Stablecoins and Monetary Policy Transmission*

Carlo Altavilla Miguel Boucinha Lorenzo Burlon

Ramon Adalid Roberta Fortes Franziska Maruhn

Abstract

This paper studies the effects of stablecoin adoption—crypto-assets designed to maintain a stable value relative to a reference asset—on bank intermediation and the transmission of monetary policy. Using evidence from the rapid expansion of stablecoins combined with confidential granular data on euro area banks and their individual borrowers, we document three main findings. First, stablecoin adoption induces a deposit-substitution mechanism, whereby funds shift from retail bank deposits to digital assets. This reallocation increases banks' reliance on wholesale funding and can ultimately constrain their intermediation capacity. Second, we show that stablecoins affect the pass-through of policy rates to bank funding costs and lending conditions, potentially strengthening bank-based monetary policy transmission while making it less predictable. These effects are nonlinear and depend critically on the scale of stablecoin adoption, their design features, use cases, and regulatory treatment. Third, we document a potential risk associated with the growing prevalence of foreign-currency-denominated stablecoins. Their diffusion is likely to increase banks' reliance on foreign-currency wholesale funding. We show that banks with greater exposure to this source of funding exhibit a weaker loan-supply response to domestic monetary policy shocks, indicating a weakening of monetary policy transmission and a potential erosion of monetary sovereignty.

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* Carlo Altavilla: European Central Bank and CEPR. E-mail: carlo.altavilla@ecb.europa.eu. Miguel Boucinha: European Central Bank. E-mail: miguel.boucinha@ecb.europa.eu. Lorenzo Burlon: European Central Bank. E-mail: lorenzo.burlon@ecb.europa.eu. Ramon Adalid: European Central Bank. E-mail: ramon.adalid@ecb.europa.eu. Roberta Fortes: European Central Bank. E-mail: roberta.fortes@ecb.europa.eu. Franziska Maruhn: European Central Bank. E-mail: franziska.maruhn@ecb.europa.eu. We would like to thank Charles-Enguerrand Coste, Nico Di Gabriele, Natalia Martín Fuentes, Jean-Francois Jamet, Claudia Lambert, Philip Lane, Massimo Ferrari Minesso, Julian Schumacher, Enrico Sette, Frank Smets, Vlad Tomozei and seminar participants at the European Central Bank. The opinions in this paper are those of the authors and do not necessarily reflect the views of the European Central Bank or the Eurosystem.

1 Introduction

The rapid expansion of digital assets has reshaped the landscape of modern finance, prompting academics, central banks and regulatory authorities to assess their implications for monetary policy, financial intermediation, and systemic stability. Among these assets, stablecoins— a type of crypto-asset designed to maintain a stable value relative to a reference asset or basket of assets—have emerged as increasingly important "money-like" instruments (Arner et al., 2020; Gorton and Zhang, 2021; Gorton et al. 2022; BIS, 2022, 2025). Unlike highly volatile crypto-assets such as Bitcoin, stablecoins aim to replicate the functionalities of conventional bank deposits, offering the potential to serve as widely used instruments for payments, trading, and liquidity management within digital financial ecosystems.

Despite these ambitions, stablecoin markets have exhibited episodes of pronounced volatility, reflecting concerns about their ability to remain effectively anchored to the underlying reference asset, typically a fiat currency (see ESRB, 2025). De-pegging events, liquidity mismatches, and the opacity of backing reserves have underscored the fragility of some stablecoin arrangements (d'Avernas et al., 2022; Hoang and Baur, 2024).

Policymakers in the euro area have devoted increasing attention to the potential risks of stablecoins for financial stability, monetary policy transmission, and payment system integrity (Panetta 2020 and 2025, Lane 2025, Cipollone 2025a and 2025b, Lagarde 2025, Schnabel 2025). As adoption accelerates, these potential vulnerabilities raise substantial questions about the interaction between stablecoins, the traditional banking system, and the transmission of monetary policy.

Against this backdrop, this paper addresses three related questions. First, how does a substantial expansion in stablecoin adoption affect banks' intermediation capacity? Second, what are the implications of rising stablecoin adoption for the transmission of monetary policy in the euro area? Third, what risks to monetary policy transmission arise if the stablecoin market in the euro area becomes dominated by non-euro-denominated instruments?

Concerning the first question, we document a deposit-substitution mechanism whereby households and firms reallocate funds from bank deposits into stablecoins. This reallocation erodes banks' stable funding base, increases reliance on wholesale funding, and ultimately constrains credit supply. These dynamics mirror well-established disintermediation pressures associated with wholesale funding dependence (Huang and Ratnovski, 2011; Pérignon et al., 2017) and resemble mechanisms previously documented for money market funds and other deposit substitutes (Sunderam, 2015; Nagel, 2016; Schmidt et al., 2016; Oefele et al., 2024; Im et al., 2025; Anadu et al., 2024; Coste, 2024).

To quantify these dynamics, we estimate a Bayesian vector autoregression (BVAR) using an internal instrument based on shifts in public attention toward stablecoins, proxied through Google Trends data following established identification strategies (Altavilla and Giannone, 2017; Stock and Watson, 2018; Plagborg-Møller and Wolf, 2021). We find that increases in attention to stablecoins lead to a statistically and economically significant decline in the ratio of retail to wholesale deposits (specifically NBFI deposits) and to a contraction in bank lending to firms.

We then use confidential bank-level data in a local projection panel framework to assess the heterogeneous effects on lending arising from the interaction between stablecoin activity and banks' deposit composition. The analysis combines supervisory data collected for oversight purposes with confidential information on individual bank balance sheet items (IBSI) for a panel of euro-area banks. Our empirical strategy exploits the cross-sectional distribution of retail deposit shares to contrast a setting in which stablecoin usage remains limited—so that banks continue to rely predominantly on retail deposits—with scenarios in which stablecoin adoption becomes more pronounced and is associated with a shift toward wholesale funding. The results reveal a pronounced nonlinearity in the effect of stablecoins on bank lending. Banks with higher ex ante retail deposit shares—which also lend more intensively to firms and households relative to their balance sheet size—exhibit a stronger lending response to declines in overnight deposits. As a result, stablecoins have negligible aggregate effects at low levels of adoption, but their impact rises sharply as adoption scales. This reflects the increasing substitution of stablecoins for retail deposits as the market matures. Moreover, the magnitude of these effects depends critically on stablecoin design features and the surrounding regulatory framework, underscoring the central role of institutional arrangements in shaping macro-financial outcomes.

Concerning the second question, we examine the implications of rising stablecoin adoption for monetary policy transmission in the euro area, where banks remain the primary conduit through which policy rate changes affect the real economy. Specifically, we focus on two core transmission mechanisms: the bank lending channel (Bernanke and Gertler, 1995; Kashyap and Stein, 2000) and the deposit channel (Drechsler et al., 2017). In short, stablecoins may affect the bank lending channel by altering banks' funding structures, thereby modifying the pass-through from policy rates to lending conditions. At the same time, stablecoins can affect the deposit channel by changing the sensitivity of bank deposit rates and quantities to policy changes, influencing monetary policy transmission through banks' liability side. Our findings show that sizable deposit outflows into stablecoins materially reshape the relative strength of these channels—strengthening the bank lending channel while weakening the deposit channel. Importantly, we also find that by altering banks' liability structures and funding costs, widespread stablecoin adoption can reduce the predictability of monetary policy actions.

Concerning the third question, we show that if non-euro-pegged stablecoins were to become an important means of payment within the euro area, fluctuations in their demand could effectively import foreign monetary conditions into the domestic economy. In such a scenario, shifts in global risk sentiment, foreign monetary policy shocks, or changes in the perceived safety of the reference currency would translate into endogenous variations in local liquidity conditions, independently of the domestic policy stance (Brunnermeier et al., 2019). This mechanism weakens the pass-through from policy rates to domestic financial conditions by partially displacing euro-denominated monetary aggregates and payment instruments. Moreover, the widespread adoption of foreign-currency-denominated stablecoins could amplify currency substitution dynamics, reduce the informational content of domestic monetary indicators, and constrain the central bank's ability to stabilize inflation and output, particularly during periods of financial stress or abrupt capital flow reversals (He et al. 2017).

This paper contributes to the growing literature at the intersection of digital finance and monetary policy (Ahmed and Aldasoro, 2026; Aldasoro et al., 2025; Barbon et al., 2025; Karau, 2023; Caramichael and Liao, 2022; Ferrari Minesso and Siena, 2025; Ferrari Minesso et al 2022; Burlon et al. 2022; Abad et al. 2025). To the best of our knowledge, this study is the first to systematically examine the bank-based transmission channels associated with stablecoin adoption and their implications for banks' lending intermediation capacity. By documenting how stablecoins reshape funding structures, alter credit allocation, and weaken monetary policy transmission, our findings underscore the importance of continued monitoring and careful regulatory calibration to balance financial innovation with monetary and financial stability.

The remainder of the paper is organized as follows. Section 2 reviews recent developments in stablecoin markets. Section 3 analyses stablecoin-induced deposit substitution, its effects on bank lending, and the resulting implications for banks' intermediation capacity. Section 4 examines the impact of stablecoins on the strength of monetary policy transmission. Section 5 shows how widespread adoption of foreign-currency stablecoins could reduce the effectiveness of monetary policy. Section 6 concludes.

2 Stablecoin market developments

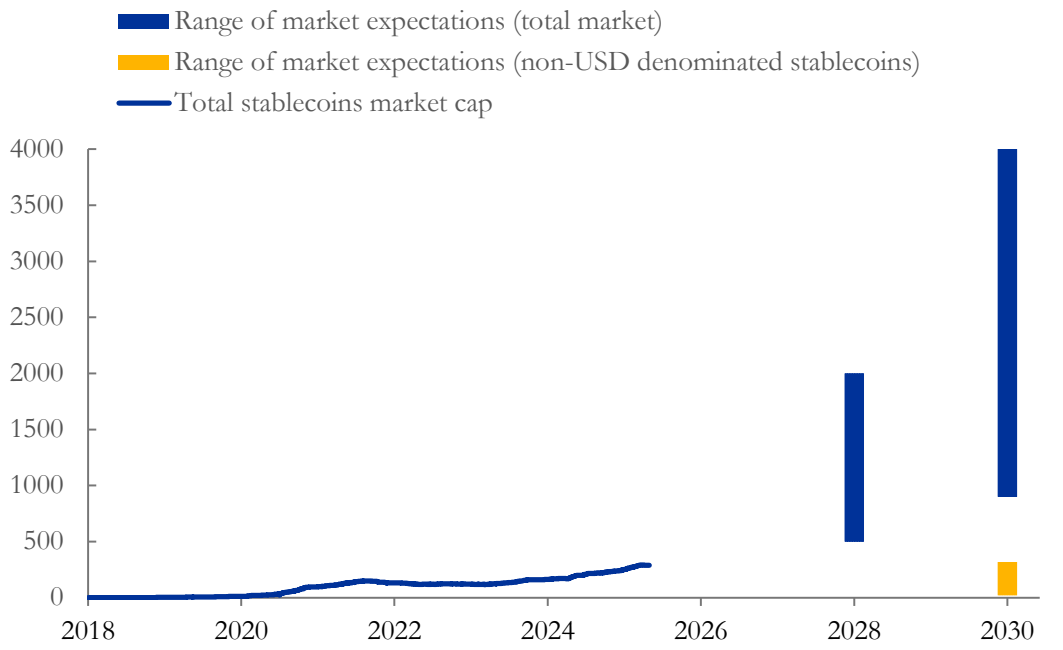
Stablecoins are a subset of crypto-assets that operates in the blockchain and are designed to maintain a stable value relative to a reference asset or a basket of assets.[1] Most are pegged to fiat currencies,

[1] Under the EU's Markets in Crypto-Assets Regulation (MiCAR), stablecoins typically refer to two types of assets: (i) Electronic Money Tokens (EMTs), which are pegged to the value of a fiat (official) currency, and (ii) Asset-Referenced Tokens (ARTs), which reference multiple currencies or other assets (e.g., oil or gold prices).

typically the US dollar, allegedly providing a counterpoint to the high volatility commonly associated with traditional unbacked crypto-assets such as Bitcoin, whose value is solely driven by supply and demand dynamics, with no intrinsic value. In this sense, stablecoins can serve as more effective monetary and payment instruments than unbacked crypto-assets (BIS, 2020), while also functioning as a bridge between crypto-space and fiat currencies by facilitating participation in crypto-trading and allowing market participants to realise valuation gains without exiting the crypto-asset ecosystem.

Figure 1 shows that the stablecoin market has expanded rapidly over recent years, reaching approximately USD 300 billion in market capitalisation, driven by rising demand for digital settlement assets and the growth of crypto-asset trading ecosystems.

Figure 1: Actual and expected stablecoin market development



Note: The chart displays the historical evolution of total stablecoin market capitalisation in USD billions (blue line), alongside two ranges of market estimates (blue bars) for expected total market capitalisation in 2028 and 2030. The yellow bar represents market expectations for non-USD-denominated stablecoins.

