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From Literacy to Liquidity: Assessing the Impact of Enhanced Liquidity Transparency on Depositors Behaviour

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ABSTRACT

This research paper explores the impact of enhanced liquidity transparency on depositor behaviour, blending it with an analysis on financial literacy, trust in banking, and liquidity expectations. Through a comprehensive survey of 117 respondents, the study examines how transparency influences depositor decisions, particularly under varying liquidity conditions. The results indicate that financial literacy significantly affects depositor behaviour, with higher literacy levels correlating with increased trust, preference for transparency, greater awareness of deposit insurance, and more realistic (lower) liquidity expectations. Additionally, the study finds that respondents are generally more inclined to increase deposits following positive liquidity signals (as compared to decreasing deposits following a negative liquidity signal), while there is a notable propensity to withdraw deposits when liquidity is lower than expected during economic uncertainty (as compared to no liquidity disclosure). These findings suggest that greater liquidity transparency can enhance depositor confidence and promote rational decision-making but emphasising the need for banks to adopt robust liquidity levels. Furthermore, the importance of managing depositor expectations on liquidity levels and improving financial literacy (specifically regarding deposit guarantee schemes) is highlighted in order to mitigate the risks of irrational withdrawal behaviours. This research contributes to the ongoing discussion on financial stability by providing empirical evidence on the benefits of transparency and the role of financial literacy in shaping depositor actions.

Keywords: Financial literacy, Liquidity, Transparency, Depositor Behaviour, Bank runs

JEL Classification: G21, G28, D14

1 Introduction

Historically, banks have served as intermediary between depositors and borrowers, where depositors effectively "lend" their money to banks, and banks lend it to borrowers more efficiently. Through this intermediary function, banks can perform the process called maturity transformation– they are able to convert deposits (short-term liabilities) that remain in the bank for an indefinite period to fund long-term assets such as loans (Paul, 2023). However, because of this, the inherent risks associated with maturity transformation have fuelled scepticism and diminished trust among the public. This process exposes banks to potential liquidity risks, as the funds tied up in long-term loans are not readily available to meet the immediate withdrawal demands of depositors. The mismatch between total deposits and the amount available to withdraw can lead to situations where banks are rendered illiquid, unable to meet withdrawals (Goodhart & Perotti, 2015)– this phenomenon is known as a bank run (Kaufman, 1988).

Bank runs have been documented as early as the 14th century (Nay, 2023), even when banks used to play a one-dimensional role in the economy of safeguarding deposits and extend loans to credible borrowers (Kaufman, 1992). Over time, banks began to implement various mechanisms designed to increase the amount that could be leant (Bordo, 2014), a notable example being the Goldsmith Banking model of the 17th century[1]. These practices, while lucrative, escalated financial risk and were heavily reliant on depositor trust. As banks expanded their use of the fractional reserve system, the clarity of their financial position waned (Campbell, 2008), since depositors were left uncertain on the actual availability of funds. The growing opaqueness, coupled with fluctuating levels of trust (Savchenko & Kovacs, 2017), renders the banking system more vulnerable to runs, as depositors lacked sufficient transparency on banks liquidity.

The extent to which financial institutions should be transparent has been heavily debated, typically settling on a moderate degree of openness. Yet, the growing role of banks in the global economy and their increasing interconnections with monetary policy has raised doubts on the need for greater transparency. Beyond simply disclosing information, transparency involves communication through a manner that can be understood and interpreted accurately. As highlighted by Morris and Shin (2004), transparency, if implemented poorly, can have counterproductive effects. It is essential that when public policy demands for increased transparency, it should be clarified how new information will enhance situational understanding. Merely providing more data without context can be ineffectual. However, as

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[1] The transition from safekeeping to banking occurred when goldsmiths realised that the gold and silver deposited in their vaults remained untouched for long periods. They began to lend out a portion of these deposits to individuals and governments in need of funds, charging interest on these loans. The receipts they had issued to depositors for the original gold and silver began to circulate as a form of paper money, backed by the promise that they could be redeemed for real gold and silver at the goldsmith's shop.

Diamond and Dybvig (1983) suggest, well-executed disclosure that helps alleviate coordination problems can significantly benefit the financial ecosystem.

Recognising the importance of financial stability and the soundness of banking, this paper explores the impact of greater liquidity transparency on depositor behaviour, seeking to bridge the gap in the understanding of how transparent reporting can influence depositor confidence and potentially reduce the risks of irrational decision-making.

Therefore, this paper addresses the following research question:

"How does enhanced liquidity transparency influence depositor behaviour, particularly in terms of deposit patterns and confidence in banking institutions, across different economic scenarios?"

This study poses a situation where banks decide to disclose liquidity information to depositors. By revealing this information, depositors can monitor, scrutinise, and hold accountable liquidity levels held by banks, attempting to mitigate the existing information asymmetry between depositors and banks. Furthermore, it can serve as a mechanism to attract depositors, leading to a situation where both depositors and banks benefit from a liquidity information disclosure.

The paper not only addresses the primary research question, but also delves into sub-questions concerning how financial literacy, trust, knowledge of deposit insurance, and liquidity expectations might affect depositor reactions to enhanced liquidity transparency.

To answer this research question, both qualitative and quantitative approaches are employed. The research involves a targeted survey to capture a range of depositor behaviours and responses to increased transparency. Specifically, the survey records respondents' demographics, financial literacy levels, general banking behaviours, and reactions to changes in transparency. Quantitative analysis, including regression techniques, is then used to identify trends and draw conclusions about the impact of heightened financial transparency.

This research is particularly relevant in light of recent failures of major banks such as Credit Suisse, Silicon Valley Bank, and First Republic bank[2], which have raised concerns about whether enough measures have been taken to promote the stability of financial institutions. These events, alongside those

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[2] Over the span of 11 days – from 8 to 19 March 2023 – four banks with total assets of about $900 billion were shut down, put into receivership, or rescued. First Republic Bank is the second-largest bank failure in U.S. history, with $232 billion in assets as of March 2023, followed by Silicon Valley Bank as the third-largest bank failure, with $209 billion in assets at the end of 2022. Both First Republic Bank and SVB were among the most well-known lenders for tech companies and start-ups and two of the top 20 largest banks in the US. Both represent the biggest bank failures since 2008 (Aldrich, 2024).

that took place in the financial crisis[3], highlight the ongoing vulnerability of bank runs under conditions of uncertainty and opaque practices. Frameworks such as the Basel Accords[4], and various national Depositor Insurance Systems (DIS) have been established to provide safety nets that aim to safeguard the banking sector against the kind of widespread instability experienced during late 19th century[5] and the Great Depression. Although these guidelines have significantly improved the robustness of banking operations, this research suggests that existing legislations, including DIS and capital requirements, may still have inherent limitations. Therefore, this paper proposes an additional strategy that could complement these measures, aiming to mitigate their limitations and further enhance the stability of banks.

The structure of this paper follows a framework that provides clarity and coherence. Section 1 introduces the research paper. Section 2 delves into the extensive literature review, providing papers that add crucial outlooks to this research. We then set out the main assumptions and hypothesis in Section 3, to ensure sound conclusions can be obtained by the end of the research. Additionally, the methodology is discussed in Section 4, where the survey design, sample data, and the data analysis are examined. We then discuss the results from the survey in Section 5, followed by the conclusion in Section 6, which mentions the overarching results, limitations of this study, and potential implications.

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[3] 42 banks received state intervention from a sample of 633 banks around Europe 2008-2009 (Abreu et al., 2019). In the US, there has been around 567 bank failures during 2001-2024, with around 500 of them from the Great Recession and its aftermath 2008-2014 (*FDIC: Bank Failures in Brief*, n.d.).

[4] The Basel Accords are a series of international banking regulations developed by the Basel Committee on Banking Supervision (BCBS), which provides recommendations on banking regulations with respect to capital risk, market risk, and operational risk. The aim is to ensure that financial institutions have enough capital on account to meet obligations and absorb unexpected losses. Originally established in 1988 with the Basel I Accord, which focused on the capital adequacy of financial institutions, the framework has undergone several revisions to enhance banking supervisory regulations. Basel II, introduced in the early 2000s, expanded rules on bank capital requirements and introduced regulatory supervision. Basel III, developed in response to the financial crisis of 2007-2008, introduced stricter capital requirements and implemented new regulatory standards on bank liquidity and leverage to improve the banking sector's ability to deal with financial stress, improve risk management, and promote transparency.

[5] Black Friday (London 1866), Panic of 1857, Panic of 1873, Panic of 1893, Panic of 1907

2 Literature Review

Three bodies of literature are germane to this study: Financial literacy literature, Bank run literature, and Transparency in banking. Each topic is integral to the framework of this research and forms the basis for developing the hypotheses.

2.1 Financial Literacy

2.1.1 Theoretical Background

Extensive research has been performed on financial literacy– from how it differs with demographics such age, country, gender, education, and past experiences (i.e. Lusardi & Mitchell, 2011; Lusardi, Mitchell and Curto, 2010; Fox, Bartholomae, and Lee 2005), to how it affects behaviour and financial decisions (i.e. portfolio under-diversification (Guiso & Japelli, 2008), unpreparedness for post-retirement times (Lusardi & Mitchell, 2007), inadequate stock participation (Van Rooij et al., 2011), irresponsible financial management behaviour (Perry & Morris, 2005) poor financial practice behaviour (Robb & Woodyard, 2011), and irresponsible credit card usage of college students (Robb, 2011)).

While a great majority of papers do not include a definition for financial literacy (72% of 71 papers on financial literacy (Huston, 2010b)), other research's use different definitions to describe financial literacy (Lusardi & Tufano, 2009). For this paper, given the different elements financial literacy should cover[6], we find the most suitable definition[7] to be:

"A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing" (OECD INFE, 2011)

2.1.2 Relevance

Financial literacy is particularly relevant for this research, as it can have a determinant role in how individuals perceive and react to information. Hung et al. (2009) provides in-depth research on financial literacy and points out how poor financial decision-making may be a widespread phenomenon (also supported by Shahrabani, 2012; Guiso & Jappelli, 2008; Atkinson & Messy, 2012), as evidenced by the sub-prime mortgage experience. The crisis provided cautionary lessons about the consequences of being financially illiterate– problems can build unnoticed for a long time before reaching a crisis point.

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[6] knowledge of financial concepts, ability to communicate about financial concepts, aptitude in managing personal finances, skill in making appropriate financial decisions and confidence in planning effectively for future financial needs (Remund, 2010)

[7] It is important to note that multiple papers use financial education, knowledge, or behaviour as interchangeable, however, this will not be the case for this paper, as they contribute to financial literacy, but they do not capture all of its components.

The less financially literate are more likely to unknowingly commit financial mistakes[8], less likely to engage in recommended financial practices, and less likely to be able to cope with sudden economic shocks. Therefore, it is of great importance that individuals remain financially literate[9], as it can significantly improve the likelihood of having unspent income (greater capacity to consume), and better equip individuals for macroeconomic shocks (Klapper et al., 2012). Not only can it benefit the overall economy, but it can add great value to the banking industry.

