Demand for Safety in the Crypto Ecosystem*

Murillo Campello[†], Angela Gallo[‡] Lira Mota[§] and Tammaro Terracciano[¶]

February 28th, 2025

Click Here for the Latest Version

ABSTRACT

We study the demand for safety within the crypto ecosystem, where investors cannot frictionlessly resort to traditional asset classes. To enter and exit, crypto investors pay substantial fees associated with deposits and withdrawals, while facing increasing scrutiny from regulators and tax authorities. These frictions lead investors to leave resources "trapped" in the crypto ecosystem. This paper shows that within crypto markets, stablecoin lending pools cater to safety demand, as measured by the spread between the T-bill yield and the overnight index swap rate ("money premium"). When the demand for safety rises, these pools experience lower interest rates and higher deposits than all other pools, as investors reallocate their funds toward them. Their safety status, however, fades away during stress periods, such as Terra, FTX, and SVB crashes, hacker attacks, or high VIX. Notably, investors treat all stablecoins as equal in terms of safety and prefer larger protocols and established blockchains (e.g., Ethereum). Our findings shed new light on how unregulated financial systems evolve to satisfy the demand for safety of institutional investors.

Keywords: Safe Assets, Demand for Safety, FinTech, Cryptocurrencies, Decentralized Finance, Institutional Demand.

*We thank Alexander Bechtel, Charles Calomiris, Jonathan Chiu, Vasso Ioannidou, Thorsten Koeppl (discussant), Gabriele La Spada, Massimo Morini, Manuel Mueller-Frank, Adib Rahman (discussant), Guillaume Vuillemey and seminar participants at the 2024 Fintech and Digital Currencies RPN Workshop, and at the 5th Crypto Asset Lab Conference for many useful comments. We also thank Leoluca Virgadamo for his excellent research assistance. Remaining mistakes are our own.

[†]Lewis H. Durland Professor of Finance, Johnson School, Cornell University; Eminent Scholar in Finance, University of Florida; and N.B.E.R. Email: campello@ufl.edu.

[‡]Senior Lecturer in Finance, Bayes Business School (formerly Cass). Email: angela.gallo.1@city.ac.uk.

[§]Assistant Professor in Finance, MIT Sloan School of Management. Email: liramota@mit.edu.

[¶]Assistant Professor of Finance, IESE Business School. Email: tterracciano@iese.edu.

1 Introduction

Safe assets are key to any financial system. They are usually short-term assets issued by governments or reputable financial institutions and serve as a storage of value or collateral (Gorton, 2017). When the public supply of safe assets is insufficient to satisfy investors' demand for safety, the private sector produces imperfect substitutes (Krishnamurthy and Vissing-Jorgensen, 2015). However, these private substitutes are inherently riskier, as they lack the same level of liquidity, creditworthiness, and backing as their public counterparts. Their status as safe assets is, therefore, more fragile, relying heavily on investor confidence and stable market conditions (Nagel, 2016; Moreira and Savov, 2017; Kacperczyk et al., 2021; Cipriani and La Spada, 2021).

In this paper, we focus on the crypto space as a unique — yet unexplored — laboratory to investigate the demand for safety in an unregulated, highly volatile environment, characterized by the prominence of institutional investors. Crypto assets lack the defining characteristics of traditional financial assets: they do not have (short) maturity, have volatile payoffs, and cannot rely on the backing of a government or a regulated financial institution. Within this ecosystem, it is unclear which assets, if any, can cater to investors' demand for safety. Critically, crypto investors cannot frictionlessly resort to traditional asset classes due to the high costs and barriers associated with exiting and re-entering the system. These costs include deposit and withdrawal fees, tax scrutiny on capital gains, and high regulatory uncertainty (De Simone et al., 2024; Cong et al., 2023; Campello et al., 2024; Gorton et al., 2022b). Alternatively, institutional investors have a clear mandate to only operate in crypto markets for compliance and regulatory issues.[1] Therefore, once their capital is allocated within the ecosystem, investors are likely to seek a safe equivalent inside it. What crypto investors treat as "safe" and what criteria they use to prioritize one asset over another are fundamental issues for understanding safety demand in an unregulated financial system.