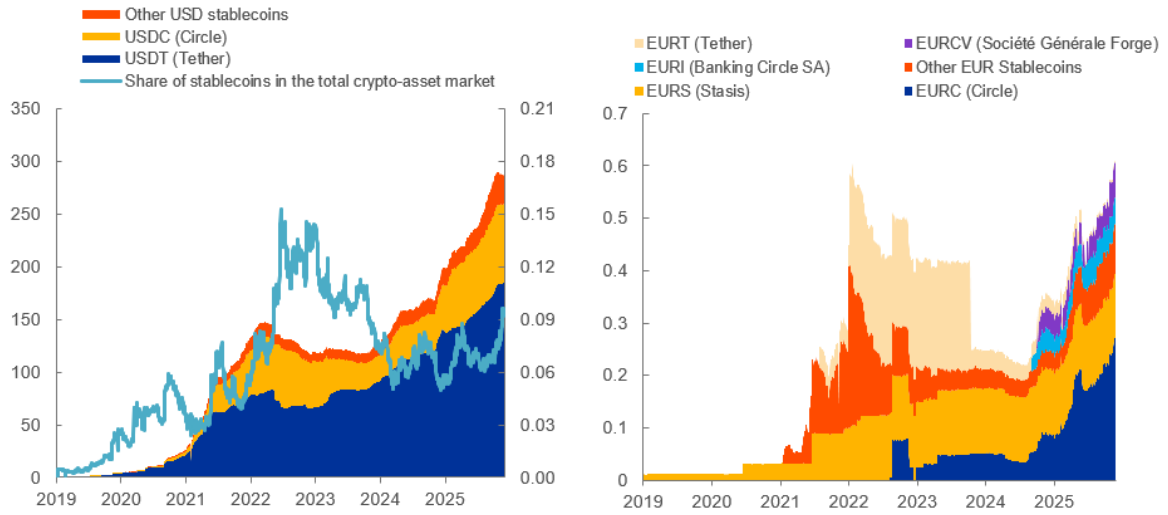
The figure also reports market expectations for 2028 and 2030, with analysts projecting continued robust growth in stablecoin issuance over the next three to five years, ranging from USD 900 billion to USD 4.0 trillion by 2030. By that date, stablecoins referencing currencies other than the U.S. dollar are forecast to range between approximately USD 20 billion and USD 300 billion.[2] Regulatory clarity from

[2] See e.g. Citigroup (2025), Coinbase (2025) and J.P. Morgan (2025).

the recently enacted GENIUS Act in the United States, which establishes a framework for USD-denominated payment stablecoins, is perceived as a key growth driver, as it provides a domestic framework for stablecoins and aligns with a broader U.S. policy preference for private crypto-asset markets over the issuance of a central bank digital currency.[3] However, the wide range of projections reflects significant uncertainty regarding market adoption and integration with traditional financial systems, particularly whether stablecoin use will expand beyond crypto-trading into payments, treasury management, and cross-border settlement. Such developments could support a more structural integration of stablecoins into the financial system (see Aerts, Lambert and Reinhold, 2025), with potentially significant implications for bank funding models and monetary policy transmission. Taken together, the observed trajectory and expected market evolution suggest that stablecoins are likely to become a durable and influential component of the financial landscape, albeit with heterogeneous use cases and uptake across jurisdictions.

The market is characterized by a high degree of concentration, as shown in Figure 2.

Figure 2: Market capitalisation of major USD-and-EUR pegged stablecoins



Sources: CryptoCompare, Coingeko, CoinMarketCap and ECB Calculations. Notes: (left-hand side: left-hand scale: USD billion; right-hand scale: percentage; right-hand side: EUR billion). Other selected USD-pegged stablecoins include 26 tokens, and other selected EUR-pegged stablecoins include 11 tokens. The latest observations are for 26 November 2025.

[3] Appendix 1 provides a comparative overview of the principal differences between stablecoin regulation in the euro area and in the United States. The GENIUS Act will take effect on 18 January 2027, or the date that is 120 days after primary Federal stablecoin regulators issue any final regulations implementing the Act, whichever comes first.

Stablecoins pegged to the USD dominate the global market, accounting for approximately 99% of global issuance. Two issuers, Tether (USDT) and Circle (USDC), account for the majority of the supply (Figure 2, left panel). In contrast, euro-denominated stablecoins remain a small segment.[4] While the market capitalisation of euro-denominated stablecoin issuers stands around EUR 615 million, this segment has shown steady growth in recent months (Figure 2, right panel).[5] These developments coincide with a range of initiatives led by European and international banks involving stablecoins denominated in currencies other than the U.S. dollar. For example, among others, a consortium of banks operating in the European Union plans to launch a euro-denominated stablecoin by 2026[6], while a group of global banks has announced joint explorations into issuing a stablecoin pegged to G7 currencies[7].

As of November 2025, the market capitalisation of stablecoins accounts for around 10% of the total crypto-asset market. Despite their relatively modest market share, the functional importance of stablecoins is significant in the crypto space. They are widely used as a medium of exchange within the crypto ecosystem and serve as a key vehicle for trading, settlement liquidity provision (See Kosse et al., 2023; BIS 2025; ESRB 2025) and a facilitator of transactions involving volatile crypto-assets like Bitcoin.[8] Stablecoins are estimated to support most transaction volumes in the crypto-asset space, with the volume over one month on public blockchains reaching approximately USD 7 trillion.[9]

The rapid pace of global stablecoin development—together with the predominance of stablecoins pegged to the U.S. dollar—has raised increasing concerns about their implications across multiple layers of the economy. In particular, the growing scale and usage of stablecoins may affect financial intermediation, cross-border capital flows, and the transmission of monetary policy, especially in jurisdictions whose domestic currency differs from the reference asset. In what follows, we focus on the

[4] Appendix 4 documents marked differences in the balance sheets of stablecoin issuers in the euro area and the United States, also reflecting distinct regulatory environments.
[5] While MiCAR applies fully to asset-referenced tokens and e-money tokens since 30 June 2024, crypto-asset service providers (CASPs) are subject to a transitional ("grandfathering") regime under which entities operating under existing national regimes may continue their activities until they receive (or are refused) MiCAR authorisation, and in any case no later than 1 July 2026. See Regulation (EU) 2023/1114.
[6] See, e.g., ING (2025), which highlights the collaboration between ING, Banca Sella, KBC, and others to develop a MiCAR-compliant euro-denominated stablecoin. Citigroup later joined the initiative.
[7] The group includes Banco Santander, Bank of America, Barclays, BNP Paribas, Citi, Deutsche Bank, Goldman Sachs, MUFG Bank Ltd, TD Bank Group and UBS.
[8] Stablecoins are a key pillar of the crypto-asset ecosystem, enabling the conversion between fiat currencies and non-stablecoin crypto-assets. Their importance has grown markedly, with stablecoins now used in roughly 80% of all trades on crypto-asset trading platforms (see Aerts et al. 2025). A recent ESRB (2025) report highlights a strong and statistically significant correlation between trading volumes of unbacked crypto-assets and stablecoins.
[9] See Visa, Onchain Analytics Dashboard (accessed November 2025), visaonchainanalytics.com.

implications for banks' intermediation capacity and for the effectiveness of monetary policy transmission.[10]

3 Stablecoin-induced deposit substitution and bank lending

In this section, we examine whether broader adoption of stablecoins could affect banks' intermediation capacity. Because stablecoins provide a digital alternative to bank deposits, they may erode banks' funding base and ultimately weaken the banking system's ability to intermediate. The effects on banks' funding base range from a compositional shift in liabilities – from retail to wholesale funding – to a net balance sheet contraction relative to the case without stablecoins.

Intuitively, stablecoins provide households and firms with an alternative to traditional bank deposits. A shift of balances from banks to stablecoins would reduce the retail deposit base of commercial banks. To the extent that non-bank stablecoin issuers redeposit part of their reserves with banks (especially in the EU given reserve requirements under Markets in Crypto-Assets Regulation (MiCAR), a change in the composition of banks' deposit base emerges, with a higher weight for wholesale deposits (as stablecoin issuers are typically non-bank financial intermediaries).[11] This shift from retail to wholesale deposits worsens banks' liquidity positions because wholesale funding is treated as less stable under Basel III. Compared with retail deposits, wholesale deposits carry higher run-off rates in the Liquidity Coverage Ratio (LCR) and lower available stable funding weights in the Net Stable Funding Ratio (NSFR), reflecting their greater sensitivity to stress and shorter maturities. As a result, banks must hold more high-quality liquid assets or secure longer-term funding to satisfy regulatory liquidity requirements.[12] The deterioration of LCR and NSFR associated with greater reliance on wholesale funding has direct implications for bank lending. To preserve compliance with liquidity requirements, banks may rebalance their balance sheets away from illiquid, long-maturity loans and toward liquid assets,

[10] An issue not addressed directly in this paper concerns multi-issuer stablecoins, which arise when tokens issued in different jurisdictions are treated as fully fungible. The risks associated with such multi-issuance schemes are discussed in Portes (2025), ECB (2025), ESRB (2025), and Di Gabriele (2025).

[11] Banks can, in principle, issue stablecoins directly on their balance sheets. In practice, however, they typically issue electronic money tokens (EMTs) through a dedicated subsidiary for three main reasons. First, initial regulatory costs are lower, as obtaining an electronic money institution (EMI) license is generally less onerous than obtaining a credit institution license. Second, EMIs are subject to less complex risk management frameworks and lower own-funds requirements. In particular, EMTs issued by EMIs are required to hold own funds equal to 2% of the average outstanding electronic money, increasing to 3% for significant EMTs, whereas credit institutions are subject to higher minimum capital requirements. Third, EMIs may fall outside the scope of prudential consolidation, thereby reducing consolidated regulatory and reporting obligations for participating banks.

[12] Given that wholesale deposits are assigned higher LCR outflow rates (25-100%) compared with retail deposits (5-10%), banks' liquidity coverage ratios may deteriorate (see Coste, 2024).

or tighten lending standards by reducing loan volumes, shortening maturities, or increasing loan pricing. Consequently, lending becomes more procyclical and less responsive to domestic monetary easing.

In addition, stablecoins could also lead to an overall decline in bank funding and a contraction in banks' balance sheets relative to the case when they are absent. Specifically, this contraction materialises if sovereign bond purchases by stablecoin issuers replace those that commercial banks would otherwise have made. The mechanism rests on the nature of money creation: when banks grant credit – whether to the private sector or to governments, and whether via loans or bond purchases – they effectively create new deposits that previously did not exist. In contrast, when stablecoin issuers (or other non-bank entities) purchase bonds, they do so by using existing money transferred by the acquirers of their stablecoins (e.g., households), thus reducing the volume of bank deposits compared to when banks undertake those purchases.[13] This contractionary effect on bank funding can be neutralised if the government responds to this new demand by simply issuing more debt, or if other non-bank entities respond by reducing their purchases of government bonds. In that case, banks are not crowded out and can continue to create new money at the same pace as before the emergence of the stablecoin.

In the remainder of this section, we test these hypotheses by examining how increases in stablecoin adoption affect the composition of bank deposits and, in turn, bank lending, using both macro- and micro-level data.

3.1 A macro-level perspective

We begin with a macro-level perspective, analysing how developments in the stablecoin market propagate to aggregate bank lending activity. To this end, we estimate a macro-financial Bayesian VAR (BVAR) augmented with an internal instrument, following Stock and Watson (2018) and Plagborg-Møller and Wolf (2021). The internal-instrument approach extends a standard BVAR by exploiting an off-model proxy variable for stablecoin developments to identify the structural shock of interest. This enables credible shock identification while preserving the flexibility and richness of the BVAR framework.

[13] Strictly speaking, unlike direct lending to the private sector, bank purchases of government bonds in the primary market do not immediately create deposits. Initially, banks settle these purchases by transferring reserves to the government's account at the central bank; this transaction represents an asset swap (reserves for bonds) rather than an immediate balance sheet expansion. The creation of inside money (deposits) occurs subsequently, when the government disburses these funds to non-bank entities (e.g. households or firms). Upon disbursement, reserves return to the banking system and the recipients' deposit accounts are credited, resulting in a net expansion of the banking sector's balance sheet (bonds on the asset side, new deposits on the liability side). For the purposes of this analysis, we abstract from the interim lag between bond issuance and fiscal spending.

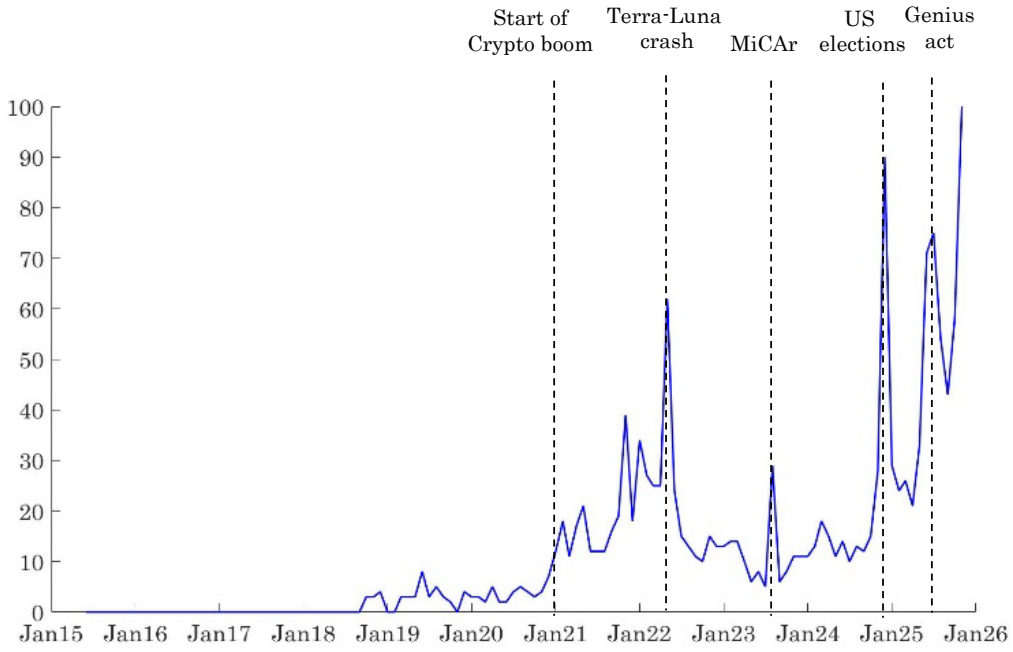
The BVAR model can be expressed as:

$$y_t = \begin{pmatrix} z_t \\ X_t \end{pmatrix} = A_1 y_{t-1} + A_2 y_{t-2} + \cdots + A_p y_{t-p} + u_t \qquad \text{with } u_t \sim N(0, \Sigma_u) \tag{1}$$

Where z_t denotes the stablecoin indicator and X_t is the $(n \times 1)$ vector of endogenous variables. The variable z_t is obtained by extracting a time series of "stablecoin innovations" from Google Trends data, following the methodology of Altavilla and Giannone (2017). We interpret the volume of Google search queries as a proxy for shifts in public attention toward stablecoins, driven by media reporting, policy communications, and broader information flows. The series is restricted to users located in Germany, an approach that ensures coverage of information channels particularly relevant for the euro area and closely linked to ECB-related publications.