Several studies have examined the impact of financial literacy on various banking aspects, including banking reporting (J. Jin et al., 2021), bank runs (Kim, 2016), bank trust (Van Der Cruijsen et al., 2021) and the usage of banking services (Andreou & Anyfantaki, 2019; Cole et al., 2011). Generally, banks benefit from depositors being financially literate, as they represent more stable sources of funding, have more predictable loan loss provisions, and can enhance customers' ability to indirectly follow and monitor bank performance and risk-taking (J. Jin et al., 2021). Financially literate customers are more likely to read and understand financial news and analyst reports. Therefore, bank managers are less likely to engage in opportunistic earnings manipulation[10]. Additionally, research has shown that financially literate individuals are more likely to save, plan for retirement, and accumulate wealth (Cole et al., 2011; Stango & Zinman, 2009), which indirectly contributes to larger funds to lend or invest for banks. Efforts to improve financial literacy can be crucial in increasing saving rates and lending to the poorest and most vulnerable consumers (Cole et al., 2011). For instance, in Indonesia, a randomly selected set of individuals were offered financial literacy training sessions, which increased the demand for banking services among those with low initial levels of financial literacy and education.

Kim (2016) explores depositor behaviour after enforcement actions, and how it varies with financial literacy. The paper provides compelling evidence that financial literacy can mitigate depositor biases during runs following an enforcement action (in their case from the FDIC). Depositors lacking financial literacy tend to require additional assurances of safety and withdraw funds rather than relying on deposit insurance guarantees. Interestingly, these depositors often transfer their accounts to nearby competing banks, indicating that they do not completely exit the banking system[11]. The study highlights how behavioural biases, especially under conditions of uncertainty or limited information, can lead to

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[8] More likely to have costly mortgages (Moore, 2003)

[9] Even if it is common sense that individuals are generally better off being literate, individuals do not engage in doing so if the marginal time and cost of becoming/remaining financially literate is higher than the marginal benefit (typically least educated individuals (Lusardi and Mitchell, 2014)).

[10] Maechler and McDill (2006) argue that depositors can reduce deposits or demand higher risk premium by monitoring banks for excessive risk-taking or poor performance.

[11] This points towards the importance of having banks that can provide additional assurances of safety for depositor's savings beyond explicit guarantees provided by deposit insurance.

depositor runs[12]. Moreover, depositors with low financial literacy are associated with larger withdrawals during institution-specific shocks, reflecting a higher sensitivity to perceived risks. This underscores the importance of financial literacy in promoting stability within the banking sector, as financially literate individuals are better equipped to make informed decisions, reducing the severity of depositor runs and contributing to more stable funding sources for banks.

A significant topic discussed in Kim's paper is the guarantees provided by deposit insurance. Indeed, it is typical for depositors completely covered by the insurance to act differently than those not fully covered. However, there is large evidence of insured depositors runs, suggesting that deposit insurance alone may not be sufficient. Shapira and Venezia (2008) explain that cognitive biases, such as reliance on anchoring heuristics, may cause depositors to withdraw insured accounts following negative news about their banks, perceiving it as additional security against potential losses (even though they are insured). Kim (2016)'s findings imply that financial literacy can be crucial in mitigating these biases, reducing the propensity depositor may have in withdrawing their balances by promoting informed decision-making, enhancing overall financial stability.

2.1.3 Methodology approach

Finally, we can look at how research papers measure financial literacy, given this paper also performs this. Most papers cited measured financial literacy through surveys. However, there are a couple of ways to perform them. As Aren and Aydemir (2014) state, financial literacy generally has been measured in three way; objective financial literacy scales, self-assessed evaluation of financial literacy (subjective scale), and a mix of both. While many papers use a combination of both objective and subjective measurements, given that consumers often think that they know more than they do (OECD, 2005), caution should be taken when using perceived knowledge as a simple proxy for actual knowledge. it provides a strong argument to use objective assessments over self-assessed.

The most commonly used survey questions to measure financial literacy can be found in the National Financial Capacity Survey (NFCS) State-by-State surveys– also used in this paper. The questions that feature in the survey were mainly established by Lusardi and Mitchell (2008, 2011) to be able to measure the numeracy and capacity to do calculations related to interest rates, understanding of inflation; and understanding of risk diversification. These questions were added to several surveys, including the 2007–2008 National Longitudinal Survey of Youth for young respondents (Lusardi, Mitchell, & Curto

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[12] Multiple studies from psychology literature show how errors in judgement can arise from misattributing information in decision-making. These biases could arise in environments with greater uncertainty or limited information (Johnson and Tversky, 1983; Clore, Schwarz, and Conway, 1994).

2010); the 2009 Financial Capability Study (Lusardi & Mitchell 2011); and several papers cited in this research (J. Jin et al., 2021; Andreou & Anyfantaki, 2019; Kim, 2016)

The questions objectively measure respondent's financial literacy, as there is often a mismatch between peoples' self-assessed knowledge versus their actual knowledge[13]. Across the board, these variables do a good job of characterizing peoples' levels of financial knowledge; moreover, they also and financial behaviours. The findings from most of these surveys underscore the low levels of financial literacy around the world. Specifically, Lusardi and Mitchell (2011) show that only a third of respondents answered all three questions correctly[14].

2.2 Bank runs

The literature on bank runs exhibited great advancements, noticeably with the publishing of Diamond and Dybvig (1983). The Nobel Prize-winning paper provides a theoretical framework and a pathbreaking research when they proposed that banks specialised in creating liquid claims from illiquid assets[15]. By recognising that few depositors need their money in short notice, they can pool deposits, giving the right to withdraw them upon demand, while relying on the fact that few depositors do so. The bank can then convert these demand deposits into long-term investments, placing depositors in a coordination situation.

In this model there exists patient and impatience depositors. Patient depositors can wait until the later periods to reap the benefits of the investment made by the bank (through higher interest rate payments on deposits), while impatient depositors need their funds early, by which they are penalised with a lower interest rate (but still greater than what you would have gotten if you had conservatively invested yourself). By pooling deposits, banks can meet the necessities of impatient depositors and small liquidity shocks, thereby providing a form of insurance. However, while being an efficient procedure to meet the needs of society, it comes with a dark side.

Since banks invest in illiquid assets (such as loans), which would be sold at a loss if liquidated early (t=1), banks would become insolvent if more than the expected number of depositors withdraw at t=1.

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[13] For example, in the 2009 Financial Capability study, 70% of respondents gave themselves a score of 4 or higher out of 7, but only 30% the same people answered the questions correctly (Lusardi & Mitchell, 2013)

[14] Q1. Suppose you had 100€ in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: (more than 102$, exactly 102$, less that 102$? Do not know, refuse to answer) Q2. Imagine the interest rate in your saving account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account: (more than, exactly the same as, or less than today with the money in this account? Do not know, refuse to answer) Q3. Do you think the following statement is true or false? 'Buying a single company's stock usually provides a safer return than a stock mutual fund.' (True, False, Do not know, Refuse to answer)

[15] Since households are the providers of loanable funds in the economy, and firms are the primary demanders of loanable funds, there is a liquidity mismatch between the two sides of the market. Banks are institutions that absorb this mismatch. They create liquidity by issuing liquid (withdrawable) deposits to households, while making illiquid loans to firms

A coordination problem arises from the interdependence of depositors' actions and the resultant outcome of the banks' stability, causing a situation with multiple equilibria.

We can first consider a state in the absence of panic– depositors believe the bank is stable, and only those who need liquidity (impatient depositors) will withdraw at t=1. Given that just a small number of depositors are impatient, the bank can meet these demands using its liquid assets, and a bank run is avoided. Now, the other potential equilibria arises when depositors coordinate on the belief that others will withdraw their money (economic crisis, failure of neighbouring banks, etc.)– If enough depositors fear that a bank might face more withdrawals than it can sustain, it is expected for them to try to withdraw their money immediately rather than risk losing it if others withdraw first. Even though illiquid assets aren't necessarily risky and patient depositors might not need their money right away, these depositors may still choose to withdraw their funds to avoid the possibility of losing them altogether. Therefore, the fear of insolvency becomes a self-fulfilling phenomenon: the mere anticipation of a bank run triggers an actual bank run.

Several papers have added to Diamond and Dybvig (1983)'s study. Jacklin and Bhattacharya (1988) comment that assuming a DD-model, bank runs do not present a problem when long-lived assets are sufficiently liquid, and depositors are not very risk averse. Chari and Jagannathan (1988), Jacklin and Bhattacharya (1988), and Gorton (1985) model runs as information-based instead of depositor panic from uncertainty– runs occur because a subset of investors may receive information indicating a low future return on the bank's investments. Chari and Jagannathan (1988) also point out that banks could suspend convertibility if withdrawals are too high, as it can give time to wear off immediate panics[16].

To finalise this section, some work has been performed on the disclosure of information and how it might affect bank runs, which strongly aligns with the purpose of this paper. He and Manela (2016) explore the role of information acquisition in rumour-based bank runs. They find that uncertainty about a bank's liquidity could motivates depositors to acquire additional noisy signals[17]. The acquisition of private information can trigger solvent-but-illiquid banks to runs, shortening their chances to amend their liquidity shortages. The Great Recession provides an ideal example, where the liquidity event generated by excessive opaqueness on mortgage-backed securities led to rumours about banks' liquidity, resulting in runs[18]. The study shows that the public provision of solvency information can mitigate runs by reducing individual efforts to acquire liquidity information, thereby allowing for a more orderly resolution that minimises damage to the banking system. Additionally, the study highlights that deposit

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[16] Often criticised since individuals who need to withdraw for liquidity purposes are normally worse off ex post. Furthermore, it tends to be seen as a tool that only prolongs the imminent run, instead of providing solutions to it.

[17] A "noisy signal" refers to information that is imperfect or contains some degree of uncertainty. Specifically, it means that the information acquired by depositors about a bank's liquidity is not completely accurate or clear, but rather has some level of ambiguity or noise.

[18] While the rumours and acquisition of information shortened the lifespan of banks, it is also argued that banks should still be the one's to blame given their excessive risk-taking and poor management.

insurance alone is only partially effective in preventing runs. While it may serve as a good method to limit contagious bank runs, it effectively removed the incentive for depositors to discipline banks, propelling increased risk-taking by banks.

2.3 Transparency

Transparency is a foundational pillar in the banking sector, playing a crucial role in maintaining financial stability and depositor confidence. The following papers discuss the impact of transparency on the banking system. Whether additional transparency translates into more stability remains a main topic of discussion in the banking literature.

