

SPEECH

Digitalisation and depositors' behaviour: preliminary reflections from empirical data

Speech by Pedro Machado, Member of the Supervisory Board of the ECB, at the conference organised by the Spanish Banking Association (AEB) and the Spanish Savings and Retail Banking Association (CECA)

Frankfurt am Main, 7 October 2025

It is a pleasure to speak to you at this event today.^[1] And it is a particular honour to do so at the Instituto Cervantes, which bears the name of Spain's greatest writer. In *Don Quixote de la Mancha*, Cervantes reminds us that “La diligencia es madre de la buena ventura” – diligence is the mother of good fortune. In banking, too, diligence has a crucial role to play – as the mother of stability. In an age where deposits can flee at the tap of a finger, vigilance and preparedness are the surest safeguard of fortune and trust. With this in mind, I would like to share a series of reflections on a subject that stands at the borderline between financial stability, digital innovation and depositors' behaviour: the impact of digitalisation and social media on bank deposits.

The March 2023 banking turmoil, and above all the sudden failure of Silicon Valley Bank, was a reminder that, in a digital age, bank runs no longer take the form of a queue outside the branch of a high street bank. Rather, they can unfold silently, in the time it takes for a finger to tap on a smartphone. Social media can fuel panic, while online and mobile banking make a bank run easier than ever.

The recent ECB working paper “Mind the App: do European deposits react to digitalisation?”^[2] provides a valuable European perspective. Allow me to highlight its main findings, link them to the emerging international literature and draw some reflections for banks, supervisors and regulators.

Digitalisation and depositor behaviour

The authors introduce the concept of deposits at risk (DaR), borrowing from the value-at-risk and growth-at-risk frameworks.^[3] By focusing on the lower tail of the distribution, they measure not average deposit flows but rather extreme outflows – the type that can threaten bank stability.

Using supervisory data from 110 banks directly supervised by the ECB between 2016 and 2024, the authors' empirical analysis tells a nuanced tale. During normal times, neither online banking nor the availability of mobile apps has a systematic effect on deposit volatility. In stress periods, however, greater use of online banking amplifies extreme outflows. The effect is modest – outflows are about 0.28

percentage points higher for every 1-percentage point increase in online banking penetration – but economically meaningful. The 20-percentage point rise in the use of online banking across the EU in recent years translates into a nearly 6-percentage point amplification of extreme outflows. Interestingly, the mere availability of a mobile banking app does not add further amplification once online banking use is controlled for.

The role of social media

One obvious question is whether digitalisation interacts with social media. The 2023 turmoil suggests that it does. Cookson et al. (2023)^[4] document how social media accelerated the run on Silicon Valley Bank, while Choi et al. (2023)^[5] highlight contagion effects across regional banks.

Yet, in the ECB study, using Bloomberg indicators of tweet volumes and sentiment, the authors find no systematic causal effect of social media on deposit flows at European banks. The effects appear to be confined to idiosyncratic cases such as Credit Suisse in March 2023. One explanation is that the authors' dataset, with a monthly frequency, cannot fully capture ultra-short-run dynamics – outflows that happen in a matter of hours or days.

Still, the broader message aligns with the Financial Stability Board's findings (2024)^[6]: digitalisation makes bank runs faster, but their scale remains comparable to historical episodes.

Digitalisation and interest rate sensitivity

Another contribution of the paper is to show that digitalisation affects not only the crisis dynamics, but also the interest rate sensitivity of deposits. This is crucial because monetary policy transmission depends heavily on how households and firms respond to interest rate changes through their deposit and credit decisions.

Earlier studies had already pointed in this direction. Koont, Santos and Zingales (2024)^[7] introduced the notion of digital “bank walks” – not dramatic runs, but steady, digitally enabled shifts of deposits towards higher-yielding alternatives. Erel, Liebersohn and Yannelis (2023)^[8] noted that online banks in the United States transmit monetary policy more strongly to their deposit rates, attracting inflows when rates rise, while traditional banks suffer outflows. Drechsler et al. (2023)^[9] also showed that reliance on uninsured deposits makes banks more fragile in this environment.

The ECB study adds a European dimension. It shows that digitalisation increases price elasticity, since depositors at digital banks are quicker to respond to rate differentials. For each 100-basis point increase in market interest rates, digital banks experience an additional 0.02% reduction in deposit growth compared with their less digitalised peers. This may sound small but, when applied to deposit bases in the hundreds of billions, it represents material flows.

For its part, the Financial Stability Board concluded that technological advancements have made deposit transfers easier and faster in recent years, while finding some evidence that social media has had an influence on some of the recent bank runs.^[10] This sensitivity – to both price incentives and confidence shocks – marks a structural shift in the deposit franchise of banks.

The implication is that digitalisation changes the very nature of the traditional deposit contract. As Diamond and Dybvig (1983)^[11] theorised, banks rely on the stability of deposits to perform maturity transformation. If digitalisation erodes that stability, the effectiveness of both monetary policy and prudential regulation may need to be reconsidered.