Figure 3 displays Google Trends search activity for the term "stablecoin" in Germany over the period from January 2015 to September 2025. Search volumes are normalized so that the highest level of interest within this timeframe is set to 100.

Figure 3: Stablecoin Google trend indicator



Note: The figure shows Google Trends data for search queries for the term "stablecoin" in Germany from January 2015 to September 2025. Search interest is normalized relative to the peak value over the sample period, which is set to 100. Vertical gridlines mark key events: the onset of the crypto boom in January 2021; the Terra–Luna crash, i.e. the de-pegging of the TerraUSD algorithmic stablecoin and the associated collapse of its reserve asset, in May 2022; the entry into force of the Markets in Crypto-Assets Regulation (MiCAR) in June 2023; the U.S. presidential election in November 2024; and the announcement of the GENIUS Act in July 2025.

The time series displays a clear pattern of evolving public attention over the sample period. In the early years, search activity remains persistently low and relatively flat, consistent with the limited prominence of stablecoins in public discourse. Beginning in the late 2010s, the index exhibits occasional short-lived spikes corresponding to episodes of heightened media coverage, regulatory announcements, or sharp movements in major crypto-asset markets. These bursts of attention typically revert quickly, suggesting that early interest was event-driven rather than reflecting sustained engagement. From 2020 onward, the series enters a markedly different regime. Attention increases both in level and in volatility, with more frequent and pronounced peaks aligned with key developments in the digital asset ecosystem, including the rapid expansion of major stablecoins, episodes of market stress, and public consultations by financial authorities. This period also features a gradual upward trend in the baseline level of search intensity, indicating that stablecoins have become a persistent topic in the information set of the general public. Search interest rises sharply with the onset of the crypto boom in January 2021, reflecting heightened public attention during the rapid expansion of crypto-asset markets. A second, prominent spike occurs in May 2022, coinciding with the Terra–Luna crash and the de-pegging of TerraUSD, which triggered widespread concerns about stablecoin design and systemic risk. Elevated search activity is also observed around the entry into force of the MiCAR in June 2023, suggesting increased interest in the regulatory framework governing stablecoins. Further spikes appear around the U.S. presidential election in November 2024 and the announcement of the GENIUS Act in July 2025, indicating that political developments and regulatory announcements play an important role in shaping public attention to stablecoins.

Overall, the evolution of the series suggests that public attention to stablecoins is characterized by low-frequency shifts in salience combined with high-frequency information shocks triggered by policy, media, and market events. This dynamic structure makes the indicator particularly suitable as an externally generated measure of information demand and as a plausible source of exogenous variation for identification purposes in a VAR setting.

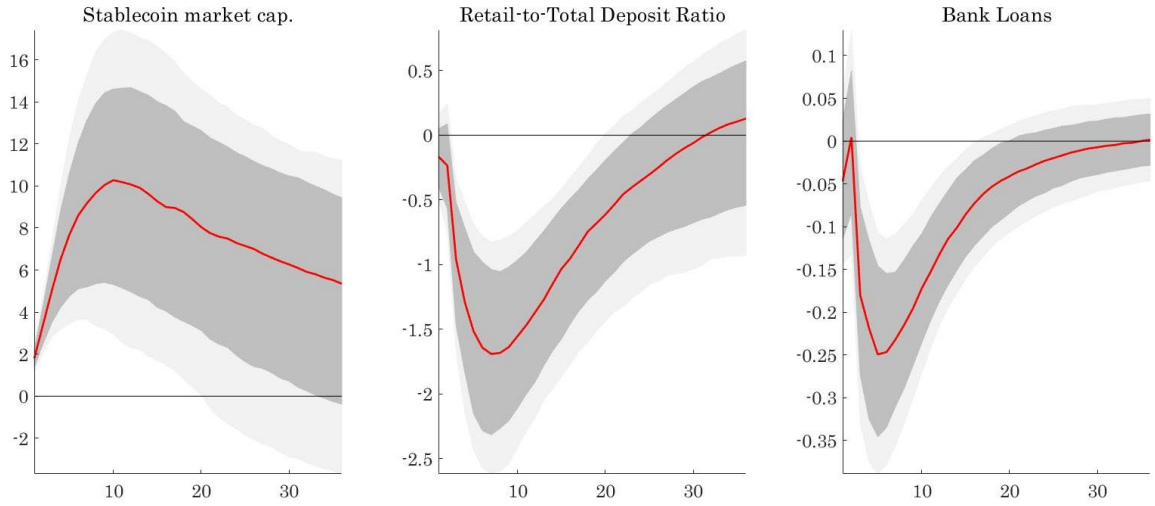
The vector X_t in the BVAR model specified above includes four variables that allow us to trace the propagation of stablecoin shocks throughout the financial system. First, stablecoin market capitalisation, which provides a direct measure of market activity. Second, the ratio of retail to total deposits, with retail deposits measured as household deposits and total deposits defined as the sum of household and non-bank financial institution deposits. This ratio is central to assessing the degree of deposit substitution between traditional bank liabilities and alternative digital instruments. Third, loans to non-financial firms, our key outcome variable for evaluating the implications of shifts in bank funding structures for the real economy. Fourth, the euro area unemployment rate, included to control for cyclical economic conditions and to mitigate confounding macroeconomic dynamics. The model is estimated at a monthly frequency

using two lags and Bayesian methods (see Giannone et al., 2015) over the sample January 2015 to September 2025. This period encompasses the emergence and rapid expansion of the stablecoin market, as well as episodes of heightened regulatory scrutiny and macro-financial turbulence, thereby providing sufficient variation to identify the relevant transmission channels.

Figure 4 shows the impulse response functions to a shock in the Google Trends index that increases the market capitalisation of stablecoins by 10% after 1-year (Figure 4, left panel).

The results provide robust evidence in favour of a deposit substitution mechanism at play. A positive stablecoin shock, proxied by the Google trend indicator, generates a statistically significant increase in stablecoin market capitalisation, indicating that heightened public interest translates into greater participation in the stablecoin ecosystem. This expansion is followed by a decline of roughly 1.5% in the ratio of retail to total deposits, consistent with a reallocation of funding away from traditional retail deposits and toward alternative digital stores of value (Figure 4, middle panel). Ultimately, this shift in the composition of bank liabilities is associated with a contraction of approximately 0.2% in lending to firms (Figure 4, right panel). Taken together, these findings imply that an increase in the market share of stablecoins can affect bank intermediation not only through competitive pressures on deposit funding, but also through broader changes in bank funding structures that transmit into credit supply conditions.

Figure 4: Response to a positive shock in the stablecoin indicator



Note: The figure shows the responses of bank loans (right panel) and of the ratio of retail to wholesale deposits in percentage (middle panel) to a shock in the Google Trends stablecoin indicator that increases stablecoin market capitalisation by 10% after one year (left panel). The solid red line depicts the median response, while the shaded areas represent the 5th–95th (light grey) and 16th–84th (dark grey) percentiles of the posterior distributions.

3.2 A micro-level perspective

In this section, we leverage granular data to examine the potential effects of widespread stablecoin adoption on bank lending. We use confidential supervisory data collected for oversight purposes, matched with another confidential dataset on individual bank balance sheet items (IBSI). The dataset covers a large portion of the euro area banking sector, making it highly representative of lending dynamics in the region (see Altavilla, Barbiero, Boucinha, Burlon, 2023; Altavilla, Burlon, Holton, Giannetti, 2022).

Figure 5 illustrates the liability evolution and composition for banks reporting crypto-related counterparties among their top ten largest counterparties.[14]

The left panel illustrates a significant increase in liabilities from crypto-related entities in recent years, despite the fact that the number of banks holding crypto deposits remains relatively small. The right panel indicates that banks with liabilities related to crypto tend to have a very high share of wholesale deposits relative to total assets. In other words, banks receiving wholesale deposits from entities active in crypto markets are typically those already reliant on wholesale funding and less dependent on retail deposits.

This suggests that, in the early stage of market development – which is the stage we are currently in – when stablecoins are predominantly used for transactions involving other crypto assets and the associated reduction in retail deposits is limited, we mainly observe an increase in wholesale deposits for banks already active in this market. As these banks are generally less engaged in lending to the real economy, the expected impact on lending is limited. In more advanced stages of market development, when stablecoins are more likely to substitute for retail deposits, their impact on bank lending could become substantially larger.

To gauge this potential effect, we employ a local projection framework, which is well suited for estimating dynamic causal responses (Jordà, 2005; Jordà et al., 2015; Plagborg-Møller and Wolf, 2021). Our variable of interest for the bank funding structure is similar to a "shift-share" Bartik (1991)–type instrument (see also Goldsmith-Pinkham, Sorkin, and Swift, 2020). The core idea is that while the mix of wholesale and retail deposits at a given bank may still be endogenous to that bank's own funding

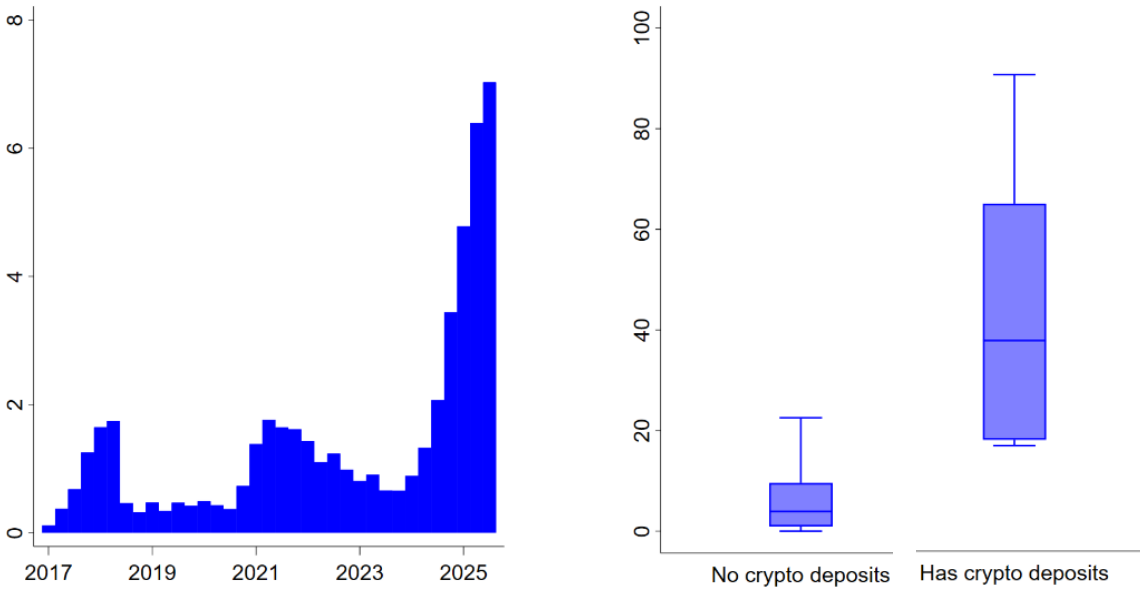
[14] This data is not complete as it is based on the top ten largest counterparties in COREP (the common reporting system for regulatory solvency information and metrics) and/or the top ten largest depositors reported to supervisors in weekly liquidity templates. Importantly, both sources capture depositor-level amounts only partially and lack aggregated information on the NACE classification of depositors. Instead, crypto-related counterparties are identified using text search in the reported names and information about crypto-exchanges from the ESMA list of CASP as well as other public information.

strategy, aggregate stablecoin developments reflect the preferences of economic agents and are therefore likely to be exogenous to the overall composition of bank funding.

Figure 5: Banks balance sheets depending on their linkages to the crypto-market

(a) Large deposits from crypto-related counterparties

(b) Wholesale deposits over assets



Notes: Panel a: EUR bn. Based on banks reporting crypto-related counterparties among their top ten largest counterparties in quarterly ECB Supervisory Reporting and/or among the top 10 largest depositors in weekly liquidity templates collected by the ECB, thus the data is not complete. Crypto-related counterparties are identified using text search in the reported names and information about crypto-exchanges from the ESMA list of CASP as well as other public information. Sample includes SIs and LSIs. Panel b: Percentages of total assets. Wholesale deposits are deposits from other financial corporations. Banks are considered to have "crypto deposits" if they report at any point since July 2024 to have crypto-related counterparties among their top 10 largest counterparties based on the same data sources as in panel a.