While the hope is that enhanced transparency may improve incentives, it is less clear whether transparency is necessarily a good strategy ex post, when a bank might have hit hard times and provision of information might have a destabilising effect. Nier (2005) comments that, on average, transparency reduces the chances of severe banking problems and thus improves overall financial stability– not all research papers agree with this statement. Transparency could be detrimental ex post if it further destabilizes banks that are hit by exogenous shocks. Market responses may aggravate the position of a bank suffering from temporary weakness, especially when more information is provided. For instance, Cordella and Yeyati (1998) show that when a bank's risk profile is hit by an external shock, transparency can lead to investors demanding higher yields, thereby reducing the bank's stability and profitability. Similarly, Furman et al. (1998) argued that greater transparency would have worsened the banking crisis in the US in the 1980s, supporting the belief that banks should remain opaque. Chen et al. (2022) note that uninsured deposit flows are more sensitive to information about bank performance when banks are more transparent. This sensitivity can be problematic as a typical depositor may not invest the necessary time and resources to fully understand disclosures, especially if they believe government support limits their losses (DIS).

While Allenspach (2009) argues that transparency can prevent excessive risk-taking by fostering market discipline, the paper highlights that augmenting transparency above a certain level may lead to inefficient liquidation of a bank. Disclosing information about a troubled bank may prompt depositors to withdraw their funds, even if the bank has a positive net present value. Chen and Hasan (2006) find that enhancing the transparency of one bank may reduce depositor welfare by increasing the likelihood of a contagious run on other banks[19]. Moreno and Takalo (2016) argue that while increasing transparency fosters efficient liquidation, it also raises rollover risk, which can be adverse for the banking sector.

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[19] These results are contended by Nier (2005) and Admati and Pfleiderer (2000)

On the other hand, several papers have found transparency as a beneficial policy. As Fischer (1999, p563) comments, *'practices and policies responsible for the depth of recent crises would not have been undertaken, had they been required to be made public'*. Transparency can help markets and depositors distinguish between insolvent banks and fundamentally sound ones, as Nier (2005) suggests. By disclosing more information[20], banks have better incentives to manage their risks, which can reduce the risk of informational contagion. Chen et al. (2022) argues that while opacity may facilitate the production of safe, money-like claims (ex-ante), it can also result in stronger market freezes and credit busts during economic downturns (ex post). Comparably, Chen and Hasan (2008) clarify that if the transparency signal is precise, information-based bank runs are beneficial as they allow the efficient liquidation of a bank. If the signal is noisy, however, bank runs reduce depositor welfare– the use of transparency tends to involve a trade-off.

Stringent transparency requirements can deter banks from excessive risk-taking and strengthen market discipline by enabling investors to better evaluate banks' risk positions (Hyytinen & Takalo, 2002). They also find that lower quality banks attract fewer uninsured deposits than higher quality banks (also supported by Goldberg & Hudgins, 1996; Jagtiani & Lemieux, 2001). Diamond and Verrecchia (1991) and Akhigbe et al. (2013) both find that increased transparency can reduce a firm's cost of capital, improve financial performance, and increase profit efficiency, which could act as a major incentive for banks to adopt further openness. Finally, Chen and Hasan (2006) point out that transparency of the banking system improves when depositors know better whether the problems of the failed banks are systematic or idiosyncratic in nature, reducing the chance of a contagious run.

Despite these findings, there is limited research on how the effects of transparency might depend on the financial literacy of citizens. This paper addresses this by measuring the financial literacy of respondents and examining whether it influences their reactions to greater transparency. This contribution is significant as it sheds light on the interaction between transparency and financial literacy, offering deeper insights into how banks can strategically manage depositor behaviour through transparent practices.

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[20] Some banks that are crisis-prone decide to provide little information, because they want to hide their true state, while those same banks are more likely to experience a problem for the same underlying reason.

3 Hypothesis Development

Before outlining the expectations of this paper, it is essential to define some key terms and clarify their specific meanings within the context of this research. This foundational understanding helps frame our hypothesis development. Following these definitions, we present our expectations for the study's results, drawing on the literature reviewed, and the findings discussed in previous sections. This approach ensures a progression from theoretical concepts to empirical predictions, providing a solid basis for our investigative framework.

3.1 Definitions

3.1.1 Liquidity Transparency

Liquidity is a measure of cash and other assets banks have available to quickly pay bills and meet short-term business and financial obligations[21].

Liquid assets are cash and assets that can be converted to cash quickly if needed to meet financial obligations. Examples of these assets generally include demand deposits due from banks, central bank reserves, and highly liquid assets like treasury bills and government bonds. To remain viable, a financial institution must have enough liquid assets to meet withdrawals by depositors and other near-term obligations.

For this paper, the liquidity banks disclose information on is divided into three different stages. To understand these, it is crucial to know what the liquidity coverage ratio (LCR)[22] is. The LCR is designed to ensure a bank holds sufficient reserves of high-quality liquid assets (HQLA) to allow them to survive a period of significant liquidity stress lasting 30 calendar days.

$$LCR = \frac{Stock\ of\ High\ quality\ Liquid\ Assets}{Net\ Cash\ Outflow\ over\ the\ next\ 30\ Days} \times 100$$

HQLA are cash or assets that can be converted into cash quickly through sales (or by being pledged as collateral) with no significant loss of value. A liquid asset can be included in the stock of HQLA if it is unencumbered, meets minimum liquidity criteria and its operational factors demonstrate that it can be disposed of to generate liquidity when needed. HQLA is made up by Level 1, Level 2A, and Level 2B assets.

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[21] Definition from https://www.federalreserve.gov/faqs/cat_21427.htm#:~:text=Liquidity%20is%20a%20measure%20of,banks%20have%20to%20absorb%20losses.
[22] The LCR was introduced as part of the Basel III reforms following the 2008 financial crisis and was finalised by the Basel Committee on Banking Supervision (BCBS) in 2013.

- Level 1 HQLA represents the most liquid assets and can be included without any haircut[23]. These include physical cash held by the bank, central bank reserves that can be drawn upon instantly, and marketable government securities issued by sovereigns and central banks that are stable and low risk.

- Level 2A HQLA includes highly liquid assets with a haircut of up to 15% when included in the LCR calculation. These assets are considered as certain government and sovereign bonds that do not qualify for Level 1 but are still considered high-quality, covered bonds backed by mortgages, and high-quality corporate debt securities rated at least AA-[24].

- Level 2B HQLA consists of less liquid assets and includes a haircut of up to 50%. These assets are lower-rated high-quality corporate bonds (A+ to BBB-), equities part of major stock indices, and high-quality residential mortgage-backed securities (RMBS) that meet specific regulatory criteria.[25]

$$Stock\ of\ HQLA = Level1 + Level2A + Level2B - Adjustment\ for\ 15\% - Adjustment\ for\ 40\%^{26}$$

Having established the assets that make up the HQLA, we can now develop how this paper defines liquidity. In other words, we look at what this paper means by enhancing liquidity transparency. This paper considers three different levels of liquidity transparency:

1. Immediate liquidity: This includes cash held by banks, cash due from deposit money banks (available on demand), and excess reserves at Central Bank, focusing specifically on the liquidity that is readily available for immediate use

2. Available liquidity including regulatory reserves: This stage includes the immediate liquidity along with the liquidity required by the Central Bank, which can only be accessed in times of crisis or increased withdrawals. It provides the same information as Level 1 HQLA but excludes the marketable government securities[27].

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[23] They do not require a discount when calculating their value for liquidity purposes
[24] Refers to bond rating, the highest being AAA and the lowest BBB-.
[25] Source:
https://www.bis.org/basel_framework/chapter/LCR/30.htm?tldate=20191231&inforce=20191215#fn_LCR_30_41_7
[26] Level 1 assets can be included without limit, while Level 2 assets can only comprise up to 40% of the stock. Level 2B assets must not comprise more than 15% of the total stock of HQLA. They must also be included within the overall 40% cap on Level 2 assets.
[27] Because of historical cost accounting or amortized cost accounting methods, it allows assets to be recorded at their original purchase price (face value) rather than their current market value. Under this accounting method, assets are recorded on the balance sheet at their original purchase price, without adjustments for changes in market value over time. This means that if a bank buys a bond for $100, it will continue to be listed at $100 on the balance sheet, even if its market value has decreased or increased.

3. Total Liquidity: This encompasses the total stock of HQLA, including all liquid assets such as cash, central bank reserves, government securities, bonds, and corporate debt securities that meet the HQLA criteria.

By combining these three levels of liquidity transparency, banks would be able to disclose the necessary liquidity levels to ensure increased transparency. However, many depositors likely lack the ability to interpret HQLA as previously established such that the provision of these numbers would be insufficient to guarantee greater transparency. As we mention is Section 1, transparency is not merely a matter of disclosing information, but also, a matter of disclosing it in an accessible manner. Therefore, providing the bank's or industry's yearly average for these levels can serve as a benchmark for depositors to make inferences of the disclosure[28].

3.1.2 Financial Literacy

In Section 2.1 we define financial literacy as "*A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing".* However, to fully incorporate financial literacy into this paper, it is essential to develop a conceptual framework that encompasses the impact on depositor behaviour and financial decision-making. This framework guides the analysis by linking financial literacy to key outcomes discussed in the literature review.

Figure 1. Conceptual framework of Financial Literacy
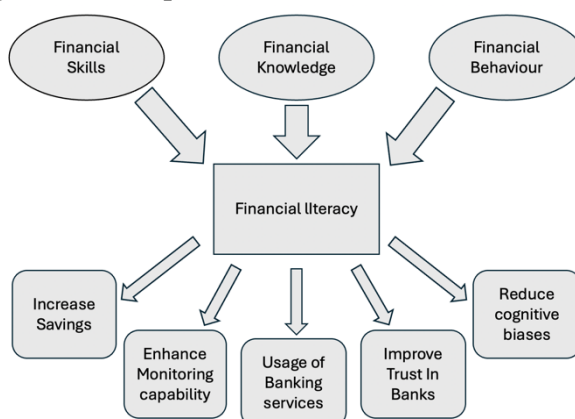
The framework illustrates the key elements that conceptualise financial literacy– financial skills, financial knowledge, and financial behaviour. These three components represent different aspects and collectively encompass the multiple facets associated with an individual's financial literacy (Hung et al.,

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[28] Although the aim of the paper is not to see whether this is the optimal way to disclose liquidity, it is essential that liquidity is understood and interpreted correctly throughout this paper, but also to set some groundwork for potential future papers on similar matters.

2009). Having recognised these elements, we can examine how financial literacy influences depositor behaviour. Using the literature previously reviewed, we can establish that a greater level of financial literacy can translate into larger savings (Stango & Zinman, 2009; Cole et al., 2011), greater capacity to monitor and hold banks accountable (Maechler & McDill, 2006; J. Jin et al., 2021), increase in banking product usage (Cole et al., 2011), greater trust (Van Der Cruijsen et al., 2021), and lower levels of cognitive biases (Kim, 2016; Shapira & Venezia, 2008).