This is the first paper studying the demand for safety within the crypto space. We do so by using a granular dataset about DeFi pools that allows us to explore the heterogeneity of safety demand accounting for a wide range of dimensions.[2] We show that stablecoin lending pools cater to institutional investors' demand for safety. Specifically, we find that as the

[1] Institutional Investor Digital Assets Outlook Survey, based on a sample of 250 US institutional decision-makers from hedge funds, asset managers, and allocators, indicates that while volatility, security, and risk remain primary concerns, 30% of respondents cite regulatory uncertainty as a barrier to crypto investment, and 28% highlight transaction fees as a significant obstacle (Fidelity Digital Assets, 2022).

[2] We focus on the DeFi ecosystem, as market practitioners prefer investing in these markets over centralized exchanges (CEXes). This preference stems from greater transparency, self-custody, and reduced counterparty risk in DeFi. Furthermore, CEXes have only recently started offering yield-bearing products. See https://www.chainalysis.com/blog/personal-wallets-institutional-crypto-adoption-self-custody-defi/.

demand for safety increases, interest rates that investors receive decline while deposits in these pools rise. This does not imply that these pools are a substitute for traditional safe assets, but that, *within* the crypto ecosystem, investors resort to DeFi lending pools when seeking safety. We also show that these safety properties disappear during stress periods, such as major crypto shocks (e.g., Terra, FTX, and SVB crashes), hacker attacks, and high VIX. This finding aligns with prior studies demonstrating that, during periods of heightened uncertainty, private safe assets lose their safety status as investors shift toward preferred public safe assets (e.g., see Kacperczyk et al., 2021, on certificates of deposit). Examining the cross-sectional differences in investors' demand for safe investments, we find that lending and the price stability of the deposited token (e.g., stablecoins) are the most crucial factors. Notably, investors do not distinguish among stablecoins (in line with Dang et al., 2015). However, investors seeking safety tend to gravitate towards the largest protocols and the largest blockchains. These dynamics resemble those of investors in private safe asset markets.

Crypto investors can deposit tokens (e.g., stablecoins) in DeFi lending pools and obtain a real-time rate called annualized percentage yield (APY) with the option to withdraw. Pools are able to pay an APY as tokens can be borrowed with over-collateralized loans (FSB, 2023; Cornelli et al., 2024). Critically, the APY automatically adjusts based on supply and demand in the pools. Specifically, the APY is a function of the utilization rate of the pool, namely the amount borrowed over the amount deposited (Rivera et al., 2023a). Lending pools are often presented as safe investments as they have low counterparty risk and several mitigation risk features while offering monetary services (e.g., cash flows, store of value). The overall value of crypto assets deposited in a pool is called Total Value Locked (TVL). For our main analysis, we focus on the APY as the TVL is a noisy measure prone to double-counting (Chiu et al., 2023; Aquilina et al., 2023; FSB, 2023; ESMA and EBA, 2025). The additional features that define a pool include the blockchain on which it operates (e.g., Ethereum), the protocol that manages it (sometimes referred to as a project, such as Aave or Compound), and its token denomination (e.g., USDT, USDT-USDC-DAI, BTC).

To conduct our analysis, we collected data on DeFi pools from DefiLlama API from February 2022 through December 2024. The dataset covers all lending and non-lending pools that include the key stablecoins (USDT, USDC, DAI), the two main crypto assets (BTC and ETH), as well as their synthetic representations (e.g., WBTC, M.USDC), and various combinations of them (e.g, USDT-USDC). Beyond standard characteristics like blockchain, protocol, and token denomination, we also have information regarding the category of the pool (i.e., lending *vs.* non-lending), and whether it is classified as a stablecoin pool. We complement our dataset by sourcing additional information from Refinitiv, CoinGecko API, FRED, the US Treasury, and the US Fiscal data, among others. The final sample encompasses 91,811 weekly observations, 1,359 pools, 194 protocols/projects, 44 blockchains, and 669 token denominations.