To operationalise this idea, we use the same Google Trends indicator from the previous subsection as a proxy for stablecoin activity, combined with a shift-share variable based on banks' wholesale deposit share (defined as NBFI deposits over the sum of retail and NBFI deposits). Specifically, we estimate the following model in a bank panel at monthly frequency, controlling for relevant bank controls:

$$\Delta L_{b,t+h,t-1} = \beta \boldsymbol{Z}_{b,t,t-12} + \boldsymbol{\gamma} \boldsymbol{X}_{b,t-1} + \mu_b + u_{b,t} \quad (2)$$

where $\Delta L_{b,t+h,t-1}$ is the growth in loans to the non-financial private sector outstanding by bank b between periods $t+h$ and $t-1$. $\boldsymbol{X}_{b,t-1}$ includes several bank-level controls: the loan growth between period $t-1$ and $t-2$, the share of retail deposit in total assets, the NPL ratio, the CET1 capital ratio, the share of TLTRO borrowing over assets, and the share of excess liquidity holdings over assets. To control for developments in loan demand, we use confidential, time-varying assessments of credit demand

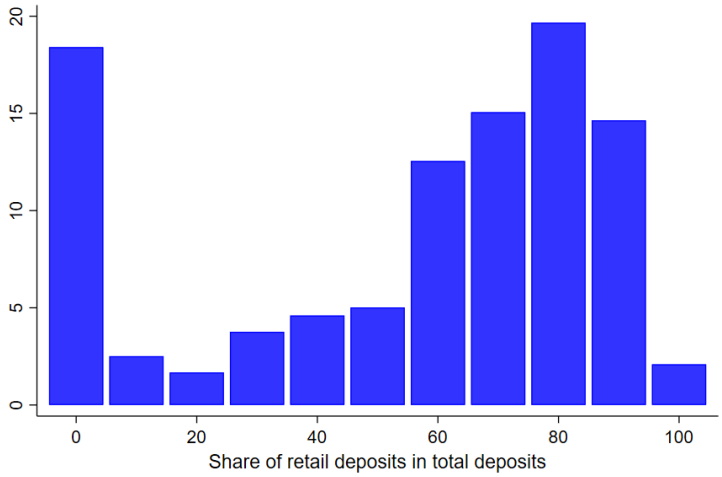
provided by individual banks participating in the euro area Bank Lending Survey (BLS). The variable μ_b is a bank fixed effect to control for the bank-specific unobserved heterogeneity related to banks' business models and any other time-invariant characteristics. The variable $\boldsymbol{Z}_{b,t,t-12}$ is instead equal to:

$$\boldsymbol{Z}_{b,t,t-12} = Shift_t \times \frac{1}{12}\sum_{k=1}^{12} Share_{b,t-k} \tag{3}$$

The first component, $Shift_t$, is the Google trends indicator for stablecoins, which is plausibly determined by the aggregate preferences of economic agents and cannot be influenced by any individual bank. The second component, $Share_{b,t-k}$, is the share of each bank's NBFI deposits in aggregate bank funding, where funding is defined as the sum of NBFI and household deposits at bank $\boldsymbol{b}$. To ensure that this second term is less dependent on specific events, we average this share over the past twelve months.

In the empirical analysis, we rely on the distribution of retail shares across banks (see Figure 7), defined as the share of household deposits in total deposits (household plus NBFI), measured as of August 2025.

Figure 7: Heterogeneity across banks



Notes: The figure displays the distribution of retail funding shares across banks as of August 2025. The x-axis reports the retail share, measured as household deposits divided by total deposits (household plus NBFI deposits), while the y-axis shows the share of banks.

Estimation results are reported in Table 1. Standard errors are clustered at the bank level. At the bank level, we find a meaningful effect: a one-standard-deviation increase in stablecoin exposure reduces cumulative non-financial private sector loan growth over the following 24 months by approximately 2.5 percentage points (Columns 1–2).

To examine how effects vary with banks' deposit composition, we estimate the impact of a decline in overnight retail deposits at the individual bank level. The specification is similar to equation (2), splitting banks into two groups based on the 75th percentile of their retail share (inverse of the wholesale share discussed before), controlling again for relevant time-varying bank characteristics and bank fixed effects:

$$\Delta L_{b,t+h,t-1} = \beta_1 \Delta D^R_{b,t,t-1} + \beta_2 \left(\Delta D^R_{b,t,t-1} \times D^{HR}_b \right) + \boldsymbol{\gamma X}_{b,t-1} + \mu_b + u_{b,t} \quad (4)$$

where $\Delta D^R_{t,t-1}$ is the change in retail (*R*) overnight deposits (*D*) in total assets between period t and $t\text{-}1$ and D^{HR}_b is an indicator variable for banks with high retail (*HR*) share, i.e. above the 75th percentile.

Results are reported in Columns (3) and (4) of Table 1.

Table 1: Heterogeneity across banks and effects on loan growth

	Impact of stablecoin shock		Impact of overnight deposits decline	
	(1)	(2)	(3)	(4)
Stablecoin shock	-2.633**	-2.230**		
	(1.055)	(1.102)		
Deposit outflow, Low retail			-0.441	-0.342
			(0.306)	(0.293)
Deposit outflow, High retail			-3.089**	-4.173*
			(0.197)	(0.163)
Loan demand (BLS)		1.010**		0.756**
		(0.413)		(0.300)
Bank controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Observations	12,272	11,456	27,236	25,270
Adjusted R^2	0.447	0.446	0.422	0.434

Notes: This table reports local projection estimates of non-financial private sector loan growth over a two-year horizon. Columns (1)–(2) show responses to a one-standard-deviation stablecoin shock, while columns (3)–(4) consider a one-standard-deviation decline in household overnight deposits relative to assets. The sample starts in January 2018 for columns (1)–(2) and in January 2008 for columns (3)–(4). Banks are classified as low (high) retail if their retail share is below (above) the 75th percentile of the retail-to-total deposits ratio. The dependent variable is the bank-level cumulative loan growth from t-1 to t+24. Controls include lagged loan growth, bank fixed effects, and bank-level characteristics (bank's share of retail deposits in assets, NPL ratio, CET1 ratio, TLTRO over assets, and excess liquidity over assets) measured at t-1. Columns (2) and (4) additionally control for loan demand using BLS responses cumulated over the same horizon as the loan growth. Stablecoin exposure is measured as the interaction between a Google Trends indicator and the 12-month lagged average wholesale-total-deposits ratio. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results reveal a pronounced nonlinearity in the effect of stablecoins on bank lending. Banks with lower ex ante retail deposit shares—reflecting intermediaries currently engaged in crypto activities—

respond less to declines in overnight deposits. In contrast, banks with higher ex ante retail deposit shares, which are also more active lenders to firms and households relative to their balance sheet size, respond more strongly to such declines. This suggests that while stablecoins have negligible aggregate effects at low levels of adoption, their impact could become substantial if adoption grows sufficiently to trigger significant deposit outflows. We also estimate the model using pooling both groups (not shown) to compare our results with the literature. Across banks, our estimates indicate that a one-standard-deviation decline in overnight deposits relative to assets (equivalent to a 0.8 percentage point reduction) reduces annual loan growth by roughly 1 percentage points or by 0.4 percentage points in terms of bank assets. The implied elasticity aligns with previous estimates (Drechsler, Savov, and Schnabl, 2017; Lammers, Giuliodori, Schmitz, and Elbourn, 2023), which suggest that a EUR 100 billion reduction in retail deposits due to stablecoins could reduce loan volumes by approximately EUR 50 billion.

Overall, these results highlight that stablecoin developments have the potential to weaken traditional bank lending and reduce the broader intermediation capacity of banks. This mechanism is important at the aggregate level because persistent conversions of retail deposits into stablecoins lower the stock of stable retail funding. Any resulting inflows of wholesale deposits from stablecoin issuers are likely to be only partial (largely dependent on requirements on reserve of assets composition) and would not fully offset the negative implications of diminished retail deposits for bank funding conditions.

4 Stablecoins and monetary policy transmission channels

In this section, we examine whether broader stablecoin adoption can materially affect monetary policy transmission channels. Monetary policy influences the real economy by shaping market interest rates and, consequently, the borrowing costs faced by firms and households. Traditionally, changes in policy rates are transmitted through banks' lending and deposit rates, prompting firms to adjust investment and production decisions and households to revise consumption and housing choices.

The rise of stablecoins may interact with this mechanism by altering banks' funding structures and the pricing of their liabilities, potentially modifying the pass-through from policy rates to lending and deposit rates. Because bank-intermediated credit remains central to firms' and households' financing decisions, any attenuation or amplification of this pass-through directly affects the effectiveness of monetary policy transmission.

4.1 A macro-level perspective

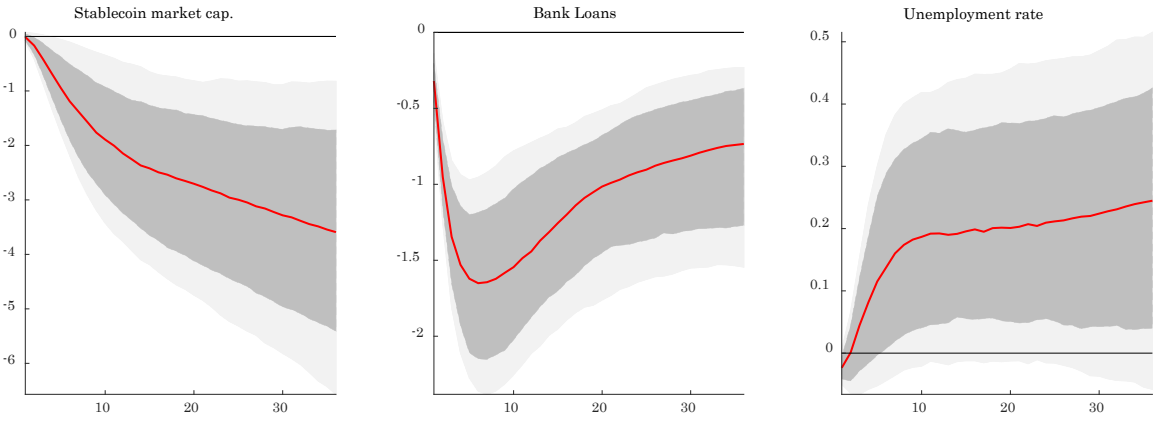
We start with a macro-level perspective by estimating a BVAR model similar to the specification used above, but now with a focus on tracing the response of stablecoin capitalisation and key macroeconomic

variables to a monetary policy shock. The model is estimated using monthly data from January 2015 to September 2025.

Identification relies on high-frequency monetary policy surprises, derived not only from official rate-setting meetings but also from speeches by members of the ECB Executive Board, following Altavilla et al. (2025). Incorporating these additional events has been shown to enhance the relevance of the instrument and improve the robustness of the resulting inference. More specifically, our monetary policy instrument is derived from intraday fluctuations in short-term overnight index swap rates, which serve as a proxy for unexpected changes in the policy rate. In particular, we employ the standard "target" factor constructed using data from the publicly available Euro Area Extended Monetary Policy Event-Study Database (EA-EMPD). Following the internal-instrument approach, this variable is included in the model and ordered first. The endogenous variable set includes stablecoin market capitalisation, the ratio of retail to wholesale deposits, loans to firms, and the euro area unemployment rate.

Figure 8 presents the impulse response functions (IRFs). A 100-basis-point contractionary monetary policy shock is estimated to lower the quarterly growth rate of euro area stablecoin market capitalisation by around 3 percentage points after two years. This result is qualitatively consistent with evidence for the United States (Aldasoro et al., 2025).

Figure 8: Response to a contractionary monetary policy shock



Notes: The chart reports impulse response functions associate to a 100-basis-point policy rate shock from a Bayesian VAR estimated over the period January 2019 to September 2025, using monthly data and two lags. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as internal instruments. The set of endogenous variables includes stablecoin market capitalisation, the ratio of retail to wholesale deposits, loans to the firms, and the euro area unemployment rate. The solid red line depicts the median response, while the shaded areas represent the 5th–95th (light grey) and 16th–84th (dark grey) percentiles of the posterior distributions.

The reduction in market capitalization in response to higher policy rates is consistent with the conventional opportunity cost channel. Under both MiCAR and GENIUS, stablecoin issuers are prohibited from paying interest on the coins they issue. While indirect forms of remuneration – such as

returns earned through DeFi lending or reward programmes offered by crypto platforms – remain possible under some restrictions, the absence of direct interest payments creates a meaningful distinction between stablecoins and bank deposits.[15] As a result, monetary policy influences the relative opportunity cost of holding these assets. When policy rates rise, traditional safe assets such as bank deposits or short-term government bonds become more attractive. This can trigger outflows from stablecoins, especially when they are perceived as riskier (Figure 8, left panel).

These effects may be amplified if monetary tightening leads to a sharp repricing of the yield curve, causing valuation losses on issuers' reserve assets. Under MiCAR, this risk may be relevant because the current proposal for the liquidity requirements does not set overall maturity restrictions but requires that 30% (or 60% for significant tokens) of the reserve portfolio be available within 5 working days, while there is no explicit restriction on the remaining part except the general requirement to minimise liquidity risk exposure .[16] If such volatility triggers sudden and sizable withdrawals of stablecoin issuers' deposits from banks, without corresponding inflows into retail deposits, it could create spillovers across the banking system and constrain credit supply. In Figure 8 (middle panel), the policy shock is associated with a roughly 1.5% decline in bank lending. These disruptions may, in turn, weigh on real economic activity and raise unemployment, consistent with the observed increase of about 0.2 percentage points in Figure 8 (right panel).

4.2 A micro-level perspective

We now investigate the underlying channels of transmission in greater depth by exploiting more granular bank-level data, which allows us to assess how the effects vary across the cross-section of lending institutions. Our objective is to compare the relative strength of the two key channels, the deposit channel and the bank lending channel, by examining the main forces that shape their responsiveness across banks.