3.2 Hypotheses formulation

As previously established, this paper aims to identify the impact of greater transparency on depositor behaviour by surveying individuals' responses to increased transparency. Specifically, we consider the effects of liquidity information disclosure by banks as explained by the three stages in Section 3.1.1. Hence, having outlined the concepts of liquidity transparency and financial literacy within the context of this paper, we can now direct our focus to what the research expectations for this study are.

Our first hypothesis is that (1) liquidity expectations between respondents will be relatively high, considering that banks keep low levels of cash to meet withdrawals and daily operations. This means that in practice, more individuals would be negatively surprised by liquidity levels. We also hypothesise that (2) liquidity expectations will play an important role in the decisions depositors make when faced with liquidity information disclosure. The implication here is that keeping depositor expectations in line with real liquidity levels will be a key determinant for banks.

The next two hypotheses focus on financial literacy. Firstly, we expect financial literacy to positively influence bank related variables, for example, increase trust in financial institutions[29] and reduce susceptibility to cognitive biases and emotional responses, as illustrated in Figure 1. Therefore, our third hypothesis is that (3) higher financial literacy benefits banks by increasing trust in financial institutions, enhancing transparency preference, raising DIS awareness, and aligning liquidity expectations closer to real liquidity levels.

Secondly, we propose that financial literacy directly impacts depositor behaviour regarding liquidity disclosure by fostering rational and predictable decision-making, while also exerting an indirect influence through enhanced trust, transparency preference, deposit insurance awareness, or liquidity expectations. Thus, we also hypothesise that (4) financial literacy has both direct and indirect effects on depositor behaviour in relation to liquidity disclosure.

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[29] Responses regarding financial literacy and trust may be driven by endogenous factors. As pointed out by Järvinen (2014) and Lusardi and Mitchel (2011), past experiences play a great role in influencing both factors. For example, Italians are more likely to answer questions on inflation correctly. Contrarywise, in a country like Japan that experienced deflation, fewer people answer inflation questions correctly.

The last hypotheses revolve specifically around reactions to the different liquidity disclosure scenarios. On the one hand, in a stable environment, we believe individuals maintain a stable behaviour, leaving deposits mostly unchanged. This can be attributed to the fact that respondents find it unnecessary to alter their deposits if there are no signs of instability or immediate risks. However, we anticipate that more respondents withdraw deposits if they find liquidity to be lower-than-expected (LTE), compared to those who increase their deposits when liquidity is higher-than-expected (HTE) (Nier, 2005; Chen et al., 2022), due to the human bias towards negative information (Rozin & Royzman, 2001).

On the other hand, when depositors are faced with an unstable environment, if the disclosed liquidity levels surpass depositor expectations, their reactions can be beneficial to both depositors and the banks' stability, compared to scenarios where no liquidity information is provided. This aligns with findings by Goldstein and Sapra (2014), who suggest that transparency can mitigate adverse reactions if the disclosed information is positive. Depositors also face liquidity levels below their expectations, or no disclosure at all.

While both scenarios are prone to negative reactions on the part of depositors like moderate reductions in deposits (Allenspach, 2009), the lack of disclosure can result in fewer withdrawals compared to the alternative scenario where liquidity information is shared and is worse than depositor expectations (Chen & Hasan, 2006). Ultimately, uncertainty can be less damaging than the revelation of negative information. When no information is disclosed, depositors may rely on guarantees such as deposit insurance or their trust on the stability of the banking system. Nonetheless, when negative liquidity information is disclosed, it reinforces depositor concerns, leading to a more pronounced adverse reaction and a higher likelihood of withdrawals. Chen and Hasan (2006) have shown that transparency could increase the likelihood of bank runs if the information revealed is negative given that it triggers depositor panic and erodes trust in the bank's stability.

From this analysis we obtain four additional hypotheses. First, we posit that (5) depositor behaviour will remain steady in a stable environment with minimal changes to deposit amounts. Second, although deposits will remain unchanged, we expect (6) LTE liquidity to lead to more withdrawals than the deposits that HTE liquidity will attract due to a bias towards negative information. Third, (7) positive liquidity disclosures in unstable conditions will likely stabilise depositor behaviour and benefit the bank more than no disclosure, promoting bank stability. Lastly, (8) negative disclosures or no disclosures can trigger withdrawals, although to a lesser extent than explicit negative information, as uncertainty may be less damaging than adverse revelations.

4 Methodology

In this section we outline the methods used to investigate the impact of greater liquidity transparency on depositor behaviour. Considering it is an uncommon practice for banks to disclose liquidity information, we are unable to perform a Difference-in-Difference analysis comparing deposit changes from banks that disclosed information and those who did not. Therefore, the study employs a cross-sectional survey to capture the potential attitudes depositors may have towards increased bank transparency. Furthermore, by measuring individuals' financial literacy and trust levels, we attempt to investigate potential exogenous effects on depositors. To ensure the validity and reliability of our findings, this paper employs analysis techniques on the survey results.

4.1 Questionnaire design

The survey questionnaire was developed based on a thorough review of relevant literature and consultation with banking and financial experts to ensure the validity of the content. The survey is made up of 15 questions (13 multiple choice and 2 open questions), with a combination of objective and subjective questions divided into four main categories (See Appendix B for full questionnaire):

1. Demographics (Q1-3): Collects basic demographic data such as age, gender, and education level

2. Financial Literacy (Q4-8): By adapting the standardised financial literacy questions from NFCS State-by-State surveys into this questionnaire, we assess the financial knowledge, skill and behaviours of respondents. This includes objective questions on inflation, interest rates, and risk diversification.

3. Trust & Transparency (Q9-11): Concisely measures trust in the banking system and preferences for transparency (utilising a Likert scale). This is done by asking respondents their general trust in the banking system, and the likelihood for respondents to change bank to one offering more liquidity transparency.

4. Depositor behaviour (Q12-15): Evaluates responses to hypothetical scenarios involving different levels of liquidity transparency. This is done by providing participants various scenarios with different options (Likert scale) to accurately reflect their behaviour.

a. These questions specifically measure how respondents react if liquidity levels are higher or lower than what they personally expect. This subjective measurement is important because depositors are unlikely to know the objectively appropriate liquidity levels banks should maintain, especially those mentioned in Section 3.1.1.

In between these sections, we also added questions (Q9 and Q15) to gauge individuals' knowledge on more specific elements of banking[30], which can also be used as potential variables that influence depositor behaviour. For instance, at the end of the survey[31], we include a question about the deposit guarantee scheme (Q15), asking respondents whether they believe such a guarantee exists and, if so, how much it covers. While it does not directly measure respondents' behaviour in relation to greater transparency levels, it allows us to analyse whether knowledge of the existence of a guarantee affects their behaviour. Additionally, understanding respondents' knowledge of the deposit guarantee scheme provides insights into the general awareness of this policy. If people are unaware of the guarantee, they may act as if it does not exist, causing suboptimal outcomes and coordination problems as pointed out by Diamond and Dybvig (1983).

4.1.1 Financial Literacy Measure

In this study, financial literacy is measured according to the number of correct answers to the five financial literacy questions in the survey (Q4-Q8). Although these questions measure basic financial skills and knowledge, we consider respondents who obtained three out of the five questions correct financially literate, and therefore use it as a benchmark, as supported by Lusardi and Mitchell (2011). However, we distinguish the financial literate respondents into two groups; those with medium financial literacy (three or more questions correct) and high financial literacy (all questions correct). This is implemented because there may be a reasonable amount of difference between individuals who incorrectly respond one or two basic financial questions and those who do not make any mistakes.

4.2 Sample and Data collection procedures

The survey consists of 117 participants, with the target population being adults (+18) holding deposits in a bank. Over the course of two weeks, individuals were mainly surveyed online through Qualtrics by posting invitation links in different social media platforms (Reddit, Instagram, WhatsApp) and encouraging individuals to scan a QR code in universities and libraries. We also performed the survey

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[30] Specifically, we ask what percentage of deposits respondents think is kept as cash in a bank (Q9) and if they believe if their deposits are insured, and if yes, by how much (Q15)

[31] We intentionally place this question at the end of the survey to avoid influencing respondents' decisions about increased liquidity transparency. This is because even those who are aware of deposit insurance might forget its existence when faced with the different scenarios given in the survey (uncertain economic environment). By asking about the deposit guarantee scheme at the end, we aim to capture the respondents' raw reactions to scenarios of strong or weak liquidity without the prior influence of insurance awareness

in-person with a bag of sweets as reward, however, this resulted to be time inefficient as many individuals were not compelled to take part (strongly reflected in the gender demographic in Table 1).

4.3 Data analysis

The data collected is imported to Excel from Qualtrics and then analysed using STATA software. For Section 5.1, descriptive statistics are used to summarise all the data obtained from the survey, displaying frequencies, means, standard deviations, and modes. A subsection is added to interpret the survey data, cross-tabulating variables that provide additional information to the paper.

The results section then employs inferential statistics to examine the relationship between financial and depositor behaviour. First, a correlation matrix is used to visualise the principal correlations between variables used in the regressions. Then, two multiple OLS regressions are performed. The first regression measures the effect financial literacy has on bank related variables (trust, transparency preference, liquidity expectations, etc.), using the following equation:

(1) $transparency\_prf = \beta_0 + \beta_1 fin\_lit\_score + \beta_2 age + \beta_3 gender + \beta_4 education + \varepsilon$

The second regression exmaines the (direct and indirect) effect financial literacy has on the different scenarios of liquidity disclosure. This regression utilises two equations:

(2) $HTE\_liquidity = \beta_0 + \beta_1 fin\_lit\_score + \beta_2 age + \beta_3 gender + \beta_4 education + \varepsilon$

(3) $HTE\_liquidity = \beta_0 + \beta_1 trust\_lvl + \beta_2 transparency\_prf + \beta_3 liquidity\_exp + \beta_4 deposit\_insurance + \varepsilon$

For equation (1), we run the same regression but exchange the dependent variable for the bank-related variables (Trust, Liquidity expectations, Deposit insurance). Similarly, equations (2) and (3) use the same independent variables but interchange the dependent variable with the different liquidity disclosure scenarios (HTE liquidity, LTE liquidity, HTE liquidity UE[32], LTE liquidity UE, no disclosure UE). For equation (1) and (2), we control for the demographic variables (Age, Gender, Education).

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[32] Uncertain environment (UE)

5 Results

5.1 Survey Descriptive Statistics

In this section, descriptive statistics are used to display the baseline survey responses. Given that most responses are in text form, we assigned numbers to each option, using a categorical rating scale (i.e. 18-24 = 1, 25-34 = 2, 35-44 = 3…).