We start by testing whether DeFi pools respond to crypto investors' demand for safety, measured by the 3-month money premium, namely the spread between the T-bill yield and the overnight indexed swap (OIS) rate (as in Sunderam, 2015). We use the money premium to capture a broader demand for safety motives.[3] We assume that crypto investors are not fundamentally different from non-crypto ones and respond to macroeconomic shocks in a similar way, especially given the participation of institutional investors (see Aiello et al., 2022; Copestake et al., 2024).[4] Furthermore, we employ a wide range of fixed effects at the protocol, blockchain, token denomination, and week levels to better isolate the demand for safety from variation coming from pools' differences. As robustness checks, we use different econometric specifications as well as alternative measures of demand for safety, like the money premium at one month, six months, or the change in the quantity of US government bonds (as in Sunderam, 2015; Kacperczyk et al., 2021).

We find that crypto investors treat DeFi stablecoin lending pools as "safe" in the sense that they significantly respond to the demand for safety. For illustration, a one-standard-deviation increase in the demand for safety leads to a decrease in APY of 0.9%, a number that is economically sizable given its unconditional mean of 6%. While this result does not mean that these pools are substitutes for traditional safe assets, they imply that these pools cater to the demand for safety *within* the crypto ecosystem.

Our baseline empirical strategy implicitly assumes that weekly variations in the money premium are not affected by the one-week-ahead variations in the DeFi market. To alleviate possible identification concerns, we also show that our results strongly hold when instrumenting the money premium with the amount of commercial paper outstanding. To the extent that commercial papers are treated as imperfect substitutes for government-issued safe assets, this instrument allows us to isolate the variation in the money premium that is due to the demand for safety. The exclusion restriction condition relies on the fact that the commercial papers markets, at weekly frequency, are not pre-determined by *one-period-ahead* weekly variations in DeFi markets (specifically, the APY), as corporates issue commercial papers to satisfy short-term "real economy" working capital needs (Calomiris et al., 1995; Kahl et al., 2015).[5]

We also document that the safe status of stablecoin lending pools fades away during

[3]In additional tests, we also examine a crypto-specific measure, i.e., Ethereum futures funding rates, and compare its impact with the money premium. We show that the crypto-specific measure only captures a part of the broad demand for safety.

[4]In Section 5, we provide more evidence on this assumption by reporting on institutional presence in DeFi and presenting a set of tests using a demand-for-safety measure based on institutional investors' purchases of T-bills. Specifically, we use the weekly amounts allotted to institutional investors in US Treasury's auctions.

[5]IV results and placebo tests hold when using alternative measures for demand for safety.

periods of market stress, both in response to crypto-related shocks and to broader economic volatility. For the first set, we consider both DeFi-specific hacker attacks as well as the most significant crypto-related crashes, namely Terra, FTX, and SVB. The Terra collapse is the most dramatic run experienced in crypto markets and revealed the limitations of Anchor, a heavily subsidized protocol (Liu et al., 2023). The scandal that led to the FTX collapse raised concerns about contagion risks due to the high interconnectedness of the exchange, which amplified the impact across markets. The SVB failure, instead, revealed the extent of the crypto ecosystem's dependence on traditional banks. For the second set, we take periods of heightened uncertainty (measured by the VIX) as prior research has shown that in these periods private safe assets lose their status (Anadu et al., 2023; Kacperczyk et al., 2021; Moreira and Savov, 2017). These episodes led stablecoin lending pools to lose their safe status. While the impact of crypto-related shocks is more intuitive, the fact that investors also react to external shocks corroborates the idea that crypto investors are not that different from traditional investors (Aiello et al., 2022; Copestake et al., 2024).

We then conduct an in-depth investigation of whether investors differentiate one stablecoin over the other. The stablecoin market is dominated by a few key players (USDT, USDC, DAI), each with unique characteristics regarding governance structures, redeemability and liquidity, transparency, regulatory alignment, and, importantly, backing from traditional financial institutions. For instance, USDC is issued by Circle, a US company that adheres to US regulatory standards and provides monthly attestations from a major accounting firm to verify its reserves. Circle also collaborates with traditional financial institutions like Blackrock.[6] In contrast, USDT is registered in the British Virgin Islands and is in the process of relocating its headquarters to El Salvador.[7] It has fewer regulatory disclosures and offers limited information on entities that are custodians, counterparties, or bank account providers of USDT's reserves.[8] Notably, USDT's size is over three times that of USDC. On the one hand, we might expect investors to treat only those stablecoins with greater transparency and backing from reputable financial institutions (e.g., with features ensuring the quality of their reserves) as safe tokens for deposits in DeFi lending pools. On the other hand, if investors treat deposits in DeFi lending pools as inherently safe investments, they may

[6] Circle's reserves are managed by Blackrock "Circle Reserve Fund". See https://www.blackrock.com/cash/en-us/products/329365/.