In principle, the presence of stablecoin issuers will produce a shift in the bank funding structure toward wholesale funding. Since wholesale funding is typically remunerated closer to market rates than

[15] MiCAR prohibits the payment of interest or other remuneration merely for holding electronic money tokens or asset-referenced tokens. This prohibition does not extend to remuneration arising from separate lending or borrowing arrangements; accordingly, crypto-asset service providers (CASPs) may borrow stablecoins and pay interest to lenders, provided that such remuneration is linked to a distinct financing activity rather than to the mere holding of the token. In the United States, the regulatory framework is not yet finalized, as the GENIUS Act focuses stablecoin issuers. As of January 2026, discussions on whether service providers should be permitted to offer rewards were still ongoing.

[16] Based on the draft regulatory standards proposed by the EBA in June 2024 which have yet to be adopted by the Commission (version accessed on 13 January 2026).

retail deposits, monetary impulses could be transmitted more quickly to banks' funding costs. For example, an interest rate hike would place greater upward pressure on funding costs, which would, in turn, lead to a faster increase in lending rates. This would result in a quicker decline in lending volumes, implying that the bank lending channel becomes stronger. On the other hand, the deposit channel of monetary policy could weaken. Stablecoins would compete with bank deposits, effectively decreasing banks' market power and wholesale funding would become more prevalent. Therefore, deposit rates would become more sensitive to policy rates and the spread between deposit rates and risk-free rates would increase less than in a system where stablecoins are absent and the liabilities of banks are dominated by retail deposits. This would translate into a smaller reduction in deposit volumes following a rate hike, partially offsetting the larger decline in lending that would have been materialized in the absence of stablecoins. As a result, the overall effect on the strength of monetary policy transmission is an empirical question and depends on the relative strength of the factors affecting the transmission channels.

Following these considerations, the empirical strategy to understand the drivers of the two channels focuses on two different variables. For the deposit channel, we focus on the sensitivity of deposit rates to monetary policy shocks. For the lending channel, we analyse the sensitivity of banks' lending rates to the same shocks. Cross-sectional heterogeneity in these responses provides valuable information on how transmission may evolve as the stablecoin market continues to develop. In the absence of sufficiently long time-series data on stablecoin adoption, we use these cross-sectional differences as a proxy for the types of transmission dynamics that may materialise once market conditions shift toward particular bank balance-sheet structures.

In other words, by studying heterogeneity in the responsiveness of deposit and lending rates to monetary policy changes, we infer the likely future configuration of monetary policy transmission in an environment where stablecoins exert increasing competitive pressure on traditional bank intermediation. This approach allows us to identify which channels are likely to strengthen or weaken as the composition of bank funding and lending adjusts to the growth of stablecoins.

To measure the relative strength of these two channels, we run the following local projection for lending rates and deposit rates:

$$Y_{b,t+h} = \beta^h \widehat{MP}_t + \gamma^h Y_{b,t-1} + \delta^h X_{b,t-1} + \mu_b^h + u_{b,t}^h, \quad (5)$$

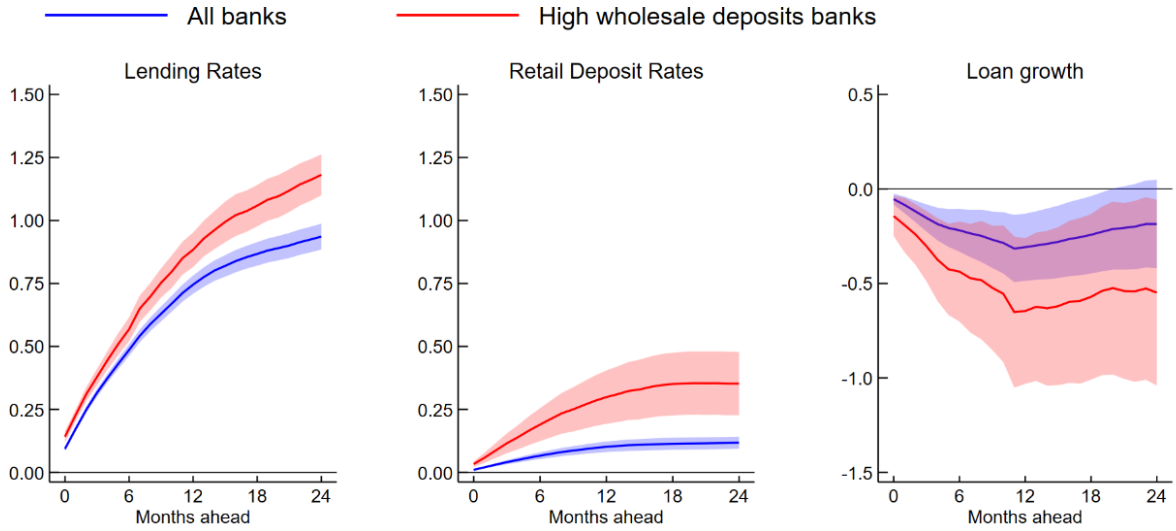
where $Y_{b,t+h}$ indicates the level of the lending rates to firms, overnight retail deposit rate or annual growth rate of loans to firms h periods after time t, $\widehat{MP}_t$ is the level of the policy rate (the deposit facility rate) at time t predicted by the monetary policy shocks cumulated up to t, $Y_{b,t-1}$ indicates the level of

the dependent variable at time *t-1*, $X_{b,t-1}$ are bank-level controls and μ_b^h represents bank fixed effects. Standard errors $u_{b,t}^h$ are clustered at the bank level.

We estimate equation (5) for the overall sample and for the subsample of banks whose long-term average retail-to-total deposits ratio belongs to the bottom quartile of the distribution across banks.

The results are reported in Figure 9. The left and middle panels illustrate how the strength of the bank lending channel and the deposit channel varies as wholesale funding accounts for a larger share of banks' liabilities relative to retail deposits. The right panel shows how the interaction of these two channels shapes the response of loan growth to monetary policy shocks.

Figure 9: Responses of interest rates and loan growth to a contractionary monetary policy shock



Notes: The chart reports the change of firm lending rates, retail deposit rates and annual loan growth to firms predicted by monetary policy rate changes from a local projection regression over the period June 2007 to September 2025, using monthly data and one lag for a sample of 354 banks. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. The first two panels report pass-through rates (percentage point changes of the dependent variable for each percentage point change of the policy rate). The third panel reports the impact of a 25-basis-point change in policy rates, and also includes the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth as a control variable. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas refer to banks with a retail-to-total deposits ratio below the 25th percentile in the cross-section of banks. Standard errors are clustered at the bank level. The results are robust to including the same bank-level controls as in Table 1, see Appendix 2.

The results indicate that the pass-through of monetary policy shocks to lending rates is around 70% after one year and approaches 100% after two years. For banks that rely more heavily on wholesale funding, funding costs rise more sharply and more rapidly, leading banks to transmit these higher costs along the intermediation chain. As a result, the pass-through to lending rates increases to about 80%

after 12 months and to roughly 120% after two years. This provides clear evidence that the bank lending channel of monetary policy is stronger for banks with greater reliance on wholesale funding.

By contrast, the pass-through to retail deposit rates is much more limited, at around 10% after 12 months and thereafter. However, as higher asset yields improve depositors' outside options, deposit rates respond more strongly when wholesale funding represents a larger share of banks' liabilities, reaching over 30% after 18–24 months. This suggests that the deposit channel of monetary policy is weaker for banks that rely more on wholesale funding, as these banks have less market power to reduce deposit remuneration and are therefore likely to face smaller deposit outflows and weaker downward pressure on loan supply.

The net effect of these opposing forces on loan supply is ultimately an empirical question. The right panel of Figure 9 shows that, in the data, the strengthening of the bank lending channel tends to dominate the weakening of the deposit channel. The peak response of loan growth, around 12 months after a 25 basis point monetary policy shock, shifts from about -0.3 percentage point in the full sample to nearly -0.7 percentage points for banks with higher wholesale funding. At the same time, the interaction of these countervailing effects increases uncertainty, with confidence intervals ranging from a negligible response to declines almost as large as -1.5 percentage points when banks rely more on wholesale funding.[17] An increase in the uncertainty around the estimated effect of monetary policy on bank lending signals greater uncertainty regarding the magnitude of policy transmission. In practical terms, wider confidence intervals indicate that the same policy shock—such as a change in the policy interest rate—may produce a highly variable response in lending across banks or over time. This reduces the predictability of monetary policy outcomes for both policymakers and market participants, making it harder to calibrate policy actions to achieve desired effects on investment, consumption, and credit conditions.

While the previous exercise relied on historical data, we now provide more direct evidence on the effects of stablecoin exposure using confidential individual-level data from the ECB's Consumer Expectations Survey (CES) on self-reported holdings of crypto-assets.[18] As part of the annual household finance module, individual respondents in the CES have been asked since 2023 whether they hold crypto-assets. In addition, consumers were asked in a separate module about their banking relationships.

[17] Figure A.1 and A.2 in the Appendix 2 report the same exercise but using the loan supply indicator that can be estimated by applying Amiti-Weinstein (2018) methodology and an additional a complementary approach, respectively.

[18] The Consumer Expectations Survey (CES) collects monthly information on euro area consumers' perceptions and expectations regarding the economy, as well as their economic and financial behaviour. The survey covers over 20,000 respondents across 11 countries: Germany, Spain, France, Italy, Ireland, Greece, Austria, Portugal, Belgium, the Netherlands, and Finland.

By matching individual crypto-asset holdings with their banking relationships, we classify banks according to their exposure to crypto-holding retail customers. While the survey does not distinguish between stablecoins and other crypto-assets, there is a strong correlation between holdings of both, as stablecoins are currently primarily used to facilitate crypto trading (see discussion in Section 2). Consequently, exposure to consumers who already hold crypto-assets can serve as a meaningful proxy for banks' exposure to stablecoin-holding customers.

Table 2 presents the results of estimating model (5) for 24-month-ahead loan growth, splitting banks into two groups based on whether they fall in the bottom three quartiles ('Low crypto') or the top quartile ('High crypto') of the distribution of crypto-asset-holding customers across banks.

Table 2: Monetary policy impact on loan growth by banks' exposure to crypto-holding customers

	(1)	(2)	(3)	(4)
	Low crypto	High crypto	Low crypto	High crypto
$\widehat{MP}_t$	-1.027**	-0.193	-0.847**	0.074
	(0.417)	(0.773)	(0.376)	(0.758)
Loan demand (BLS)			0.745**	1.015
			(0.368)	(0.683)
Bank controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Observations	3592	1104	3592	1104
Adjusted R^2	0.347	0.215	0.354	0.230

Notes: The table reports the impact of euro area monetary policy rate changes on the 24-months ahead annual growth rate of loans from a local projection regression over the period January 2018 to September 2025, using monthly data and one lag of the dependent variable for a sample of 69 banks for which we have information on the retail customers exposure to crypto assets via the ECB's Consumer Expectations Survey. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. The coefficients report the impact of a 25-basis-point change in policy rates for 24 months after the shock. The sample of banks is split between above and below the 75th percentile of the share of retail customers holding any crypto assets in 2023, 2024 or 2025 as reported in the Consumer Expectations Survey. Bank-level controls include the bank's share of retail deposits in assets, NPL ratio, CET1 ratio, TLTRO over assets, and excess liquidity over assets, all in *t-1*. In addition, in columns (3) and (4) the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth is included. All estimations include the lagged dependent variable and bank fixed effects. Standard errors are clustered at the bank level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The results provide important insights for monetary policy transmission: for banks with relatively low exposure to crypto-holding customers, the estimated effect of monetary tightening on loan growth remains significantly negative, consistent with the baseline results for the full sample (Figure 9). By contrast, for banks with higher exposure ('High crypto'), the effect is statistically indistinguishable from zero. This suggests that loan supply from banks serving a larger share of crypto-asset-holding customers may be less responsive to monetary policy measures. Overall, these findings indicate that banks' exposure to crypto-holding, and by extension stablecoin-holding, can alter the effectiveness of monetary policy in influencing bank lending.

5 Foreign-denominated stablecoins and monetary sovereignty

A potential major risk to monetary policy transmission not addressed in the preceding sections concerns the implications of a broader adoption of stablecoins pegged to non-euro currencies.[19] The widespread use of such instruments has the potential to attenuate the link between domestic monetary conditions and the financial environment faced by households and firms. If stablecoins referencing foreign currencies or foreign-currency-denominated collateral were to become an important means of payment, fluctuations in their demand could effectively import foreign monetary conditions into the euro area. This would weaken the ECB's ability to steer short-term interest rates, complicate liquidity management within the banking system, and increase exchange-rate-related volatility in funding flows. In extreme cases, this process could amount to partial currency substitution, thereby eroding the effectiveness of conventional monetary policy tools, consistent with models of currency competition (see Benigno, Schilling and Uhlig, 2022).

This risk is not immaterial for some jurisdictions. The vast majority of existing stablecoins are denominated in U.S. dollars, and this dominance may be reinforced by comparatively looser regulatory frameworks in certain jurisdictions. As a result, stablecoins may themselves contribute to the persistence of the dollar's global dominance (Miran, 2025). A scenario in which euro area investors increasingly adopt USD-denominated stablecoins could lead to a greater net reliance by banks on foreign-currency funding, along with a concentration of such funding in a relatively small number of internationally active euro area banks. This reflects the specific requirements of MiCAR, which mandate that stablecoin issuers hold a significant share of their reserve assets as deposits with EU banks, denominated in the currency

[19] Appendix 3 illustrates how foreign-currency stablecoins could strain euro-area banks, constrain lending, and redirect domestic savings toward U.S. assets. The overall impact depends on whether retail deposit outflows are offset by (i) wholesale deposits denominated in euros, (ii) wholesale deposits denominated in U.S. dollars, or (iii) a contraction of bank assets.

of the stablecoin.[20] This contrasts with a standard outflow toward foreign assets, where banks can manage the associated liquidity drain according to their balance sheet preferences, either by shrinking assets or by replacing the lost funding in a currency of their choice. Consequently, a shift by euro area investors from EUR-denominated bank deposits towards USD-denominated stablecoins would trigger a direct substitution of funding within the euro area banking system.