Table 1 presents the descriptive statistics for the demographic variables in our dataset. While an attempt was made to maintain age and gender balanced, it resulted challenging due to interests and availability of respondents. As depicted in Table 1, survey respondents consist more of males (60%), young adults (58% being younger than 34), and well educated (only 16% of respondents do not hold a Bachelors' degree). In terms of gender, males tend to value, be more interested, and more invested in topics involving finance and the stock market (Furnham et al., 2024; H. Chen & Volpe, 2002); therefore, a lack of female participants is justified on the basis that they were not sufficiently motivated in filling in the survey. For the age groups, we deduce that because the survey was partially carried in places where it is common to find young adults (libraries and universities), a great proportion of respondents fell on the 18-24 age group. Finally, the table shows that the most common education level obtained is a Bachelors' degree, followed by a Masters' degree– this sample presents a high education level among respondents, potentially due to location of in-person responses.

Table 1. Demographics

Variable	Categories	Sub-categories	Frequency	Percentage	Mean	St. Deviation	Mode
Age (Q1)					2,65	1,79	
	18-24		52	44%			
	25-34		16	14%			
	35-44		9	8%			
	45-54		6	5%			
	55-64		29	25%			
	65+		5	4%			
Gender (Q2)					1,40	0,49	
	Male		70	60%			
	Female		47	40%			
Education Level (Q3)					3,10	0,72	
	Less than High School Degree		2	2%			
	High School Degree		16	14%			
	Bachelors' Degree		70	60%			
	Masters' Degree		26	22%			
	Doctoral degree		3	3%			

Table 1 displays the survey results for the demographic questions. In the Categories column we see the options presented to respondents. The Frequency shows how many respondents chose that option. The Mean and St Deviation numbers are interpreted through the Categorical ratings scale – respondents who chose the Male gender represent number 1, while females represent 2. For instance, in education, the mean of 3,10 signficies that most respondents chose the Bachelors' Degree option

Table 2 highlights responses to financial literacy, trust, and transparency questions, also through descriptive statistics. The financial literacy results exhibit high levels compared to previously discussed

papers[33], with a moderate number of respondents (63%) having a medium level of financial literacy, and only 32% of participants recording a high level of financial literacy. Notably, almost half of respondents failed to answer correctly the question on bonds (Q6).

In the subsequent question, respondents are asked to estimate the percentage of deposits that banks keep as cash for managing daily operations and withdrawals. The average response of 15.62% is relatively high (distribution shown in Table 7). It is likely that participants included regulatory cash or liquidity requirements into their estimates, resulting in an overestimation.

Question 10 measures respondents' likelihood of switching to a bank offering liquidity transparency, which displayed favourable results towards transparency, with the most frequent answer being somewhat likely. Finally, most individuals have a positive perception of the banking systems' stability, exhibiting moderate high levels of trust in Q11.

Table 2. Financial Literacy, Liquidity expectations, Transparency preference, & Trust levels

Variable	Categories	Frequency	Percentage	Mean	St. Deviation	Mode
Financial literacy				3,79	1,09	
	Correct Answer for Q4	111	95%	1,09	0,38	
	Correct Answer for Q5	105	90%	2,83	0,53	
	Correct Answer for Q6	61	52%	1,61	0,57	
	Correct Answer for Q7	88	75%	1,36	0,67	
	Correct Answer for Q8	79	68%	2,62	0,60	
	Medium Level (>3/5)	74	63%			
	High Level (5/5)	38	32%			
Bank liquidity expectations (Q9)						
	Open question	111		15,62	14,48	10
Liquidity preference (Q10)				3,48	1,17	
	Extremely unlikely	11	9%			
	Somewhat unlikely	10	9%			
	Niether likely nor unlikely	30	26%			
	Somewhat likely	44	38%			
	Extremely likely	22	19%			
Banking system trust (Q11)				3,31	1,04	
	Very unstable	5	4%			
	Somewhat unstable	24	21%			
	Neutral	30	26%			
	Somewhat stable	46	39%			
	Very stable	12	10%			

Table 2 displays survey answers for financial literacy questions and bank related questions. The mean for financial literacy (highlighted in red), represents the average amount of correct answers obtained by respondents (out of 5), instead of representing the options chosen. For Q9, we highlight the frequency because 6 respondents wrote non-numerical answers which are not interpretable. Also, the mean represents the average deposit percentage kept as cash by banks.

Lastly, Table 3 presents the section of the survey which records respondents' behaviour to enhanced liquidity transparency. Overall, responses show that individuals decide not to change deposit amounts, irrespective of higher or lower liquidity levels than expected. This is specifically the case for Q12, where 58% of respondents do not change deposit amounts for both HTE and LTE liquidity (with 43% and 22% respectively not changing deposits nor behaviour).

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[33] Our average score stands at 76% (3,79/5), while OECD (2016) obtains a 62% average score with similar questions.

In an uncertain economic environment, as depicted in Q13, results highlight several trends in depositor behaviour. As expected, respondents are generally more inclined to withdraw part of their deposits compared to Q12, with mean responses indicating higher level of withdrawal activity[34]. Interestingly, 26% of respondents chose to modestly increase deposits in an uncertain environment for HTE liquidity levels, compared to 24% in Q12, possibly due to an increased sense of security and trust towards the transparent bank.

Question 14 tests respondents' preference for transparency by presenting an option between a bank offers liquidity transparency with a low interest rate (1%), and a bank without such transparency but offering higher deposit rates (3%)[35].While Q10 merely gauges general preference for transparency, Q14 simulates a more realistic situation to truly reflect respondents' priorities. If respondents are willing to sacrifice interest for transparency, it indicates a strong value placed on transparency. Despite a general preference for transparency in Q10, Q14 reveals that only 36% of respondents truly value transparency, prioritising it over immediate monetary benefits. Notably, 24% of respondents do not show any preference for either option (they choose the most convenient bank), suggesting a limited value placed on transparency.

Lastly, the awareness and understanding of the deposit guarantee scheme, as probed in the final survey question, reveal gaps in financial literacy, considering only 63% of respondents are aware of a deposit guarantee scheme (with 69% of those respondents knowing the amount that is covered).

Table 3. Liquidity Disclosure Scenarios

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[34] Given that means for HTE and LTE show the average option chosen, the larger the mean, the closer it is to the options involving withdrawal activity

[35] If banks were to adopt increased liquidity transparency, by which they would also raise their liquidity levels, it would be expected that they offer a lower rate on savings due to less deposits being invested or higher external funding costs (Chen et al., 2020)

Variables	Categories	Sub-categories	Frequency	Percentage	Mean	St. Deviation	Mode
Liquidity disclosure (Q12)							
	Higher than expected				2,79	1,08	
		Strongly increase deposits	15	13%			
		Modestly increase deposits	28	24%			
		No changes to deposits/behaviour	50	43%			
		Monitor situation but no changes	17	15%			
		Modestly decrease deposits	5	4%			
		Strongly decrease deposits	2	2%			
	Lower than expected				4	1,18	
		Strongly increase deposits	3	3%			
		Modestly increase deposits	8	7%			
		No changes to deposits/behaviour	26	22%			
		Monitor situation but no changes	42	36%			
		Modestly decrease deposits	25	21%			
		Strongly decrease deposits	13	11%			
Liquidity disclosure with Economic uncertainty (Q13)							
	Higher than expected				3,05	1,31	
		Strongly increase deposits	13	11%			
		Modestly increase deposits	30	26%			
		No changes to deposits/behaviour	33	28%			
		Monitor situation but no changes	27	23%			
		Modestly decrease deposits	7	6%			
		Strongly decrease deposits	7	6%			
	Lower than expected				4,49	1,12	
		Strongly increase deposits	2	2%			
		Modestly increase deposits	4	3%			
		No changes to deposits/behaviour	13	11%			
		Monitor situation but no changes	36	31%			
		Modestly decrease deposits	40	34%			
		Strongly decrease deposits	22	19%			
	No disclosure provided				4,24	1,20	
		Strongly increase deposits	2	2%			
		Modestly increase deposits	3	3%			
		No changes to deposits/behaviour	29	25%			
		Monitor situation but no changes	38	32%			
		Modestly decrease deposits	21	18%			
		Strongly decrease deposits	24	21%			
Savings account preference (Q14)					1,90	0,78	
	Bank A		42	36%			
	Bank B		45	38%			
	Most convenient Bank		30	26%			
Deposit guarantee scheme (Q15)					1,37	0,48	
	Open question		74	63%	129750	170214,75	100000
	No deposit guarantee		43	37%			

Table 3 depicts the surveys answers to depositors' behaviour to increased transparency, but also the general awareness of the deposit guarantee scheme. Similarly to liquidity expectations of Table 2, the mean for Q15 shows the mean response to the amount the deposit insurance covers.

5.1.1 Interpretations

Now, this section interprets and provides insights on the results obtained from the survey.

We start off by looking at respondents' liquidity expectations in Q9, where participants displayed high levels of liquidity expectations. Banks typically maintain a low percentage of deposits in cash, but the specific percentage can vary widely based on the bank's size, location, regulatory environment, and other factors. However, the results for Q9 imply that a large fraction of people would be negatively surprised if they learn the actual liquidity levels.

We can calculate this fraction by using a realistic percentage of liquidity banks keep (around 5%) as a benchmark, with all respondents who expected liquidity to be higher than 5% falling in the scenario where liquidity levels are LTE (Q12). A cross-tabulation of Q9 and Q12 is performed (Table 7).

Assuming banks keep 5% of deposits as liquid cash (Level 1 immediate liquidity as per Section 3.1.1), Table 7 shows that 74% of respondents (82 out of 111) expected liquidity levels to be higher than 5%. Therefore, if banks disclosed their actual liquidity levels, 74% of respondents would find liquidity to be

lower than expected. By cross-tabulating liquidity expectations with LTE liquidity disclosure, we can estimate the practical withdrawal behaviour of these respondents. Of the 36 respondents who indicated they would withdraw deposits under LTE conditions, 24 (66%) would have done so in practice, given the 5% liquidity level. This means 29% (24 out of 82) of those expecting higher liquidity would withdraw part of their deposits. This aligns with our earlier discussion that many respondents who indicate withdrawal intentions under LTE scenarios would act accordingly in real-life situations considering banks keep liquidity levels at similar or lower levels.

There are multiple ways to reduce this, for instance, increasing liquidity levels, or trying to make depositors to adopt less tendency to withdraw. However, in this paper, we consider the most effective way to influence this behaviour is by influencing depositor expectations. If banks can align depositor expectations more closely to actual liquidity levels, they can reduce the number of respondents who would be negatively surprised by liquidity levels, by which reducing the amount of people who fall under LTE liquidity scenario

Q10 and Q11 display encouraging results for banks to adopt greater transparency, with moderate levels of trust and preference for transparency. Adopting greater transparency can be a strategic move to attract and retain customers. When depositors feel informed and assured about the bank's financial stability, they are less likely to engage in panic-induced withdrawals, fostering a more stable banking environment (Van der Cruijsen et al., 2021).

