Q1 – 2020 Q4 have been collected from the Our World in Data (2021) database. We gained data regarding trust in government, the police, and the legal system in 2019 from Eurostat (2021) official databases.

*Figure 1* Quarterly ROE of the banking system in selected countries
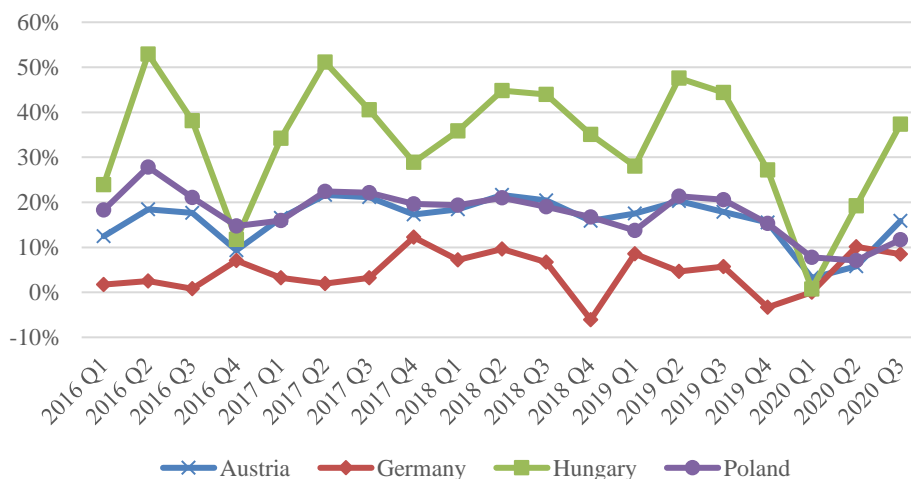


*Source*: ECB (2021)

Using the data collected, we also set up a panel database that contained 513 country-quarters. Next, we included the national banking level quarterly ROE and quarterly growth of GDP, import, and export for each item.

Many factors determine the ROE ratio level of a single bank or the average ROE of the whole banking system of a given country. Those country-specific issues may include inflation, the general risk level of the banking sector, or the real risk-free rate. (Note that only 19 of the EU27 countries are members of the eurozone.) Thus, simply focusing on country groups with low or high ROE during 2020 would mix up pandemic effects and country-specific effects.

Also, when analysing the quarterly ROE ratios, we detected both seasonality and autocorrelation. While first differentiating of the quarterly ROE ratios could solve autocorrelation, seasonality might have stayed. Thus, to eliminate both of these potential distortions, we calculated for each country and quarter the yearly change of the quarterly ROE ratios (ROEt-ROEt-4). (Table 1)
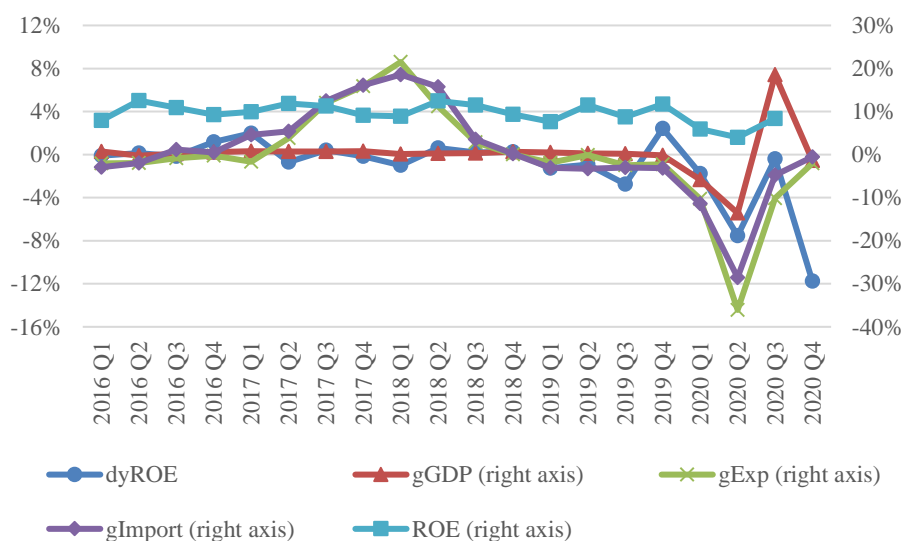
*Table 1* Autocorrelation of quarterly ROE for banks in EU27 countries
(2016 Q1–2020 Q3)

|  | t-1 | t-2 | t-3 | t-4 |
|---|---|---|---|---|
| $ROE_t$ | .434** | .512** | .281** | .577** |
| $dyROE_t=ROE_t-ROE_{t-4}$ | −.182** | −.013 | .052 | |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