As stablecoin holdings are expected to substitute retail deposits, banks would see stable, euro-denominated retail funding replaced by concentrated, USD-denominated wholesale deposits.[21] Such a shift toward less stable and more concentrated sources of funding can be expected to raise banks' operational costs — either through higher funding premia or through the additional costs associated with hedging currency risk. These developments would also complicate banks' liquidity management. Taken together, the pressures on funding stability and liquidity buffers would likely exert downward pressure on the supply of credit. In light of the potential adverse effects, a detailed analysis of such a scenario is warranted, notwithstanding MiCAR's restriction on the issuance in the European Union (EU) of stablecoins referencing non-EU country's currencies for payment purposes, including transactions for goods and services.[22] The analysis further highlights the need for robust supervisory oversight and effective enforcement of the regulatory framework.

We assess this effect by investigating whether the transmission of domestic monetary policy is in general affected by banks' reliance on USD denominated funding.

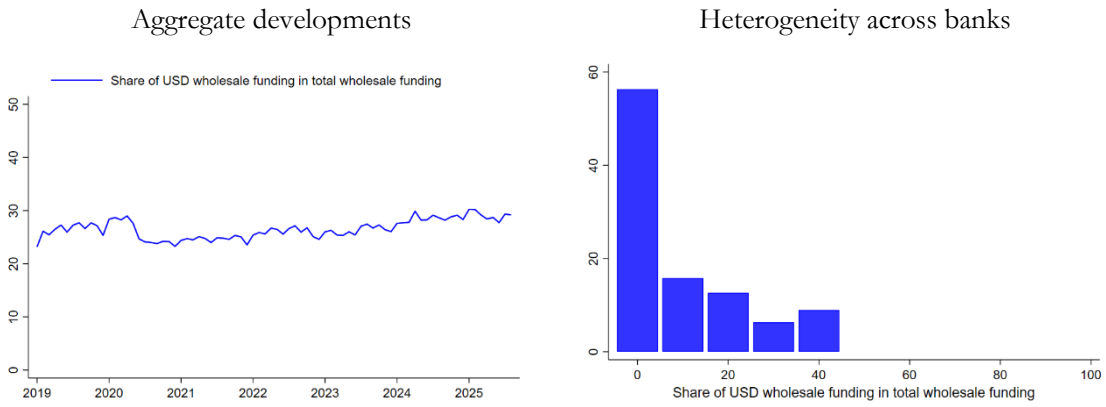
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[20] Article 54 of MiCA regulation requires that at least 30% of the funds received by issuers of non-significant EMTs (60% for significant EMTs) be deposited in separate accounts in EU credit institutions (in accordance with the definition in Article 3(1)(26), referring to Article 4(1)(1) of Regulation (EU) No 575/2013). These reserve assets must be denominated in the same official currency as the token to mitigate foreign exchange risk. This currency-matching requirement is explicitly mandated for significant EMTs via Article 58(1) applying Article 36(4), and specified in the EBA's RTS on liquidity requirements (EBA/RTS/2024/10), which states that the minimum amount of deposits "cannot be lower than 30% of the amount referenced in each official currency if the asset-referenced token is not significant or 60% if the asset-referenced token is significant." For non-significant EMTs, while Article 54(1)(a) is textually silent on currency, the requirement to redeem at par at any time (Article 49) effectively imposes the same currency-matching constraint to avoid open FX positions, a view reinforced by the EBA's consistent application of prudential standards across all token categories.

[21] This effect primarily concerns banks that experience an outflow of retail deposits. By contrast, banks that act as custodians and service providers for stablecoin issuers may benefit from fee income (from custody and safekeeping of reserve assets, asset servicing, and cash-management services related to reserve flows) and from specific regulatory treatments applicable to custodial holdings. Nevertheless, the benefits accruing to these specific banks do not offset, at the system level, the potential increase in funding costs and liquidity management complexity for banks losing stable retail funding.

[22] As reported in Table A.1, which summarizes the key structural and design differences between euro area and U.S. regulation, MiCAR imposes quantitative limits on e-money tokens (EMTs) referencing foreign currencies. Specifically, such EMTs may not exceed either one million transactions per day or a total daily transaction value of EUR 200 million. If these thresholds are breached, issuers are required to implement corrective measures in accordance with Article 23.

Figure 10: The relevance of the USD denominated funding for the euro area banks



Notes: The left panel shows the aggregate evolution of the ratio of USD-denominated wholesale funding to total wholesale funding for euro area banks. The right panel displays the cross-sectional dispersion of this ratio across banks included in the analysis. Blue bars represent the share of banks (unweighted).

The left panel shows the aggregate stock of USD-denominated liabilities across a balanced sample of banks, scaled by total assets. The right panel reports the ratio of USD-denominated wholesale funding to total wholesale funding for the cross-section of banks included in the analysis. The left panel shows that, in recent quarters, approximately 30 percent of euro area banks' total wholesale funding is denominated in U.S. dollars. The right panel reveals substantial cross-sectional heterogeneity. While most banks report no USD-denominated wholesale funding, a sizable fraction—just over 40 percent—relies on wholesale funding in U.S. dollars. Among these institutions, the exposure is economically meaningful: roughly 10 percent of banks, for example, fund about 40 percent of their wholesale liabilities in USD. No bank in the sample has a USD-denominated wholesale funding share exceeding 40 percent.

To capture the effect of changes in USD funding on transmission we estimate the model below:

$$Y_{b,t+h} = \beta^h \widehat{MP}_t + \gamma^h Y_{b,t-1} + \delta^h X_{b,t-1} + \mu_b^h + u_{b,t}^h, \quad (6)$$

where $Y_{b,t+h}$ is the annual growth rate of loans for bank *b* at time *t+h*, $\widehat{MP}_t$ is the level of the domestic policy rate (the ECB's deposit facility rate) at time *t* predicted by the monetary policy shocks cumulated up to *t*, and μ_b represents bank fixed effects. $X_{b,t-1}$ are bank-level controls as in section above. In addition, columns (3) and (4) include a proxy for loan demand constructed from confidential, time-varying responses of individual banks in the euro area Bank Lending Survey (BLS). Standard errors are clustered at the bank level. In order to proxy a situation where banks in general rely on wholesale funding, the analysis in this Section focuses on the sub-sample of banks identified as "Low retail" in Section 4.2 above. The model is then estimated for banks with high and low USD-denominated wholesale funding as a ratio of total wholesale funding (Low USD and high USD), respectively.

The results in Table 3 show that at low exposures to USD funding contractionary monetary policy clearly dampens loan growth whereas this is not the chase when banks have a high exposure to USD funding: the coefficient on the impact of monetary policy decreases in magnitude and loses its statistical significance.

These results are consistent both based on a simpler specification where possible confounding factors at the bank level are controlled for through fixed-effects (columns 1 and 2) and when controlling also for a time-varying indicator of loan demand (columns 3 and 4). Based on the latter specification, a 25-basis point increase in the policy rate leads to around 1.5 percentage point decrease in loan growth after 24 months when exposure to USD funding is low, whereas at high exposures to foreign (USD) funding, the impact of changes in the domestic (euro area) policy rate is substantially smaller and no longer statistically different from zero (Table 3, column 4).

Table 3: Monetary policy impact on loan growth for banks with high wholesale funding

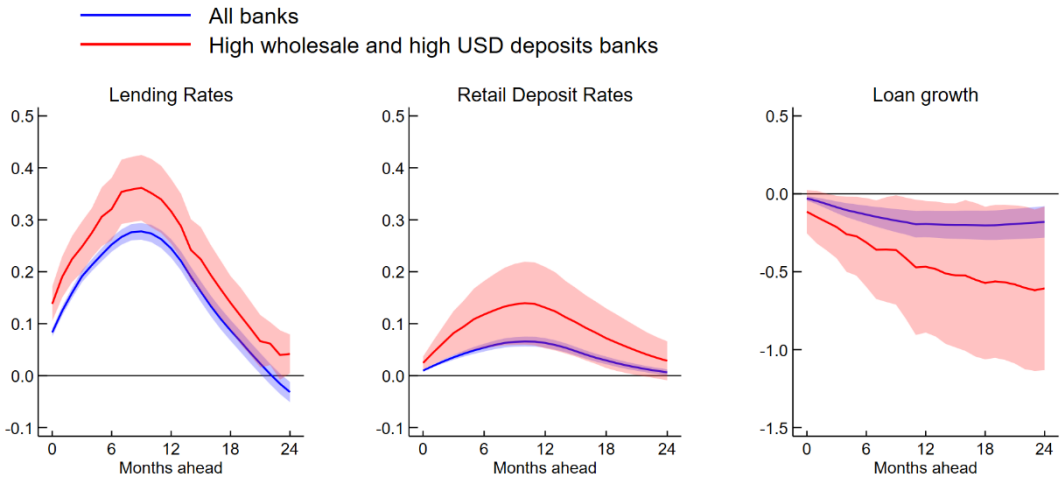
	(1) Low USD	(2) High USD	(3) Low USD	(4) High USD
$\widehat{MP}_t$	-1.590**	-0.064	-1.330**	0.293
	(0.617)	(0.578)	(0.596)	(0.540)
Loan demand (BLS)			1.288	1.157
			(0.797)	(0.735)
Bank controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Observations	2574	1754	2574	1754
Adjusted R^2	0.310	0.097	0.317	0.105
F-Stat: low vs. high USD	3.36*		4.20**	

Notes: The table reports the impact of euro area monetary policy rate changes on the 24-months ahead annual growth rate of loans from a local projection regression over the period January 2008 to September 2025, using monthly data and one lag of the dependent variable for the sample of banks with high wholesale funding (defined as retail-to-total deposits ratio below the 25^{h} percentile). Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. The coefficients report the impact of a 25-basis-point change in policy rates for 24 months after the shock. The sample of banks is split between above and below the 75th percentile of the ratio of USD-denominated wholesale funding over total wholesale funding. Bank-level controls include the bank's share of retail deposits in assets, NPL ratio, CET1 ratio, TLTRO over assets, and excess liquidity over assets, all in *t-1*. In addition, in columns (3) and (4) the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth is included. All estimations include the lagged dependent variable and bank fixed effects. Standard errors are clustered at the bank level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Moreover, USD-denominated stablecoins could enable the direct international transmission of U.S. monetary policy to euro area economic agents: increases in the U.S. policy rate would raise the yield on the assets backing these stablecoins, effectively exporting Federal Reserve policy abroad through the return structure of stablecoin reserves. This mechanism mirrors well-documented spillover channels associated with the global role of the U.S. dollar (Rey, 2015; Bruno and Shin, 2015) and is consistent with recent BIS assessments highlighting the cross-border risks posed by stablecoins and their potential to amplify external monetary influences (BIS, 2022).

We investigate this based on the model in equation (5), but using the federal funds rate as proxy for US monetary policy. The results shown in Figure 11 confirm that banks with higher exposure to USD funding do indeed react to US monetary policy more than other banks.[23] Following a US monetary policy tightening, they react with larger increases in lending and deposit rates as well as stronger declines in loan growth. Ultimately, these results show that an increase in exposure to foreign funding can pose material risks to monetary sovereignty.

Figure 11: Responses of interest rates and loan growth to a contractionary US monetary policy shock



Notes: The chart reports the change of firm lending rates, retail deposit rates and annual loan growth predicted by monetary policy rate changes from a local projection regression over the period June 2007 to September 2025, using monthly data and one lag. For US monetary policy we use the effective federal funds rate. The first two panels report pass-through rates (percentage point changes of the dependent variable for each percentage point change of the policy rate). The third panel reports the impact of a 25-basis-point change in policy rates, and also includes the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth as a control variable. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas to the sample of banks with a retail-to-total deposits ratio below the 25th percentile in the cross-section of banks and with USD-denominated wholesale funding over total wholesale funding above the 75th percentile of the ratio. Standard errors are clustered at the bank level and reported in parentheses. The results are robust to including the same bank-level controls as in Table 1, see Appendix 2.

[23] The results are robust to including the same bank-level controls as in Table 1, as shown in Appendix 2.

6 Conclusions

This paper has examined the evolving role of stablecoins in the euro area financial system, with a particular focus on their implications for bank intermediation and the transmission of monetary policy. Exploiting the rapid expansion of stablecoins and confidential granular data on euro area banks, our analysis documents three main results on how the wider adoption of stablecoins may affect lending conditions and the broader economy.

First, we show that a substantial expansion in stablecoin usage can trigger a deposit-substitution mechanism, whereby households and firms reallocate funds from retail bank deposits toward digital assets. This reallocation alters banks' funding structures by reducing the share of stable, retail deposits, increasing reliance on wholesale funding, and ultimately constraining the supply of credit to firms. Importantly, these effects are nonlinear: stablecoins have limited aggregate implications at low levels of adoption, but their impact intensifies once they reach sufficient scale. The magnitude of these effects also depends on key design features of stablecoins, as well as their regulatory treatment, underscoring the role of institutional arrangements in shaping macro-financial outcomes.