We now move on to the different liquidity scenarios. As opposed to our hypothesis, individuals are more inclined to increase deposits after a positive liquidity signal, compared to withdrawing their deposits when liquidity is LTE. This behaviour is attributed to a strong sense of security and trust in the banking system, reinforced by effective communication and perceived stability of the institution. Additionally, psychological factors such as optimism bias, where depositors may interpret positive signals as a sign of strength and reliability, can also play a role. These results from Q12 provide compelling evidence for banks to adopt greater liquidity transparency and maintain a strong level of liquidity. By doing so, banks can enhance depositor confidence and simultaneously attract new ones as well.

Critical results are derived from Q13 by comparing scenarios where liquidity is HTE or LTE to instances where no liquidity disclosure is made. This comparison offers robust insights into depositor behaviour, reflecting potential deviations from their current actions in today's banking environment (where banks typically do not provide liquidity transparency). Firstly, the mean responses and consequently the percentage of respondents willing to withdraw are significantly lower for HTE liquidity compared to scenarios with no liquidity disclosure. This demonstrates that transparency can be a robust strategy for banks to mitigate depositor withdrawal tendencies during economic uncertainty. On the contrary, LTE liquidity levels result in nearly double the respondents choosing to modestly withdraw deposits compared to the no disclosure scenario. This underscores the importance of maintaining strong liquidity

levels with transparent communication, as doubts about a bank's liquidity can lead to substantial withdrawals (Diamond & Dybvig, 1983), exacerbating a bank's liquidity crisis.

The final two questions provide strong insights for this research. As established above, Q14 reflects a more realistic situation where transparency preference is tested, with results pointing towards the lack of consistency between respondents' transparency preference between Q10 and Q14. It is possible to examine whether respondents who initially valued transparency in Q10 still prioritise it when faced with a realistic scenario of choosing between higher savings yields and lower transparency– those who favour a bank with higher saving yields and lower transparency, but initially valued transparency, in practice, will likely not be encouraged to change to a more transparent bank. This distinction is crucial for identifying whether subjective preferences for transparency holds in practical situations or if individuals are swayed by immediate financial benefits

As seen in Table 8 (cross-tabulation between Q10 and Q14), only 28 of the 66 respondents who preferred liquidity transparency (selected option 4 or 5) continue to value transparency when faced with the choice of a higher savings rate. This indicates that while a significant portion of respondents initially express a preference for transparency, their behaviour changes when financial incentives such as higher savings rates are introduced. The potential challenge for banks aiming to implement transparency measures becomes apparent– while transparency is generally valued, it might not always outweigh the financial benefits for many depositors. Therefore, relying on subjective measurements of transparency preference like Q10 does not always provide an accurate presentation of how depositors behave.

Lastly, Q15 looks at respondents' awareness on deposit guarantee schemes. Despite the presence, and knowledge of a guaranteed scheme, the observed withdrawal behaviour under LTE conditions suggests that cognitive biases fuelled by loss aversion influences depositors' actions, as depicted by Kim (2016). We can look at the extent to which this behaviour is due to a lack of deposit guarantee knowledge, or if it's the emotional responses of respondents influencing their decisions. Table 9 tabulates deposit insurance awareness with both LTE liquidity disclosure (Panel A) and LTE liquidity disclosure during an uncertain economic period (Panel B)[36].

Both panels effectively display that despite respondents being aware of deposit insurance, they still decide to withdraw their deposits. 33% of respondents in Panel A aware of a deposit guarantee

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[36] To properly interpret this table, several remarks must be considered. Firstly, more individuals were aware of the deposit insurance scheme (74) compared to those who were not (43). Therefore, analysing the data as a proportion of respondents who are aware and unaware of deposit insurance provides a more accurate assessment. Secondly, the deposit insurance variable only indicates which respondents are aware of the guarantee, without specifying the amount they believe it covers. Table 10 in Appendix A cross-tabulates deposit insurance awareness with the expected coverage amounts. As shown, the majority of respondents (51) correctly stated €100,000, with only 9 respondents believing that the deposit insurance covers less than €50,000 (the amount guaranteed in 2009). Thus, it is reasonable to draw conclusions from the deposit insurance variable, given that the responses were predominantly accurate.

responded to a negative disclosure by withdrawing a portion of their deposits, compared to 30% who do not know about deposit insurance. Panel B also displays similar results, with 46% withdrawing against 65% respectively. This provides strong evidence, especially from Panel A, that having previous knowledge of deposit insurance does not necessarily contribute to different behaviours of depositors. This finding opposes conclusions of several studies. For instance, Iyer and Puri (2012) argue that deposit insurance can mitigate panic withdrawals and enhance depositor stability during bank runs. Similarly, Demirgüç-Kunt and Kane (2002) suggest that deposit insurance serves as a safety net, reducing the propensity for depositors to withdraw their funds during periods of uncertainty. While these may hold in practice, the empirical evidence from this study challenges these assertions, indicating that awareness of deposit insurance does not significantly alter depositor behaviour in the face of adverse liquidity disclosures. This discrepancy underscores the need for further research to explore the conditions under which deposit insurance might fail to mitigate cognitive biases, and its implications for banking policies.

5.2 Inferential statistics

This section presents the inferential statistical analysis conducted to investigate the relationships between the variables that affect depositor behaviour in response to liquidity transparency. The statistical methods applied start off with a simple correlation matrix analysis, followed by multiple OLS regression analysis.

5.2.1 Correlation Analysis

Table 4 presents the correlation matrix for all variables interpretable through the categorical ratings scale. While this section does not specifically answer the hypotheses established in 3.2, it provides a better understanding of the overarching trends.

The demographic variables mostly exhibit weak correlations, most notable being education level with liquidity expectation (-0.224) and trust level (0.203), indicating that liquidity expectations are smaller and trust levels are greater with higher education level. Age and gender both display positive, although weak, correlation with financial literacy (Lusardi & Mitchell, 2011).

The financial literacy scores do display somewhat meaningful correlation with other variables (further developed in 5.2), specifically liquidity expectations (-0.222), transparency preference (0.211), trust levels (0.326), and deposit guarantee[37] (-0.263). Interestingly, coefficients between financial literacy scores and behavioural responses (Q12-Q13) are all positive, suggesting that higher financial literacy results in lower deposit increases. A potential reason for this is that respondents with higher financial

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[37] The deposit guarantee variable is used as a binary variable, measuring whether individuals know about a guaranteed scheme (1) or do not (2). Therefore, a negative coefficient between financial literacy and deposit guarantee means that those with better financial literacy levels are more aware of a deposit guarantee

literacy are more aware of risks and prefer to diversify their deposits across various financial instruments rather than leaving them as bank deposits. We see if this is the case in the section below.

Liquidity expectation inversely correlates with transparency preference (-0.285). Thus, higher liquidity expectation associates with less importance placed on transparency. This makes sense, as individuals do not find transparency necessary as they expect banks to hold large buffers of liquidity. Additionally, liquidity expectations consistently display negative correlations with behavioural variables (-0.140, -0.240, -0.159, -0.230, -0.285), implying that higher expectations of liquidity levels generally lead to fewer withdrawals across all specified scenarios. This can also be rationalised, considering respondents who think that banks keep large amounts of liquidity do not feel the urge to withdraw, even in uncertain periods.

Among the behavioural variables, the strongest correlation in this matrix is observed between a negative disclosure and a negative disclosure in crisis (0.512), followed closely by negative disclosure in crisis and no disclosure in crisis (0.505). This suggests that respondents who withdraw after LTE liquidity level are also likely to withdraw in the same scenario with an uncertain economic environment. Similarly, individuals inclined to withdraw under LTE liquidity during uncertain periods are also likely to withdraw when no information is disclosed. This means that individuals who withdraw do not necessarily withdraw due to the negative signal of disclosure, but potentially due to loss aversion and other emotional factors.

These findings emphasise the somewhat low correlation between variables. Thus, this research benefits from using stronger analysing tools to find potential interconnections between variables, ultimately arriving at a sound conclusion.

Table 4. Correlation Matrix

	Age	Gender	Education	Liquidity expectation	Transparency	Trust	Financial Literacy	Deposit Insurance	HTE liquidity disclosure	LTE liquidity disclosure	HTE liquidity disclosure UE	LTE liquidity disclosure UE	No disclosure UE
Age	1,000												
Gender	0,170	1,000											
Education	0,064	0,235	1,000										
Liquidity expectation	0,085	0,102	-0,224	1,000									
Transparency	0,109	-0,003	-0,076	-0,285	1,000								
Trust	0,092	-0,062	0,203	-0,075	-0,056	1,000							
Financial Literacy	0,106	-0,058	0,122	-0,222	0,211	0,326	1,000						
Deposit Insurance	-0,112	0,064	-0,037	-0,030	-0,020	-0,188	-0,263	1,000					
HTE liquidity disclosure	-0,011	-0,203	0,088	-0,140	-0,010	0,139	0,114	-0,014	1,000				
LTE liquidity disclosure	-0,092	0,042	0,052	-0,240	0,126	0,097	0,263	-0,054	0,029	1,000			
HTE liquidity disclosure UE	-0,154	-0,102	-0,033	-0,159	-0,030	0,027	-0,161	0,128	0,155	-0,076	1,000		
LTE liquidity disclosure UE	-0,029	0,079	0,065	-0,230	0,179	0,022	0,109	0,097	0,119	0,512	0,191	1,000	
No disclosure UE	0,165	0,046	0,004	-0,285	0,237	0,022	0,144	0,079	0,010	0,151	0,131	0,505	1,000

Table 4 displays a correlation matrix between all interpretable variables used in the results section.

5.2.2 Regression Analysis

The final method used in this research is OLS regression analysis. This approach allows us to quantify the relationship between various variables (e.g., financial literacy, trust in banking, transparency

preference, demographic factors) and regress them with depositor behaviour under different liquidity scenarios. first look at the relationship between our independent variables.

Table 5 illustrates a regression analysis that examines the effect financial literacy has on trust in banking, transparency preference, deposit insurance awareness, and liquidity expectations (controlling for the demographic variables). By doing so, hypothesis (3) is tested, while also establishing the groundwork for (4). The regression exhibits a strong and significant correlation between financial literacy and all the dependent variables. Higher scores in the financial literacy questions translates into higher preference for bank transparency, greater trust in the banking system, lower expected liquidity levels, and greater awareness of a deposit guarantee scheme. These results, besides being in line with what was previously hypothesised in section 3.2, showcase the importance of keeping depositors financially literate– greater demand for transparency incentivises banks to maintain better financial practices and risk management (Hyytinen & Takalo, 2002); higher trust in the banking system increases customer retention and deposit stability (Van der Cruijsen et al., 2021; Fungáčová et al., 2019); lower expected liquidity levels reduces the likelihood of panic-induced runs and inefficiencies associated with holding excessive liquidity, as depositor expectations are more aligned with reality (Goldstein & Pauzner, 2005); greater insurance awareness enhances depositor confidence, promoting more stable and efficient bank operations (Chen & Hassan, 2006).