*Figure 2* Yearly change in quarterly ROE, and quarterly growth of GDP, import, and export in France



*Source*: Based on ECB (2021) and OECD (2021)

Results show that the autocorrelation was radically reduced, and the connections became, in most cases, insignificant. This change is why we focus on yearly changes in quarterly ROE ratios during the rest of the paper. The paper references this variable as dyROE. (Figure 2).

### 3.1. Covariance analysis

As a first step in identifying crisis effects, we calculated the correlation matrix for our variables. The statistics revealed several significant connections shown in Tables 2–5. However, as earlier research suggests that correlations tend to change during crisis periods, coefficients were calculated not only for the whole period but also separately for the before-pandemic and the pandemic quarters as well.

*Table 2* Correlation with dyROE$_t$ during the whole period examined
(2016 Q1–2020 Q3)

|        | t      | t-1     | t-2      | t-3      | t-4      |
|--------|--------|---------|----------|----------|----------|
| ROE    | .257** | .072    | –.126**  | –.115**  | –.633**  |
| gGDP   | .175** | –.027   | .168**   | .075     | .010     |
| gExport| .179** | .083    | .066     | –.008    | –.071    |
| gImport| .216** | .138**  | .096     | .008     | –.060    |
| dyROE  |        | –.101*  | .013     | .052     |          |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

*Table 3* Correlation with dyROE$_t$ during the non-pandemic periods
(2016 Q1–2019 Q4)

|        | t      | t-1     | t-2      | t-3      | t-4      |
|--------|--------|---------|----------|----------|----------|
| ROE    | .180** | .054    | –.162**  | –.107*   | –.668**  |
| gGDP   | –.027  | –.033   | –.015    | –.041    | .000     |
| gExport| .067   | .021    | –.090    | –.100    | –.143*   |
| gImport| .058   | .044    | –.082    | –.105    | –.145**  |
| dyROE  |        | –.247** | .024     | .476**   |          |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

When contrasting the correlations measured during different periods, we may conclude that a new significant negative correlation with GDP growth, import, and export during the previous quarter emerged. However, the negative sign is counterintuitive as it suggests that countries more hit by cutbacks on their foreign trade saw their banking profitability growing. This could be because more open economies suffered more due to a fall in foreign trade and had a more stable banking system, but there is no causality between the two phenomena.

At the same time, the current quarter growth of GDP became positively correlated. Besides that, the positive connection to the current quarter ROE ratio was boosted. We may interpret this change as the quarterly performance of banks being more dependent on the current quarter changes. In other words, the performance saw a higher fluctuation than earlier. Thus, the pandemic affected economic processes, connecting the banks' performance more directly to the macroeconomy of the given country.

*Table 4* Correlation with dyROE$_t$ during the pandemic periods
(2020 Q1–2020 Q3)

|  | t | t-1 | t-2 | t-3 | t-4 |
|---|---|---|---|---|---|
| ROE | .613** | –.154 | –.196* | –.241* | –.479** |
| gGDP | .364** | –.203* | –.020 | .016 | –.154 |
| gExport | .055 | –.440** | –.047 | –.029 | –.017 |
| gImport | .168 | –.382** | .028 | .027 | –.090 |
| dyROE |  | –.279** | –.171 | .046 |  |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

*Table 5* Correlation with dyROE$_t$

| (Same quarter) | Total sample 2016 Q1–2020 Q3 | Pandemic only 2020 Q1–2020 Q3 |
|---|---|---|
| Covid Cases per million | –.193** | –.164 |
| Accumulated Covid Cases per million | –.193** | –.139 |
| Excess Mortality | –.259** | –.077 |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

As for our variables directly linked to Covid-19 (Table 5), it seems that there is no direct linear connection between the performance changes and how heavily the pandemic hit the given country. However, where those variables are not equal to zero, the whole pandemic period is different to the earlier quarters. This difference results in the connection being significantly over the entire sample level.