Second, we show that stablecoins interact with multiple monetary policy transmission channels. By changing banks' liability composition and funding costs, sizable deposit outflows into stablecoins can materially reshape these channels—strengthening the bank lending channel while weakening the deposit channel. Importantly, we find that widespread stablecoin adoption, through its impact on banks' funding structures, can increase uncertainty in the pass-through of policy rates on lending volumes, reducing the predictability of monetary policy actions.

Third, we show that risks to monetary policy transmission in the euro area would be significantly amplified if a developed stablecoin market were dominated by non-euro-denominated instruments. In this scenario, fluctuations in the demand for foreign-currency-pegged stablecoins could transmit foreign monetary and financial shocks directly into the euro area, effectively importing external liquidity conditions that are potentially orthogonal to the domestic policy stance.

Taken together, these findings underscore the potential for stablecoins to materially affect the effectiveness of conventional monetary policy in bank-centric economies such as the euro area. Our results also highlight the importance of regulatory interventions aimed at mitigating the risks associated with stablecoin proliferation. Policies that enhance reserve transparency, strengthen redemption guarantees, and clarify the regulatory perimeter—alongside the potential introduction of central bank digital currencies—could reduce run risk, limit excessive disintermediation, and preserve the efficacy of monetary policy, while still allowing for innovation in digital finance. Design choices are key in

delineating the structural differences between stablecoins and central bank digital currencies. In the European context, for example, holding limits exemplify this distinction. By imposing caps on individual holdings, the digital euro is intentionally designed as a means of payment. This approach helps protect commercial bank deposits and reduces the risk of large-scale shifts of funds into central bank money during periods of financial stress. In turn, this design choice supports the stability of the banking system and ensures the continued effectiveness of monetary policy transmission. A related issue not discussed at length in the text, for example, concerns multi-issuer stablecoins, which arise when tokens issued in different jurisdictions are treated as fully fungible. In this case, if a non-EA issuer experiences distress, investors may seek to transfer their holdings to the EA entity to benefit from the redemption guarantees provided under MiCAR. Such reallocations can trigger bank-run-like dynamics, with sudden and concentrated redemption pressures. This amplifies systemic risk and strains liquidity, underscoring the importance of robust oversight and high-quality reserves.

Overall, this paper contributes to the growing literature on digital finance by providing new evidence that stablecoins, while offering opportunities for efficiency gains and financial innovation, may also disrupt traditional credit allocation mechanisms and weaken the transmission of monetary policy. These findings underscore the need for continued monitoring of stablecoins' evolving role in the financial system and for careful regulatory calibration to balance innovation with monetary and financial stability.

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Appendix 1: Euro Area and US Stablecoins Regulation

The table below reports Here's a breakdown of the major differences between how stablecoins are regulated in the Markets in Crypto-Assets Regulation (MiCAR), i.e. the current regulatory regime in the euro-area, and how they are regulated under the GENIUS Act in the United States (since 2025).

Table A.1: Key structural and design differences between euro area and US regulation

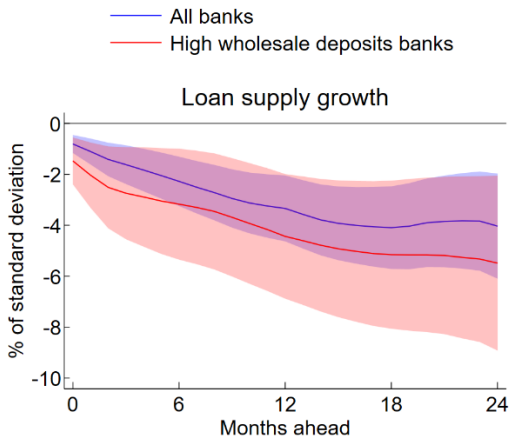
Category	**MiCAR (for EMTs)**	**GENIUS (for stablecoins)**
Level of reserves	- >= 100% of outstanding coins - Additional overcollateralization requirement based on past differences in the valuation of reserve assets and referenced assets.	- >= 100% of outstanding coins - No additional overcollateralization
Types of reserve assets	- deposits with European credit institutions - "Highly liquid financial instruments"[1] o Level 1 HQLA (from LCR regulation) ▪ Government bonds issued by member states with 0% haircuts ▪ extremely high-quality covered bonds ▪ Cash and central bank money (if they have access to ECB) o reverse repurchase agreements	- cash and central bank money (if they have access to Fed) - demand deposits and insured shares of depository institutions falling under deposit insurance - government bonds (treasuries) - repos with government bonds (treasuries) - reverse repos with government bonds (treasuries) and triparty, CCP or with a counterparty "adequately creditworthy even in the event of severe market stress" - MMF shares invested in treasuries - Other government securities as agreed with supervisor
Minimum/maximum composition requirements[1]	- At least 30% (60% for significant EMTs) has to be deposits with European credit institutions - At most 35% can be covered bonds.	- no composition requirements but the regulator/supervisor can set requirements on asset diversification and interest rate risk management
Maturity requirements[1]	- At least 20% of market value (40% for significant EMTs) with maturity of 1 working day - At least 30% of market value (60% for significant EMTs) with maturity of up to 5 working days - No specific requirement on the maturity of deposits or clarification that it has to be demand deposits.	- deposits have to be withdrawable at any time - treasuries with maximum maturity of 93 days - repos only overnight and using with treasuries with maximum maturity of 93 days
Redemption fees	- Prohibited, but the mandatory recovery plan may include limitation on redemptions for crisis periods.	- not prohibited but have to be public and can only change with 7 days' notice
Prudential requirements	- 2% (3% for significant EMTs) CET1 capital - possible to impose 20% (40% for significant EMTs) prudential add-on top of the minimum requirement.	- At discretion of supervisor
Restrictions on referencing foreign currency assets	- EMTs referencing foreign currencies cannot exceed 1 million transactions per day and/or transactions worth more than EUR 200 million. If they exceed, countermeasures need to be taken (Article 23).	- Not explicit reference to this but the regulation focussed on "payment stablecoins" which are defined to be referencing USD.

[1]The details regarding the non-deposit reserve assets permissible under MiCAR (type of assets, maturity and composition) are implemented via Regulatory Technical Standards (RTS) that the European Banking Authority (EBA) develops, and the European Commission adopts. The points list here are based on the drafts RTS submitted by the EBA which still need to be adopted.

Appendix 2: Robustness exercises

Figure A.1 reports the results of a regression model similar to the one used in the main text but using the loan supply indicator that can be estimated by applying Amiti-Weinstein (2018) methodology to bank-firm level growth rates in loan volumes from the euro area credit register. This method allows us to isolate the supply component in loan developments by controlling for loan demand at the bank-firm level. As with loan volumes, the conclusion is that the countervailing effects of stronger bank lending channel and weaker deposits channel increase the uncertainty in the transmission of monetary policy shocks.

Figure A.1: Responses of loan supply growth to a contractionary monetary policy shock

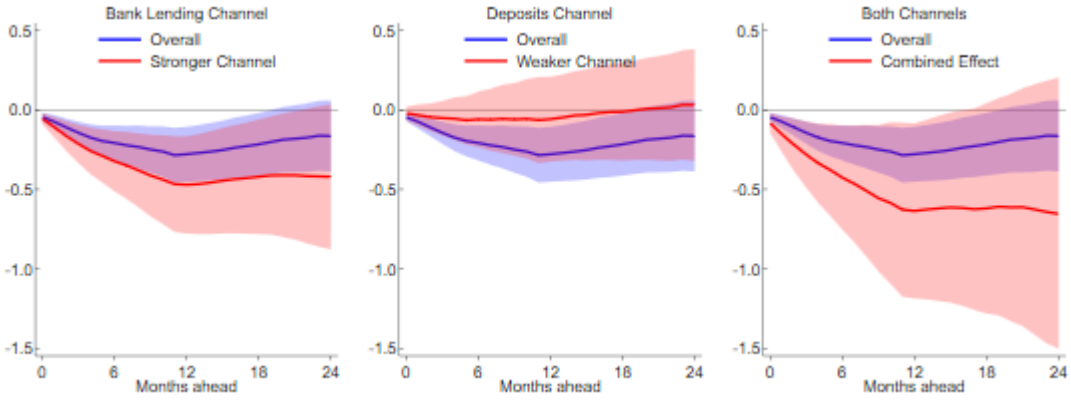


Notes: The chart reports the cumulated change in loan supply predicted by monetary policy rate changes from a local projection regression over the period January 2019 to June 2025, using monthly data and one lag for a sample of 354 banks. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. Loan supply is estimated applying Amiti-Weinstein (2018) methodology to bank-firm level growth rates in loan volumes from the euro area credit register. The panel reports the impact of a 25-basis-point change in policy rates and the resulting coefficient is reported in percentage points of the standard deviation of the dependent variable. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas to banks with a retail-to-total deposits ratio below the 25th percentile.

Figure A.2 corroborates these findings using an additional complementary approach. We re-estimate equation (5) at the bank level and extract bank-specific pass-through rates at a 2-year horizon as measures of exposure to the bank lending and deposits channels. We then estimate the response of loan growth to monetary policy shocks across subsamples of banks characterized by a stronger bank lending channel, a weaker deposits channel, or both. Consistent with Figure 9, a stronger bank lending channel amplifies the contraction in loan growth, while a weaker deposits channel dampens it, in some cases the response is null altogether. When both channels are present, monetary policy transmission to loan volumes is

stronger on average but accompanied by a wider range of plausible outcomes, reflecting heightened uncertainty around the central estimate.

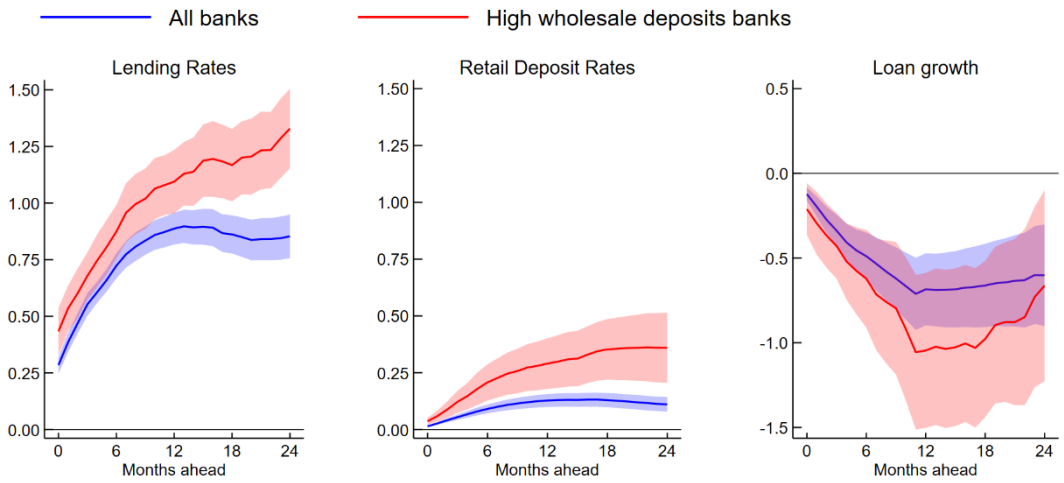
Figure A.2: Responses of loan growth to a contractionary monetary policy shock



Notes: The chart reports the change of annual loan growth predicted by a 25-basis-point policy rate change from a local projection regression over the period June 2007 to September 2025, using monthly data and one lag for a sample of 354 banks. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas to subsamples of banks belonging to the top quartile of bank-specific pass-through to lending rates at 24 months ahead, the bottom quartiles of bank-specific pass-through to deposit rates at 24 months ahead, or both. The third panel is truncated at -1.5 percentage points.

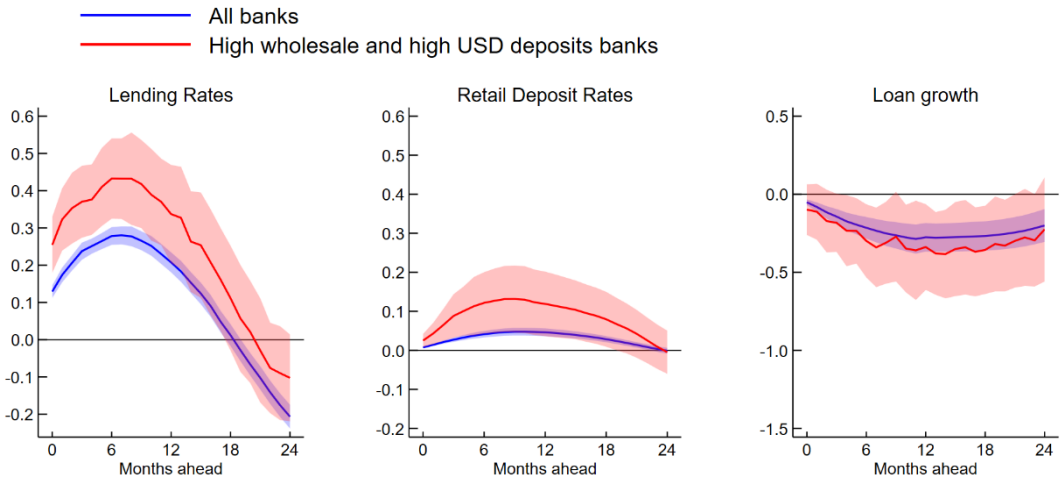
Figures A.3 and A.4 show the same results as Figures 9 and 11, respectively, but based on estimations which include additional control variables. Specifically, we estimate again model (5) for euro area monetary policy (Fig. A.3) and US monetary policy (Fig. A.4) but including the share of retail deposit in total assets, the NPL ratio, the CET1 capital ratio, the share of TLTRO borrowing over assets, and the share of excess liquidity holdings over assets as additional control variables. The results confirm the stronger bank lending channel, weaker deposit channel and overall less predictable transmission of euro area monetary policy to loan volumes for high wholesale deposits banks (Fig. A.3). They also broadly confirm the results for the impact of US monetary policy (Fig A.4).