Table 5. OLS Regression Financial Literacy on Bank Related Variables

Dependent variables	(1) Transparency	(2) Trust	(3) Deposit insurance	(4) Liquidity expectation
Financial Literacy	0,206**	0,257***	-0,124***	-2,602**
	(0,100)	(0,085)	(0,040)	(1,232)
Age	0,045	0,022	-0,008	0,831
	(0,062)	(0,052)	(0,025)	(0,783)
Gender	0,023	-0,297	0,113	3,852
	(0,234)	(0,199)	(0,094)	(2,855)
Education	-0,186	0,294**	-0,007	-4,686**
	(0,155)	(0,132)	(0,062)	(1,881)
Obs	117	117	117	111
R-squared	0,051	0,139	0,099	0,118

Table 5 presents the results of an OLS regressions examining the impact of financial literacy on bank-related variables. The dependent variables are transparency preference (column 1), trust in the banking system (column 2), awareness of deposit insurance (column 3), and liquidity expectations (column 4). Financial Literacy is the independent variable and Age, Gender, and Education are the control variables. Standard errors are reported in parentheses. "Obs" refers to the number of observations, and "R-squared" represents the proportion of variance explained by the model. *** indicates significance at 1% level, ** at 5%, and * at 10%.

Now that the relationship between financial literacy and bank-related variables are established, we look at Table 6, where the direct and indirect effect of financial literacy on depositor reaction to liquidity scenarios is examined. Panel A in Table 6 displays the results for equation (2), again, controlling for demographics. Financial literacy depicts a positive correlation with LTE liquidity disclosure, but also a negative correlation with HTE liquidity disclosure during an uncertain economic environment. This

suggests that individuals with higher financial literacy levels are more likely to withdraw deposits when liquidity is lower than expected, potentially due to a better understanding of the associated risks and the implications of lower liquidity on the bank's stability. Conversely, these individuals might feel more secure and less likely to withdraw their deposits when liquidity is higher than expected, as they can better assess the bank's health. Even though financial literacy is significant for only two dependent variables, it is still possible to conclude that it impacts depositor reactions towards liquidity scenarios– better financial literacy provides banks with more predictable responses to liquidity disclosure.

Lastly, Panel B of Table 6 tests the indirect effect financial literacy may have on depositor behaviour through the bank related variables (trust, transparency preference, etc.). Trust in banking and awareness of deposit guarantee show no significant effect on respondents' behaviour, which counters findings from Fungáčová et al. (2019) where higher levels of trust associates with lower propensity to withdraw during periods of financial distress. This observation also contrasts with the findings of Demirgüç-Kunt and Detragiache (2002), who argue that deposit insurance schemes generally mitigate depositor panic and withdrawals. The lack of significance in the table suggests that even with knowledge of deposit insurance, respondents may still act conservatively, driven by other factors[38].

Panel B does display a consistent negative significant correlation between liquidity expectations and dependent variables (2), (3), (4), and (5). This implies that those who expected banks to hold a greater amount of cash relative to deposits are less likely to withdraw their deposits. These results can be attributed to the depositor's confidence in the bank's liquidity position. When depositors believe that banks maintain higher liquidity levels, they feel more secure about the bank's ability to handle withdrawals and financial shocks. Consequently, their inclination to withdraw deposits decreases, even in scenarios of economic uncertainty or negative liquidity disclosure.

This analysis reveals a nuanced relationship between financial literacy, liquidity expectations, and withdrawal behaviour. Table 5 shows that higher financial literacy aligns depositors' liquidity expectations closer to reality, typically leading to lower expectations. Conversely, Table 6 indicates that higher liquidity expectations result in reduced withdrawal behaviour in different liquidity disclosure scenarios. While it may seem that lowering financial literacy to increase liquidity expectations could reduce withdrawals, this approach neglects the broader benefits of financial literacy, such as fostering trust, reducing panic during financial stress, and enhancing depositor understanding of banking operations.

Instead of reducing financial literacy, banks can aim to improve the perception of their liquidity management among depositors. By transparently showcasing robust liquidity levels, banks can increase depositor expectations while still aligning it to reality, thus achieving the benefits observed in Table 5.

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[38] In line with Shapira and Venezia (2008) and Kim (2016), where depositors still decide to withdraw even with insurance due to cognitive biases

This approach ensures that the broader benefits of financial literacy are preserved, while also reducing withdrawal tendencies, thereby enhancing overall financial stability.

These results suggests that depositor expectations play a crucial role in shaping their behaviour, independent of actual liquidity levels disclosed by banks. This underscores the psychological aspect of banking, where perceptions can be as influential as reality. Such insights highlight the need for banks to manage not just their liquidity but also depositor expectations to ensure stability.

Table 6. OLS Regression Depositors Behaviour to Liquidity Scenarios

	Panel A: Direct effect				
	Stable Environment		Uncertain Environment		
	(1)	(2)	(3)	(4)	(5)
Dependent variables	HTE liquiditiy disclosure	LTE liquidity disclosure	HTE liquiditiy disclosure	LTE liquiditiy disclosure	No liquidity disclosure
Financial Literacy	-0,082	0,300***	-0,215*	0,130	0,119
	(0,101)	(0,109)	(0,122)	(0,106)	(0,112)
Age	-0,005	-0,097	-0,084	-0,058	0,064
	(0,057)	(0,062)	(0,069)	(0,060)	(0,064)
Gender	-0,527**	0,243	-0,253	0,060	0,056
	(0,219)	(0,236)	(0,266)	(0,230)	(0,243)
Education	0,176	0,009	0,025	0,072	-0,002
	(0,147)	(0,159)	(0,179)	(0,154)	(0,163)
Obs	117	117	117	117	117
R-squared	0,085	0,099	0,074	0,063	0,087
	Panel B: Indirect effect				
	Stable Environment		Uncertain Environment		
	(1)	(2)	(3)	(4)	(5)
Dependent variables	HTE liquiditiy disclosure	LTE liquidity disclosure	HTE liquiditiy disclosure	LTE liquiditiy disclosure	No liquidity disclosure
Transparency	-0,038	0,039	-0,036	0,155	0,134*
	(0,100)	(0,104)	(0,119)	(0,092)	(0,106)
Trust	0,092	0,041	0,139	0,009	0,041
	(0,114)	(0,117)	(0,135)	(0,109)	(0,120)
Deposit insurance	0,076	-0,040	0,223	0,265	0,285
	(0,232)	(0,236)	(0,277)	(0,230)	(0,245)
Liquidity expectation	-0,007	-0,015**	-0,018*	-0,014*	-0,022**
	(0,008)	(0,008)	(0,01)	(0,008)	(0,009)
Obs	111	111	111	111	111
R-squared	0,082	0,126	0,101	0,092	0,157

Table 6 presents the results of OLS regressions examining the direct and indirect effects of financial on depositor behaviour under different liquidity scenarios. Panel A shows the direct effects, while Panel B shows the indirect effects through variables such as transparency, trust, deposit insurance awareness, and liquidity expectations. The dependent variables include HTE (higher-than-expected) and LTE (lower-than-expected) liquidity disclosure in both stable and uncertain environments, as well as scenario with no liquidity disclosure. Independent variables include Financial Literacy, Age, Gender, Education, Transparency, Trust, Deposit Insurance, and Liquidity Expectation. The coefficients are reported with standard errors in parentheses. Significance levels are denoted by ***, **, and * for 1%, 5%, and 10% levels, respectively

6 Conclusion

The findings from this study present several critical insights into financial literacy of respondents, liquidity expectations, and their relationship with depositor behaviours under different liquidity scenarios.

Firstly, the financial literacy levels of respondents are relatively high compared to previous studies, with 63% exhibiting a medium level and 32% a high level of financial literacy. Respondents' expectations of cash kept as a percentage of deposits is also high, with the average response being 15.62% (most common response being 10%). This overestimation likely included regulatory liquidity requirements, affecting depositor expectations. Thus, hypothesis (1) cannot be rejected.

Our findings also confirm that liquidity expectations play a crucial role in depositor behaviour when faced with liquidity information disclosure. From Table 7, it is evident that most respondents overestimate bank liquidity levels, with 74% expecting more than a 5% liquidity level benchmark. This misalignment led many to fall into the lower-than-expected (LTE) liquidity scenario, prompting higher withdrawal intentions. Managing depositor expectations is therefore essential.

Table 6's consistent negative significant correlation between liquidity expectations and depositor behaviour means that higher liquidity expectations lead to fewer withdrawals, as depositors feel more secure about the bank's ability to handle financial shocks.

Importantly, higher financial literacy aligns expectations closer to reality by lowering liquidity expectations, meaning that more depositors withdraw since financial literacy is higher. Therefore, because financial literacy generally has advantageous effects[39], banks should not reduce financial literacy initiatives, but instead improve the perception of their liquidity levels[40]. Transparent communication about liquidity, while also adopting more robust liquidity levels, can align depositor expectations with reality and improve perceptions of liquidity levels, reducing withdrawal tendencies. Therefore, effectively managing depositor expectations through transparency and increasing perception of liquidity practices is essential for reducing withdrawals and maintaining financial stability. Consequently, we do not reject hypothesis (2), as managing depositor expectations effectively stabilises and promotes positive depositor behaviour, enhancing overall banking stability.

Trust in the banking system, transparency preference, and deposit insurance awareness all displayed moderately high levels in the survey responses. However, detailed analysis from section 5.1.1 reveals important nuances. When faced with a realistic transparency preference scenario (Q14) of choosing between higher savings yields with lower transparency, only 28 of the 66 respondents who initially

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[39] See Figure 1 and Table 5
[40] Increasing liquidity perceptions of depositors means that those with higher financial literacy start expecting liquidity levels to be higher

valued transparency (Q10) maintained their preference for high transparency, foregoing higher saving rates. This indicates that while transparency is valued in theory, financial incentives can override this preference, posing a challenge for banks aiming to implement transparency measures.

For Q15, despite awareness of deposit insurance (69%), withdrawal behaviour under lower-than-expected liquidity conditions indicated that cognitive biases and loss aversion heavily influence depositor actions. Table 9 shows that 33% of respondents aware of deposit insurance withdrew deposits following a negative disclosure, compared to 30% who were unaware. This suggests that awareness alone does not significantly alter depositor behaviour, challenging previous studies on the mitigating effects of deposit insurance. These findings suggest the need for banks to improve education and communication regarding deposit protection measures to mitigate irrational withdrawal behaviours.