### 3.2. Panel regressions

To measure the effects of the variables simultaneously, we estimated panel regressions that also included dummies for all year and quarter effects. Based on the results of the correlation analysis, we expect the dummy of 2020 to be significant even when controlling for the macro factors.

As the last analysis showed a significant connection to dyROEt-1 (the yearly change of ROE a quarter earlier), we included that variable. Because of this, we had to drop 2016 from the analysis due to a lack of data. As a robustness check, we re-estimated the model without including dyROEt-1. We calculated this later model removing the quarter dummies as those did not prove significant. To be able to contrast year dummy coefficients, 2017 was selected as the base year (Table 6).

*Table 6* Panel regression results

|  | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
|  | **Beta** | **Sig.** | **Beta** | **Sig.** | **Beta** | **Sig** |
| Constant (2017) | .029 | .121 | .030* | .041 | .019 | .414 |
| 2016dummy |  |  |  |  | .013 | .589 |
| 2018dummy | −.030 | .064 | −.030 | .062 | −.029 | .178 |
| 2019dummy | −.043* | .037 | −.043* | .034 | −.036 | .189 |
| 2020dummy | −.120** | .000 | −.121** | .000 | −.110** | .000 |
| Q2dummy | .005 | .773 |  |  | .013 | .514 |
| Q3dummy | −.004 | .834 |  |  | −.004 | .824 |
| Q4dummy | .003 | .846 |  |  | .006 | .762 |
| gGDP | .006** | .001 | .006** | .000 | .006** | .009 |
| gExp | −.002 | .211 | −.002 | .215 | −.002 | .393 |
| gImport | .002 | .221 | .002 | .222 | .002 | .344 |
| Q-1dyROE | −.136** | .001 | −.134** | .001 |  |  |
| R Square | .255 |  | .254 |  | .139 |  |

*\*p<0.05 \*\*p<0.01*

*Source*: own results

When comparing the three models, we do not see significant differences across coefficient values and significance levels; thus, the results are robust. In all our models, the dummy of 2020 was significant, causing an 11.0–12.1 percentage fallback in quarterly ROE values. At the same time, higher GDP growth in the current quarter implied significantly higher ROE ratios. In two of our models, 2019 had a significant negative effect on ROE, indicating that 2020 is very likely to be the second poor year in a row for banking in the EU27 countries.

We may conclude that the pandemic harmed the banks' profitability on top of the usual effects of macroeconomic fallbacks. This result hints to Covid-19 having a non-standard way of affecting banking operations. This conclusion is well underpinned by the literature quoting extra expenses linked to home office infrastructure, additional disinfection expenses, and boosting of online banking and electronic payment capabilities.

## 3.3. Clustering on Trust

We collected data from Eurostat on trust in police and the political and legal system across the EU27 countries. We assumed that citizens having a more solid confidence in the officials' imposing certain kinds of precautionary rules (e.g., lockdown, Obligation of wearing masks) would be more disciplined in following the rules as thus Covid-19 may have a lesser effect on the country.

To test our hypothesis, we calculated both correlations among trust variables and effect-measures and created two clusters of the countries based on their general level of trust in those three dimensions. Table 7 summarises the significant correlations identified, while Figure 3 illustrates the spatial distribution of the two clusters.

Our results show a significant and negative connection between trust variables and the excess mortality across three of the four quarters of 2020, justifying our initial assumption. However, it is only during Q2 of 2020 that we measured a positive connection with the yearly difference of the quarterly ROE of the given banking system. Interestingly, during Q2, we could not confirm the relationship between trust variables and excess mortality. So, it seems that during Q2, banks suffered less in countries where citizens had more solid trust in their government.