[7] See https://www.reuters.com/technology/crypto-firm-tether-its-founders-finalising-move\-el-salvador-2025-01-13/.

[8] These distinctions are further evidenced by S&P Global Ratings, which evaluate the capacity of each stablecoin to maintain its peg to the US dollar. S&P Global assigns USDT a rating of 4 (constrained), suggesting limitations in its stability relative to the peg, whereas USDC receives a rating of 2 (strong), indicating a comparatively higher resilience in sustaining its dollar parity. See https://www.spglobal.com/ratings/en/products-benefits/products/stablecoin-stability-assessment.

not distinguish among stablecoins, consistent with the information-insensitivity hypothesis (Dang et al., 2015; Holmstrom, 2015). To test this hypothesis and ensure that we isolate the variation of each stablecoin, we focus on a tighter specification in which we control for protocol-year-week, beyond the standard token and blockchain fixed effects. We find that crypto investors essentially treat USDT, USDC, and DAI equally, despite having remarkably different features. This suggests that investors are information-insensitive regarding the pools denominated in stablecoins, making them the preferred safe assets of the crypto ecosystem.

We further leverage the granularity of our dataset to identify the features that investors value the most as safety attributes. The first dimension we explore is the pool category. We find that lending pools have a significantly larger effect, *vis-à-vis* non-lending pools, likely because they are the largest stablecoin category and one of the simplest types of pools, with specific design features meant to minimize risks (e.g., over-collateralization).[9] Remarkably, staking pools are not treated as safe, arguably because of their inherent exposure to the underlying token (mostly ETH). Secondly, we test whether investors distinguish between protocols and conclude that there is some preference for the largest ones and those hosted on the largest blockchain. Specifically, we find that investors treat pools on Ethereum (the largest by TVL) as the safest investment. Finally, we show that lending pools denominated in BTC or ETH do not cater to the demand for safety. In fact, in some tests, we even find opposite results; that is, when the demand for safety is low, the APY on BTC and ETH pools increases, arguably due to speculation motives.

Our paper contributes to the literature on safe assets by shedding light on what is considered safe in a new unregulated environment where assets are designed with different characteristics from traditional ones. This strand of literature started by focusing on government-issued safe assets (see, among others, Krishnamurthy and Vissing-Jorgensen, 2012; Greenwood et al., 2015, 2018; Gorton, 2017; Gorton et al., 2012; Nagel, 2016). More recent research has documented the characteristics of privately issued safe assets. Some studies have focused on safe assets issued by traditional financial institutions, such as banks (Krishnamurthy and Vissing-Jorgensen, 2015; Kacperczyk et al., 2021), while others have examined those created by shadow banks (Sunderam, 2015). Kacperczyk et al. (2021) investigate the safety properties of French certificates of deposits and document that their supply responds positively to excess safety demand. They further show how such certificates of deposits heterogeneously cater to investors' need for safety. More recently, Mota (2023) enlarged the scope of this literature by investigating the role of corporates in provid-

[9] Consistently, we also find that pools partially akin to lending pools (e.g., yield and yield aggregators) show similar behavior.

ing quasi-safe assets. Vuillemey (2024) provides evidence that the demand for safe stores of value underpins not only key characteristics of debt markets but also the institutional evolution of equity markets, notably the adoption of limited liability.