This also opens up a debate on competition versus stability. On the one hand, a faster transmission of rates through digital banks enhances monetary policy effectiveness. On the other hand, it weakens the traditional cushion of “sticky” deposits, increasing liquidity risks for banks. Supervisors must therefore balance these dynamics carefully.

Policy implications

Let me now share some thoughts on the policy implications following on from digitalisation and depositors' behaviour.

First, Basel III's liquidity coverage ratio assigns run-off rates to different categories of deposits, based on their presumed stability. Yet, these assumptions were calibrated in an era when withdrawals required a visit to the bank. If outflows can occur at extreme speed, those run-off rates may underestimate risks. Supervisors may need to revisit assumptions for uninsured, digitally active deposits. The ECB working paper estimates that a 20-percentage point increase in online banking penetration amplifies extreme outflows by nearly 6 percentage points, a figure that could justify a review of how stress scenarios are calibrated.

Second, supervision must integrate depositors' digital behaviour in its assessments. Quantile regressions in the paper show that uninsured retail deposits at digital banks are the most flight-prone. Supervisors should therefore not only review banks' liquidity buffers but also examine how they segment and monitor their depositor base, whether they stress test for ultra-rapid outflows, and how they communicate with customers through digital channels when under stress.

The Sparkassen case study in the working paper is revealing: regional variations in online banking penetration directly shape deposit flows, even among banks that rely on the same app. This suggests that some banks need to monitor local customer habits.

Third, we need broader reflection on financial stability. As Beck (2024)^[12] argues, the 2023 turmoil reignited the debate on deposit stickiness. Drechsler et al. (2023)^[13] show uninsured deposits are inherently fragile; digitalisation further reduces their stickiness. This reinforces the case for robust deposit insurance schemes, effective resolution frameworks and credible lender-of-last-resort facilities. Without them, the interplay of uninsured deposits and digital channels could destabilise confidence very quickly.

Fourth, data and monitoring need to catch up. The ECB study relies on monthly supervisory data. But as March 2023 showed, runs can materialise in a matter of hours. Policymakers should consider higher-frequency reporting of retail flows during stress periods – perhaps even real-time monitoring of liquidity conditions for systemic institutions. Without such data, supervisors may always be one step behind digital runs.

Finally, and this does not directly follow from the ECB working paper, I would argue that social media monitoring may end up becoming part of a bank's risk management.

Even if the evidence in Europe is limited so far, idiosyncratic cases such as Silicon Valley Bank exemplify the danger. The speed of sentiment cascades on platforms like X or Instagram requires banks to build monitoring capacity and supervisors to consider how reputational risk can quickly morph into liquidity risk.

As Chen et al. (2014)^[14] remind us, the “wisdom of crowds” online can move markets in unexpected ways.

Looking ahead

The working paper rightly cautions that measurement challenges remain. App availability is a crude proxy; more granular data on depositors' digital habits are needed. Besides, monthly supervisory data may not fully capture the extreme speed runs of the future. Regulators should therefore address the case for higher-frequency data collection, or perhaps even real-time monitoring of retail flows during stress.

At the same time, let's not be alarmist. The study confirms that, in Europe, there has been no major structural break in depositors' behaviour despite the surge in digital banking. Runs may be faster, but they are not necessarily more likely. Social media can fuel crises but mostly in specific, idiosyncratic cases.

That said, while the ECB paper identifies the strongest statistical effects for uninsured retail deposits, it is worth remembering that large wholesale deposits, particularly from wealth management clients, are inherently more prone to rapid withdrawals. The Credit Suisse episode in 2023 illustrated how quickly such clients can act on franchise concerns, often prompted by market indicators such as CDS spreads. Even though CDS markets are relatively illiquid and potentially subject to manipulation, they can still accelerate outflows when confidence is already fragile.

Furthermore, while the ECB paper underscores how digital channels can amplify depositor responsiveness, recent changes to instant payments - enabling large transfers to be completed within seconds – introduce yet another dimension of speed and scale to potential outflows. Coupled with broader shifts toward faster settlement cycles, these new developments compress response timeframes further and could reshape how banks approach liquidity risk management. Nonetheless, the broader implications of these changes are yet to unfold.

Ultimately, what digitalisation does is make the banking system more elastic – both positively, in terms of deposit inflows when rates rise, and negatively, in terms of outflows when confidence falters. Elasticity is not fragility per se, but it requires vigilance.

Conclusion

To conclude, allow me to paraphrase Walter Bagehot: in times of crisis, “money does not manage itself.” In today’s digital era, neither do deposits. They move quickly, sometimes irrationally, and banks and supervisors must adapt accordingly.

The ECB study shows that online banking increases the speed of deposit flows, but the effect is nuanced and measurable. It underlines the importance of uninsured deposits, the central role of depositors’ behaviour, and the need to integrate digitalisation into our supervisory and regulatory frameworks.

If the 20th century was about managing queues outside a high street bank, the 21st will be about managing flows in the cloud. Our challenge is to harness the benefits of digitalisation without allowing it to destabilise trust. After all, that’s the most precious asset in banking.

Thank you.

1.

I would like to thank Livio Stracca, Beatrice Scheubel, Michael Wedow and Anke Veuskens for their helpful comments to this speech.

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