*Table 7* Correlations with trust variables

| Year 2020 | **Trust in the political system** | **Trust in the police** | **Trust in the legal system** |
|---|---|---|---|
| dyROEQ1 | –.043 | .010 | –.072 |
| dyROEQ2 | .646** | .450* | .476* |
| dyROEQ3 | .091 | .284 | .295 |
| Trust Political | | .696** | .886** |
| Trust Police | .696** | | .868** |
| Trust Legal | .886** | .868** | |
| Excess Mortality Q1 | –.433* | –.478* | –.600** |
| Excess Mortality Q2 | –.232 | –.136 | –.376 |
| Excess Mortality Q3 | –.393* | –.436* | –.513** |
| Excess Mortality Q4 | –.461* | –.538** | –.581** |

*$p<0.05$ **$p<0.01$

*Source*: own results

We created two clusters based on the standardised values of three trust measures (Figures 3 and 4). While we could not find any significant differences in excess mortality between the two groups, the Q2 ROE, quarterly export and import growth, Q1, Q2, and total yearly GDP growth, and dyROE ratios deviated significantly (Table 8).

*Figure 3* The spatial distribution of the trust clusters



*Source*: own results

*Figure 4* Differences in types of trust between clusters*
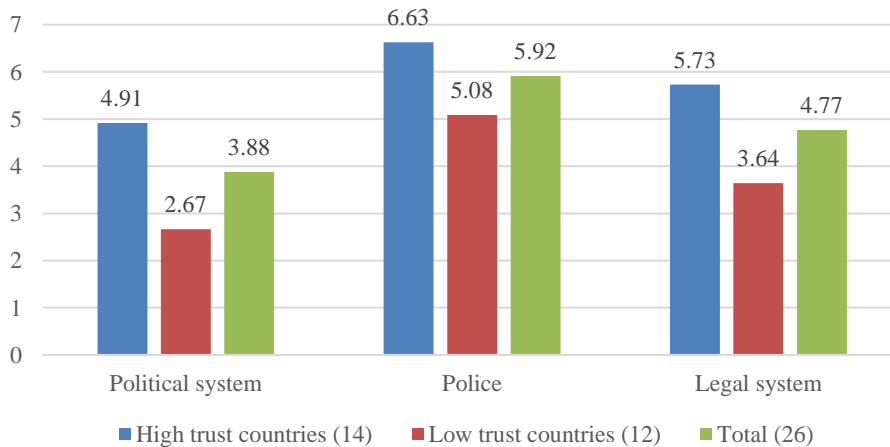


*\*High trust countries:* Austria, Belgium, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Lithuania, Luxembourg, Malta, Netherlands, Romania, Sweden. *Low trust countries:* Bulgaria, Cyprus, Czech Republic, France, Greece, Italy, Latvia, Poland, Portugal, Slovakia, Slovenia, Spain. Croatia not categorised due to lack of data.

*Source*: Based on Eurostat (2021)

*Table 8* Trust clusters profitability values

| Year 2020 | High trust | Low trust | Total |
|---|---|---|---|
| dyROEQ1 | –0.0935 | –0.0909 | –0.0923 |
| dyROEQ2 | –0.1160* | –0.2246* | –0.1661 |
| dyROEQ3 | –0.0350 | –0.0417 | –0.0381 |
| gGDPQ1-2020 | –1.4602* | –3.2045* | –2.2597 |
| gGDPQ2-2020 | –8.2015* | –11.2362* | –9.5924 |
| gGDP2020 | –3.1109** | –6.4035** | –4.6200 |
| gExpQ2-2020 | –18.7696* | –26.8145* | –22.3898 |
| gImportQ2-2020 | –19.7167** | –28.1084** | –23.4929 |

*\* p<0.05 \*\* p<0.01*

*Source*: own results

Thus, we may conclude that economies with a higher level of trust in their governments suffered less during the first wave of the pandemic, most likely due to upholding regulations more consistently. As a result, these countries lost less in GDP, export, import and banking profitability.