Figure A.3: Responses of interest rates and loan growth to a contractionary monetary policy shock



Notes: The chart reports the change of firm lending rates, retail deposit rates and annual loan growth to firms predicted by monetary policy rate changes from a local projection regression over the period January 2008 to September 2025, using monthly data and one lag for a sample of 354 banks. Identification is achieved using high-frequency monetary policy surprises from Altavilla et al. (2025) as instruments for the policy rate. All estimations include the share of retail deposit in total assets, the NPL ratio, the CET1 capital ratio, the share of TLTRO borrowing over assets, and the share of excess liquidity holdings over assets as control variables. The first two panels report pass-through rates (percentage point changes of the dependent variable for each percentage point change of the policy rate). The third panel reports the impact of a 25-basis-point change in policy rates, and also includes the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth as a control variable. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas to banks with a retail-to-total deposits ratio below the 25th percentile in the cross-section of banks. Standard errors are clustered at the bank level.

Figure A.4: Responses of interest rates and loan growth to a contractionary US monetary policy shock



Notes: The chart reports the change of firm lending rates, retail deposit rates and annual loan growth predicted by monetary policy rate changes from a local projection regression over the period January 2008 to September 2025, using monthly data and one lag. For US monetary policy we use the effective federal funds rate. All estimations include the share of retail deposit in total assets, the NPL ratio, the CET1 capital ratio, the share of TLTRO borrowing over assets, and the share of excess liquidity holding s over assets as control variables. The first two panels report pass-through rates (percentage point changes of the dependent variable for each percentage point change of the policy rate). The third panel reports the impact of a 25-basis-point change in policy rates, and also includes the change in loan demand as reported in the BLS and measured over the same horizon as the loan growth as a control variable. The solid lines depict the central estimates, while the shaded areas represent the 90% confidence interval. Blue lines and areas refer to the overall sample, red lines and areas to the sample of banks with a retail-to-total deposits ratio below the 25th percentile in the cross-section of banks and with USD-denominated wholesale funding over total wholesale funding above the 75th percentile. Standard errors are clustered at the bank level.

Appendix 3 Balance sheet adjustments following issuance of foreign denominated stablecoin

The implications for bank intermediation become significantly more acute when euro area (EA) depositors substitute domestic deposits for non-euro-denominated stablecoins. In that case, banks must manage not only a funding shock but also a currency mismatch and the heightened volatility of foreign deposit liabilities. These challenges compound the effects on private credit supply and sovereign financing capacity.

To structure the comparison with the generic case, we organise the discussion into three stylised cases of increasing severity. The incremental impact depends on whether the retail deposit outflow leads to a substitution with wholesale deposits denominated in domestic EUR (Case A.1), wholesale deposits in USD (Case A.2), or to an asset contraction (Case B). These three corner solutions represent the

relevant set of structural adjustments available to a bank facing deposit outflows towards stablecoins denominated in foreign currency.

Case A.1: Loss of retail deposits fully replaced with EUR-denominated wholesale funding

This scenario would be the least unfavourable. It would emerge when funds are transferred to a stablecoin issuer located abroad, and the intermediaries facilitating the transfer would maintain EUR deposits with EA banks in a volume equivalent to the loss of retail deposits.[24]

Impact on credit to the private sector: While this outcome would avoid a currency mismatch, it would not avoid the empirically higher flightiness of cross-border wholesale funding compared to domestic wholesale funding. This could induce banks to hold larger liquidity buffers, weighing on their maturity transformation capacity and their willingness to grant credit to the domestic private sector.

Impact on credit to the domestic government: Banks tend to back wholesale funding with liquid positions in the currency of denomination of that funding. As the new wholesale funding would remain in EUR and would fully cover the loss of retail deposits, banks could continue providing banks would keep the capacity to finance their sovereigns intact.

Table A.1: Impact of USD-denominated stablecoins relative to the generic EUR baseline

Stylized Case	**Structural Adjustment**	**Balance Sheet Characteristics**	**Incremental impact on private sector credit** *(Relative to EUR stablecoins)*	**Incremental impact on sovereign financing** *(Relative to EUR stablecoins)*
Case A.1 *(EUR wholesale deposits)*	**Cross-border funding** When funds are transferred abroad, e.g. because the USD-stablecoin issuer is abroad or because reserves are invested abroad.	**Size:** Unchanged **Funding:** Less stable (foreign wholesale deposits less stable than domestic wholesale deposits). **Asset counterpart:** EUR HQLA.	Higher volatility of wholesale funding requires larger liquidity buffers. This weighs on maturity transformation capacity.	Banks continue using EUR HQLA to back EUR wholesale liabilities.
Case A.2 *(USD wholesale deposits)*	**Cross-border funding in USD.** When USD-stablecoin issuer is in the EA (as per MiCAR) or correspondent bank so demands.	**Size:** Unchanged **Funding:** Less stable (foreign wholesale deposits less stable than domestic wholesale deposits). **Asset counterpart:** USD HQLA or currency hedging.	Direct asset acquisition crowds out domestic lending capacity. Hedging costs erode profitability.	Banks rebalance HQLA portfolios from EA government securities to US Treasuries to match the currency of the new liabilities.
Case B *(Balance sheet contraction)*	**Disposal of foreign assets.** Possible outcome when funds are transferred abroad.	**Size:** Shrinks **Funding:** stable but smaller **Asset counterpart:** existing foreign assets depleted, increased loan-to-deposit ratio.	Higher loan-to-deposit ratio leads to credit tightening. Loss of scale erodes profitability.	Sovereign financing capacity already impaired in A.2. Potential marginal worsening due to loss of scale.

Note: The generic EUR baseline assumes retail deposit outflows are replaced with domestic wholesale deposits in EUR. "Incremental Impact" describes the additional impact of each case relative to this baseline.

[24] When an EA depositor transfers funds to a foreign stablecoin issuer, the transfer typically flows through a correspondent banking network. The foreign issuer's correspondent bank receives the EUR funds and may choose to maintain a EUR-denominated deposit at an EA bank rather than converting to USD, thereby avoiding FX costs. This allows the EA bank to replace the lost retail deposit with a wholesale EUR deposit from the correspondent bank.

Case A.2: Loss of retail deposits largely replaced with USD wholesale funding

In practice, the materialisation of Case A.1 and its relative benign outcome is highly unlikely. The reason is that MiCA regulations strongly incentivize USD-denominated stablecoins to be issued from within the EA and that a large portion of their reserves be placed in USD deposits at EA banks.[25] In addition, if correspondent banks demand it, EA banks may need to accept even more USD-denominated deposits, those generated from the transfers abroad to acquire direct reserves in USD (i.e. those reserves not held at EA banks). As Gopinath and Stein (2021) note, banks often accept such "currency hits" to preserve franchise value.

Impact on credit to the private sector: To match these USD liabilities, banks must either acquire liquid USD assets or hedge the currency risk via FX swaps. Both strategies are likely to weigh on the supply of credit to the domestic private sector. The direct acquisition of foreign assets, unless fully offset an equal decline in EUR liquid assets, consumes balance sheet capacity that would otherwise support domestic lending. Similarly, hedging via FX swaps incurs costs that can erode the profitability and capital generation necessary to sustain domestic credit creation. Furthermore, hedging via FX swaps is a fragile strategy: during periods of dollar scarcity, spiking swap costs can force a disorderly reallocation of assets potentially precipitating sharp contractions in domestic credit.

Impact on credit to the domestic government: To the extent that banks offset increased USD-denominated liquid assets (prominently US Treasuries) with reductions in euro area government securities, they effectively shift from financing the euro area government to financing the US government. This funding gap cannot be offset by the stablecoin issuer, whose non-deposit reserves also consist predominantly of US government bonds.

Case B: Balance Sheet Contraction

This occurs when a part of the funding outflow is not replaced with any form of deposit liability. Instead, the bank settles the withdrawal by liquidating existing foreign assets (typically US Treasuries or deposits at US banks) to deliver USD liquidity. This occurs when transfers abroad, linked to the portion of

[25] Article 54 of MiCA regulation requires that at least 30% of the funds received by non-significant EMTs (60% for significant EMTs) be deposited in separate accounts in EU credit institutions (in accordance with the definition in Article 3(1)(26), referring to Article 4(1)(1) of Regulation (EU) No 575/2013). These reserve assets must be denominated in the same official currency as the token to mitigate foreign exchange risk. This currency-matching requirement is explicitly mandated for significant EMTs via Article 58(1) applying Article 36(4), and specified in the EBA's RTS on liquidity requirements (EBA/RTS/2024/06), which states that the minimum amount of deposits "cannot be lower than 30% of the amount referenced in each official currency if the asset-referenced token is not significant or 60% if the asset-referenced token is significant." For non-significant EMTs, while Article 54(1)(a) is textually silent on currency, the requirement to redeem at par at any time (Article 49) effectively imposes the same currency-matching constraint to avoid open FX positions, a view reinforced by the EBA's consistent application of prudential standards across all token categories.

reserves that EA stablecoin issuers place in US assets, are settled by the EA bank disposing of USD assets instead of receiving wholesale deposits from the correspondent bank involved in the transaction.

Impact on credit to the private sector: Unlike Options A.1 and A.2, where deposit substitution preserves total funding, Case B involves an outright loss of deposit funding, which weighs on domestic credit creation via two channels. First, the loan-to-deposit ratio deteriorates as deposits shrink without replacement, forcing banks to either raise expensive wholesale EUR funding or reduce lending to restore acceptable ratios. Second, balance sheet shrinkage erodes profitability and capital generation. At a significant scale, this erosion can force credit tightening over time if capital cannot be rebuilt at sufficient pace.

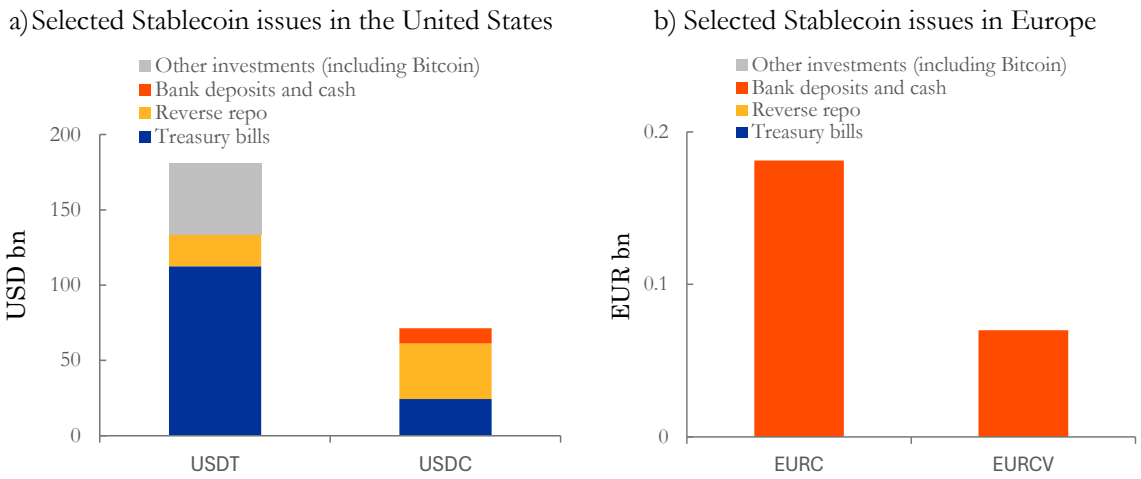
Impact on credit to the domestic government: The incremental impact on sovereign financing relative to Case A.2 would be marginal, as that Case already implied a diversion of financing from EA sovereigns to the US sovereign.

Overall, widespread adoption of USD stablecoins by euro area residents would have far more detrimental effects than the already significant ones estimated from a shift towards EUR-denominated ones. This is particularly the case if the USD stablecoins are MiCAR-compliant and issued in the euro area, as the regulatory requirements increase the likelihood that the wholesale funding replacing the lost retail deposits be denominated in USD (Case A.2). At the same time, it does not preclude the possibility of balance sheet contraction of euro area banks (Case B) linked to transfers of funds abroad. The result is material consequences for sovereign financing and potentially significant effects on private sector credit. The primary impact operates through sovereign financing displacement: as bank portfolio rebalancing towards US HQLA to hedge USD liabilities leads to a substitution of euro area government securities with US Treasuries. Private sector credit supply faces pressure through the risk that loans are crowded out by USD liquid assets and the need to absorb hedging costs and manage smaller balance sheets. The net result is a systematic shift in the allocation of euro area savings: from financing the euro area economy towards financing the US government.

Appendix 4 Selected Stablecoin Balance Sheets

Figure A.3 shows that stablecoin balance sheets differ markedly between the euro area and the United States. Euro area stablecoins typically hold a larger share of their assets as bank deposits, reflecting a more conservative and liquidity-focused structure. By contrast, US stablecoins hold relatively few deposits and invest a significant share of assets in US Treasury bills, often complemented by holdings of commercial paper and corporate debt. These differences largely reflect regulatory environments: EU rules and supervisory guidance emphasize high-quality liquid assets and conservative risk management, while US regulations are less prescriptive regarding asset composition.

Figure A.5: Composition of selected stablecoin balance sheets in different jurisdictions



Source: Tether (USDT), Circle (USDC), Société Générale-Forge (EURCV).