Our paper also relates to the burgeoning research work on decentralized finance and crypto assets.[10] A seminal contribution in this literature is by Liu et al. (2023), who document the economics of lending protocols and what led to the crash of the Terra-Luna ecosystem. Rivera et al. (2023b) study how lending platforms set interest rates as a function of pool utilization rates, while Cornelli et al. (2024) document the main drivers of DeFi investors by using granular data from Aave-v2. Other studies have focused on the functions, leverage, and collateral liquidation of lending protocols (Chiu et al., 2022; Carapella et al., 2022; Lehar and Parlour, 2022; Saengchote, 2023; Heimbach and Huang, 2024). Another branch of literature focuses on the macro and trading aspects of these ecosystems (e.g., Chiu and Koeppl, 2019; Chiu and Monnet, 2024; Capponi et al., 2024; Copestake et al., 2024). On the features of stablecoins, Gorton et al. (2022b) study banknotes from the free-banking era and stablecoins as private money to investigate whether the forces that generated positive convenience yield on banknotes also apply to stablecoins. Finally, Anadu et al. (2023) provide evidence that stablecoins exhibit flight-to-safety dynamics, akin to money market funds, particularly during periods of heightened Bitcoin volatility.

Our contribution consists in delineating the empirical boundaries of what is considered safe in crypto markets. We show that investors value similar safety features when assessing crypto and non-crypto assets, opting for yield-bearing deposit-like investments, akin to certificates of deposits or commercial papers. Moreover, we show that investors display an information-insensitive approach regarding the specific tokens deposited, provided they are stablecoins. However, this insensitivity diminishes in market distress periods due to both crypto and non-crypto shocks. In addition, we demonstrate that investors show a preference for the largest protocols and blockchains, paralleling traditional investors' tendency to favor private safe assets issued by systemically important financial institutions. Overall, this paper sheds light on how unregulated financial systems evolve to satisfy investors' demand for safety.

2 Theory and Hypotheses

In this section, we discuss the theoretical background that underpins our analysis. We begin by defining the key underlying concepts and discuss the rationale and economic mechanisms that motivate our testable hypotheses.

[10] See Makarov and Schoar (2022) and Harvey et al. (2021) for an overview.

2.1 Defining Safe Assets

An asset is considered a "safe asset" if it is widely accepted at face value without the need for extensive verification, as it is believed to be largely insulated from concerns related to adverse selection. When purchasing a safe asset, investors do not perceive the issuer (or seller) as having superior information regarding the asset's value, thereby eliminating the incentive to generate private information about its value (Gorton and Pennacchi, 1990). Dang et al. (2015) describe this feature as 'information insensitivity' (see also Holmstrom, 2015; Dang et al., 2017).

Information insensitivity requires credible backing (Gorton and Metrick, 2012). Securities issued by governments are typically regarded as safe assets due to their backing by a taxing authority. In theory, privately issued securities can also be *made safe* through specific contract design elements, such as collateral, maturity, and seniority. For example, short-term securities issued are expected to be less exposed to new information compared to long-term securities, making their value more information-insensitive. Alternatively, privately issued securities may be treated as safe assets if they benefit from explicit or implicit government backing (e.g., when issued by financial institutions). Government-issued securities, such as T-bills, remain the preferred safe asset for investors and are often associated with a significant safety premium (Krishnamurthy and Vissing-Jorgensen, 2012; Christensen and Mirkov, 2022). However, when the supply of these securities is insufficient to meet the demand for safe assets, investors turn to privately issued substitutes with similar characteristics (Gorton et al., 2012; Sunderam, 2015; Cipriani and La Spada, 2021; Kacperczyk et al., 2021).

In crypto markets, assets do not have the same characteristics as traditional financial assets, and diverge significantly from conventional safe assets, as they often lack defined maturity, fixed-income features, or credible backing from established institutions. Since investors in these markets are not fundamentally different from those in traditional markets (Aiello et al., 2022) and increasingly include institutional funds (Copestake et al., 2024), they arguably seek safer alternatives when looking to adjust their asset allocations. However, moving funds in and out of the crypto ecosystem is costly (e.g., due to withdrawal fees and taxes, regulatory and compliance issues), making investors search for safe alternatives *confined* to the crypto ecosystem. This raises questions about what products, if any, cater to the demand for safety and what features investors consider as safety attributes in this unique context.

2.2 Defining the Demand for Safety

Previous studies have measured the demand for safety using the money premium, which is defined as the spread between the yield on T-bills and a reference risk-free rate, typically the overnight interest rate swaps (OIS) rate (e.g., see Sunderam, 2015; Kacperczyk et al., 2021). The rationale is that credit risk on OIS contracts is extremely low, as no cash is exchanged upfront, the notional value is never exchanged, and contracts are either fully collateralized or centrally cleared. Under normal market conditions, liquidity risk is also minimal, as the OIS markets in both the US and Europe are highly liquid. Moreover, since no cash is exchanged upfront, investors cannot use swap contracts as a store of value or pledge them as collateral.