However, when analysing Figure 3, we may also conclude that there might be some spatial effects behind these results. Mediterranean countries suffered considerably due to the fallback of tourism that is typically a critical economic driver in the area. So, a bigger fallback in financial performance may be linked to the higher role of the badly hit tourism sector, and it is just by random that those countries share the characteristic of having lower citizen trust. Nevertheless, this would not offer a reasonable explanation why Poland, Czechia, Slovakia, and Latvia belong to the same group where tourism is less critical.

## 4. Conclusion

This paper analysed how the Covid-19 pandemic affected the banking system performance across the EU27 countries from 2016 Q1 to 2020 Q3. This period covers the first wave of the crisis.

Correlation analysis revealed that during the pandemic, the connectedness of the banking system to the macroeconomy increased but surprisingly, the link to the change in exports and imports was negative. The open economies suffered more due to falls in foreign trade but still had a banking system with more stable profitability. We also found that performance fluctuations on the whole banking system level increased and that banking performance was more closely linked to the quarterly GPD growth.

Our panel regression discovered that Covid-19 had a significant adverse effect on the banking sector's profitability on top of the standard macroeconomic fallbacks. Results confirmed the positive impact of quarterly GDP growth on ROE of the banks for 2017–2020 in the EU27 countries.

Data also hint that the countries where citizens had stronger trust in their government (political system, legal system, police) suffered less due to the Covid-19 crisis than other EU27 members. Not only banking performance was better there than in different countries, but excess mortality was also lower. Our cluster analysis highlighted that high-trust EU27 countries lost less in GDP, import, export, and banking profitability during the first wave of the pandemic. However, this phenomenon might be partly caused by some common cultural traits of the countries with similar geographic locations.

## References

Aiyar, S. – Dao, M. C. – Jobst, A. A. – Mineshima, A. – Mitra, S. – Pradhan, M. (2021): COVID-19: How Will European Banks Fare?, International Monetary Fund, European Department, No. 21/08, https://www.imf.org/-media/Files/Publications/DP/2021/English/CHWEBFEA.ashx. Accessed: 29 June, 2021.

Ari, A. – Chen, S. – Ratnovski, L. (2020): COVID-19 and non-performing loans: lessons from past crises, https://www.ecb.europa.eu/pub/economic-research/resbull/2020/html/ecb.rb200527~3fe177d27d.en.html. Accessed: 21 June, 2021.

Catana, S. – Toma, S. G. – Gradinaru, C. – Nicoleta, Z. L. (2020): How were banks involved in supporting Romanian SMEs during the Covid-19 pandemic? *Annals – Economy Series*, Constantin Brancusi University, Faculty of Economics, 5, 15–19.

Chirita, N. – Nica, I. (2020): Analysis of the Impact Generated by COVID-19 in Banking Institutions and Possible Economic Effects. *Theoretical & Applied Economics*, 27(3): 21–40.

Deloitte (2020): COVID-19 CEE banking sector impact survey – First symptoms of the coronavirus outbreak, September, https://www2.deloitte.com/hu/en/pages/penzugy/articles/a-koronavirus-hatasa-regionk-bankjaira.html, Accessed: 21 March, 2021.

EBA (2020): *The EU banking sector: First insights into the Covid-19 impacts*. Thematic Note EBA/REP/2020/17. https://www.eba.europa.eu/covid-19-placing-unprecedented-challenges-eu-banks. Accessed: 2 May, 2021.

ECB (2021): *European Central Bank: Consolidated Banking Data*. https://sdw.ecb.europa.eu/browse.do?node=9691533 Accessed: 25 March, 2021.

EUROSTAT (2021): *European Statistics*. http://ec.europa.eu/eurostat/ Accessed: 15 April, 2021.

Falzon, J. – Vella, J. (2020): European banks and risk management: Did the 2008 financial crisis have any impact? *Journal of Risk Management in Financial Institutions*, 14, 1, 84–95.

Guth, M. – Lipp, C. – Puhr, C. – Schnierder, M. (2020): Modeling the COVID-19 effects on the Austrian economy and banking system, *Financial Stability Report*, Oesterreichische Nationalbank (Austrian Central Bank), 40, 63–86.

Hardiyanti, S. E. – Aziz, L. K. (2021): The Case of COVID-19 impact on the level of non-performing loans of conventional commercial banks in Indonesia. *Banks and Bank Systems*, 16, 1, 62–68.