The results then focus on the effect financial literacy has on bank-related variables and depositor behaviour regarding liquidity disclosure. Financial literacy significantly impacts bank-related variables and depositor behaviour. First, higher financial literacy increases trust in banking, preference for transparency, awareness of deposit insurance, and aligns (lowers) liquidity expectations closer to reality. These factors incentivize better financial practices and enhance stability (Hyytinen & Takalo, 2002; Van der Cruijsen et al., 2021; Fungáčová et al., 2019; Chen & Hassan, 2006). Thus, hypothesis (3) is not rejected. Furthermore, financial literacy influences depositor behaviour directly by providing banks with more predictable responses to liquidity disclosure. This highlights the need for banks to maintain financial literacy among depositors to manage liquidity scenarios predictably and ensure stability. Additionally, financial literacy indirectly affects depositor behaviour regarding liquidity disclosure through liquidity expectations, as highlighted in hypothesis (2). Hence, hypothesis (4) is also not rejected.

In terms of respondents' behaviour to liquidity scenario, assuming a stable environment, more than half of respondents do not alter their deposit amounts irrespective of whether liquidity levels are higher or lower than expected. From this, we cannot reject hypothesis (5). Furthermore, respondents are more inclined to increase their deposits following a positive liquidity signal compared to withdrawing their deposits when liquidity is lower than expected, which rejects hypothesis (6), This suggests that higher transparency can instil confidence among depositors, benefiting banks and depositors simultaneously. Therefore, banks should adopt greater transparency and hold strong levels of liquidity to reap the benefits of transparency.

Under economic uncertainty, respondents show a higher propensity to withdraw deposits compared to stable conditions. Importantly, fewer withdrawals occur when liquidity is higher-than-expected compared to no disclosure, highlighting transparency as a potent strategy for banks to mitigate withdrawals during uncertain times, especially if transparency provides a positive signal to depositors. Conversely, lower-than-expected liquidity lead to almost double the withdrawal rate compared to no

disclosure. As mentioned in section 3.2, the lack of disclosure can result in fewer withdrawals compared to the alternative scenario where liquidity information is shared, and it is worse than depositors' expectations.

Therefore, both of these findings imply that hypothesis (7) and (8) cannot be rejected. These results are in accordance with Goldstein and Sapra (2014) results, underscoring the need for robust liquidity levels to reap the benefits of transparent communication and avoid aggravating liquidity crises.

6.1 Limitations

This research suffers from some limitations that could be improved in follow up papers. Firstly, A larger number of observations gives this research more credibility, since 117 respondents may not be enough to make conclusions for the whole populations and different sub-groups. Aiming to obtain over 300 responses is ideal for a more reliable and credible research. Similarly, this paper benefits further from a balanced demographic sample. This means obtaining respondents with lower levels of education, more females, and between the ages of 35-54. By doing so, the demographic variables could be interpreted with more accuracy, perhaps displaying significance with more variables. Finally, a big limitation of performing a survey that attempts to measure respondents' behaviour is that the chosen comportment might not represent what they do in practice. This is verified with the use of Q9 and Q14, demonstrating that it is likely that respondents' answers deviate from their true behaviour. While this limits the interpretability of respondent's answers, we can assume that this is not always the case.

6.2 Implications

In summary, this research highlights the intricate dynamics between financial literacy, transparency levels, and depositor behaviour. Transparency generally fosters depositor confidence and rational decision-making, being a robust policy for banks to adopt due to its beneficial outcomes. However, liquidity expectations and cognitive biases remain a significant challenge. Banks must, therefore, focus on enhancing financial education (specifically awareness and implications of deposit guarantee schemes), simultaneously increasing and aligning liquidity expectations to reality, and promote transparency to safeguard against irrational withdrawal behaviours, particularly during economic uncertainties.

Diamond and Dybvig (1983) gave strong reasons why banks should adopt deposit insurance, however, this research paper aligns closer to He and Manela (2016)'s finding, where deposit insurance alone is only partially effective in preventing runs. For banks, we believe that aiming for a blend of liquidity transparency, financially literate depositors, and strong liquidity levels to be an ideal solution for the on-going problems in banking relating to liquidity, bank runs, and coordination issues.

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APPENDIX A: Tables

Table 7. Depositor Withdrawal Behaviour in Practice

Liquidity expectations	LTE liquidity disclosure						
	1	2	3	4	5	6	Total
0	0	0	1	0	0	0	1
0,1	0	0	1	0	0	0	1
0,5	0	0	0	0	1	0	1
1	0	0	0	1	1	4	6
2	0	0	0	2	0	0	2
2,5	0	0	0	1	0	0	1
3	0	0	0	2	0	0	2
5	0	1	1	7	6	0	15
7	0	0	0	1	0	0	1
9	0	0	0	1	0	0	1
10	1	0	4	10	8	3	34
15	0	0	0	6	1	0	9
20	0	1	1	7	1	1	14
22	0	0	0	0	1	1	2
25	0	0	0	1	0	0	1
30	0	1	1	2	3	2	11
40	0	0	0	0	2	0	3
50	1	0	0	0	0	1	5
100	1	0	0	0	0	0	1
Total	3	7	24	41	24	12	111

Table 7 cross-tabulates liquidity expectations (Q9) and LTE liquidity disclosure (Q12)

Table 8. Real Transparency Preference

	Savings Transparency			
Transparency preference	1	2	3	Total
1	3	6	2	11
2	3	4	3	10
3	8	16	6	30
4	16	14	14	44
5	12	5	5	22
Total	42	45	30	117

Table 8 cross-tabulates transparency preference (Q10) with Savings transparency preference (Q14) to see the deviations between subjective and actual transparency preference

Table 9. Cross-Tabulation Depositors Behaviour and Deposit Insurance Awareness

	Panel A						
	LTE Liqudity Disclosure						
Deposit Insurance	1	2	3	4	5	6	Total
1	2	3	18	26	17	8	74
2	1	5	8	16	8	5	43
Total	3	8	26	42	25	13	117
	Panel B						
	LTE Liqudity Disclosure Uncertain						
Deposit Insurance	1	2	3	4	5	6	Total
1	1	2	11	26	19	15	74
2	1	2	2	10	21	7	43
Total	2	4	13	36	40	22	117

Table 9 performs two cross-tabulations. Frist, Panel A tabulates deposit insurance awareness (Q15) with the LTE liquidity scenarios from Q12. Panel B tabulates Q12 with the LTE liquidity scenario of Q13

Table 10. Deposit Insurance Coverage Amount

Deposit Insurance Amount	Deposit Insurance
500	1
1000	1
5000	1
10000	3
20000	1
25000	2
50000	3
60000	2
75000	1
100000	51
150000	2
250000	1
500000	3
1000000	2
Total	74

Table 10 displays the quantities respondents expected the deposit insurance to cover (Q15)

APPENDIX B: Survey Questions

1. Indicate your Age
   a. 18-24
   b. 25-34
   c. 35-44
   d. 45-54
   e. 55-64
   f. 65+

2. Indicate your gender
   a. Male
   b. Female
   c. Other

3. What is the highest level of education you have/are obtaining
   a. Less than high school degree
   b. High school degree
   c. Bachelors' degree
   d. Masters' degree
   e. Doctoral degree

4. Suppose you had 100€ in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?
   a. More than 102€
   b. Exactly 102€
   c. Less than 102€

5. Imagine the interest rate in your saving account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
   a. More than today
   b. Exactly the same
   c. Less than today

6. If interest rates rise, what will typically happen to bond prices?
   a. Bond prices will rise
   b. Bond prices will fall
   c. Bond prices will stay the same

7. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the 15-year loan will be less.
   a. True
   b. Neither true nor false

     c.   False

8. Buying a single company's stock usually provides a safer return than a stock mutual fund.

     a.   True

     b.   Neither true nor false

     c.   False

9. Banks typically keep a certain percentage of their deposits as cash to manage daily operations and withdrawals. What percentage of deposits do you think banks actually keeps as cash for daily operations and withdrawals?

     a.   (text entry)

10. If banks provided information on liquidity, how likely would you be to switch to a bank offering this transparency (from one who doesn't)?

     a.   Extremely unlikely

     b.   Somewhat unlikely

     c.   Neither likely nor unlikely

     d.   Somewhat likely

     e.   Extremely likely

11. How would you rate your overall perception of the stability of the banking system?

     a.   Very unstable

     b.   Somewhat unstable

     c.   Neutral

     d.   Somewhat stable

     e.   Very stable

12. Consider this situation:

     a.   Your bank's liquidity data revealed that the available cash was higher than you expected. How would this influence your decision on your deposited amount?

          i.   I would strongly increase my deposit amount

          ii.   I would modestly increase my deposit amount

          iii.   I would make no changes to my deposit amount/behaviour

          iv.   I would monitor the situation closely but make no immediate changes

          v.   I would modestly decrease my deposit amount

          vi.   I would strongly decrease my deposit amount

     b.   Your bank's liquidity data revealed that the available cash was lower than you expected. How would this influence your decision on your deposited amount?

          i.   I would strongly increase my deposit amount

          ii.   I would modestly increase my deposit amount

          iii.   I would make no changes to my deposit amount/behaviour

          iv.   I would monitor the situation closely but make no immediate changes

       v.   I would modestly decrease my deposit amount

      vi.   I would strongly decrease my deposit amount

13. Imagine there is a financial crisis/uncertain economic environment, and rumours are circulating that banks may have insufficient liquidity. Below are three scenarios describing your access to information about your bank's liquidity. Please select how you would likely respond in each scenario

    a. Scenario A: Your bank discloses its liquidity data showing that it is better than you expected

        i.   I would strongly increase my deposit amount

       ii.   I would modestly increase my deposit amount

      iii.   I would make no changes to my deposit amount/behaviour

      iv.   I would monitor the situation closely but make no immediate changes

       v.   I would modestly decrease my deposit amount

      vi.   I would strongly decrease my deposit amount

    b. Scenario B: Your bank discloses its liquidity data showing it is weaker than you expected

        i.   I would strongly increase my deposit amount

       ii.   I would modestly increase my deposit amount

      iii.   I would make no changes to my deposit amount/behaviour

      iv.   I would monitor the situation closely but make no immediate changes

       v.   I would modestly decrease my deposit amount

      vi.   I would strongly decrease my deposit amount

    c. Scenario C: Your bank does not provide any liquidity information (limited monitoring options)

        i.   I would strongly increase my deposit amount

       ii.   I would modestly increase my deposit amount

      iii.   I would make no changes to my deposit amount/behaviour

      iv.   I would monitor the situation closely but make no immediate changes

       v.   I would modestly decrease my deposit amount

      vi.   I would strongly decrease my deposit amount

14. Consider the following two banks: Bank A offers periodic liquidity information about its financial health but provides a lower-than-average interest rate on savings accounts (around 1% per year). Bank B does not provide additional transparency about its liquidity but offers a higher-than-average interest rate on savings accounts (around 3% per year). Which bank would you prefer to deposit your savings in?

    a. Bank A

    b. Bank B

       c. The more convenient bank

15. In Europe, deposit guarantee schemes protect depositor's savings by guaranteeing deposits up to

       a. Write down amount in Euro (text entry)

       b. There is no deposit guarantee scheme