Ilie, F. (2020): Considerations regarding financial risk management in order to maximise earnings during the coronavirus pandemic. *Nicolae Balcescu Land Forces Academy*, 6, 5–7.

Jeris, S. S. – Nath, R. D. (2021): US banks in the time of COVID-19: fresh insights from the wavelet approach. *Eurasian Economic Review*. https://doi.org/10.1007/s40822-021-00171-8.

Korzeb, Z. – Niedziółka, P. (2020): Resistance of commercial banks to the crisis caused by the COVID-19 pandemic: the case of Poland. Equilibrium. *Quarterly Journal of Economics and Economic Policy*, 15, 2, 205–234. doi: 10.24136/eq.2020.010.

KPMG (2020): European banks and COVID-19 – Impacts on 2020 Q3 results, KPMG IFRG Limited (UK), 19 November, https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/11/european-banks-blog-nov-printable.pdf. Accessed: 29 June, 2021

Kristof, T. (2021): Bank Failure Prediction in the COVID-19 Environment. *Asian Journal of Economics and Finance*, 3, 1, 157–171.

Mosser, P. C. (2020): Central bank responses to COVID-19. Bus Econ 55: 191–201. https://doi.org/10.1057/s11369-020-00189-x. Accessed: 21 June, 2021.

Nicolaides, P. (2021): The Corona Virus Can Infect Banks Too: The Applicability of the EU Banking and State Aid Regimes. *European State Aid Law Quarterly,* 19(1): 29–38. doi:10.21552/estal/2020/1/7.

OECD (2020): *The Covid-19 crisis in the Western Balkans: Economic impact, policy responses, and short-term sustainable solutions*. https://www.oecd.org/south-east-europe/COVID-19-Crisis-Response-Western-Balkans.pdf. Accessed: 20 April, 2021.

OECD (2021): *Organisation for Economic Co-operation and Development*. https://www.oecd.org/ Accessed: 10 April, 2021.

Our World in Data (2021): *Excess mortality during the Coronavirus pandemic (COVID-19)*, https://ourworldindata.org/excess-mortality-covid, Accessed: 12 April, 2021.

Rababah A. – Al-Haddad, L. – Sial, M. S. – Chunmei, Z. – Cherian, J. (2020): Analysing the effects of COVID-19 pandemic on the financial performance of Chinese listed companies. *Journal of Public Affairs*, 20:e2440. https://doi.org/10.1002/pa.2440.

Schildbach, J. (2020): European banks suffer more than US peers in the corona crisis, EU Monitor, Global financial markets, Deutsche Bank Research, 27 August, https://www.dbresearch.com/PROD/RPS_DE-PROD/PROD0000000000511376/European_banks_suffer_more_than_US_peers_in_the_co.pdf;REWEBJSESSIONID=048BB6F923824512B1B438C6F4536C67?undefined&realload=ktpPZDAD9RGchK5Zsq~41AU29CUsYryCiY7s4m93~O5srlrVOrVRmzgZMuyLIvxn. Accessed: 21 March, 2021.

Tullo, L. (2020): COVID-19 triggers great non-financial risk crisis: Non-financial riskmanagement best practices in Canada. *The Journal of Risk Management in Financial Institutions*, 14, 1, 40–58.

Wackerbeck, P. (2020): COVID-19 crisis and the European banking sector. https://www.strategyand.pwc.com/de/de/implications-of-covid-19/five-priorities-for-european-banks/covid-19-crisis-and-the-european-banking-industry.pdf. Accessed: 24 April, 2021.

Weimert, M. – Saiag, A. (2020): *Covid-19 and European retail payments: Actions and considerations for merchants, merchant service providers, and banks*. https://www.oliverwyman.com/our-expertise/insights/2020/jun/covid-19-and- european-retail-payments.html. Accessed: 25 April, 2021.

Wullweber, J. (2020): The COVID-19 Financial Crisis, Global Financial Instabilitiesand Transformations in the Financial System, http://dx.doi.org/10.2139/ssrn.3688453 Accessed: 17 May, 2021.