Variations in the money premium at relatively high frequencies, such as weekly, helps isolate these variations from background economic changes, making them more exogenous. Unlike low-frequency variations, which are influenced by the state of the macroeconomy, weekly fluctuations are primarily driven by factors including payroll schedules, inventory management, dividend disbursements, and financial market transactions (Sunderam, 2015; Poole and Lieberman, 1972; Cochrane, 1989; Faig, 1989). For a given level of demand, a shortage of government bonds will lower the T-bill yield, thereby reducing the money premium. Thus, a reduction in the money premium (i.e., a more negative premium) indicates increased demand for private safe assets.

We investigate which crypto assets cater to the demand for safety using the money premium, under the assumption that institutional investors with a crypto mandate respond to the demand for safety in a way consistent with their behaviour in their traditional portfolios. The prominence of institutional investors in the DeFi space is discussed in Section 5, where we also introduce an alternative measure of institutional demand for safety, based on actual T-bill demand from investment funds. In further tests, we also disentangle a flight-to-safety measure within crypto markets based on the proxy for speculative demand used by Gorton et al. (2022a) from our broader measure of demand for safety. This allows us to demonstrate that our findings are not driven by speculative crypto market dynamics but rather by broader market forces. In additional robustness tests, we incorporate the money premium at different maturities and the quantity of US government bonds to further validate our findings.

2.3 The DeFi Ecosystem

Let us discuss the institutional characteristics of the DeFi ecosystem, with a particular focus on DeFi lending. DeFi, short for decentralized finance, refers to a financial system built on blockchain technology that enables users to lend, borrow, and trade digital assets without intermediaries like banks. DeFi lending protocols, such as Aave, allow users to deposit cryptocurrencies into lending pools, where they can earn interest from borrowers who take out loans (Cornelli et al., 2024).

A key feature of DeFi lending is the interest paid to depositors, often expressed as the Annual Percentage Yield (APY). APY reflects the real rate of return earned on an investment, taking into account compound interest over a year. In Aave, one of the largest lending protocols, users who deposit stablecoins like USDC or DAI may see an APY ranging from 0% to 62%, depending on the supply and demand within the pool. Crucially, the APY fluctuates based on how much capital is borrowed with respect to the amount available in the pool, which is called "utilization rate" (Rivera et al., 2023a). When more investors deposit funds than borrow, this increases the total capital supply and thus the APY decreases. Conversely, when fewer funds are available, APY increases as borrowers compete for access to the limited capital, driving up interest rates.[11]

DeFi lending is typically characterized by the absence of fixed maturities for deposits and loans, unlike traditional financial systems. Depositors can withdraw their funds at any time, provided there is sufficient liquidity in the pool, which allows for flexible lending terms. Borrowers, similarly, can repay loans on-demand without strict repayment schedules, though they must maintain collateral above a certain threshold to avoid liquidation.

Another important metric in DeFi is Total Value Locked (TVL), which refers to the market value of all tokens deposited in a pool and serves as a measure of the protocol's scale and popularity. The TVL is commonly used to signal the size and attractiveness of a pool, often serving as a marketing tool for DeFi protocols. Nevertheless, the TVL is a noisy measure prone to double-counting (Chiu et al., 2023; Aquilina et al., 2023; FSB, 2023; ESMA and EBA, 2025). For this reason, we will use the APY for our main analysis as it automatically captures the quantity adjustments (via the utilization rate).

To participate in DeFi lending, users typically deposit assets by connecting their crypto wallets to a DeFi protocol like Aave, selecting an asset to lend, and confirming the transaction on the blockchain. The deposited funds are pooled with others, and borrowers can take loans from this pool by providing collateral, which is often over-collateralized to mitigate the risk of default. Additionally, protocols like Aave employ mechanisms such as automated liquidations and the "Safety Module" (a reserve fund) to reduce risk for depositors (such as smart contract risk, and liquidation risk) and ensure the safety of their assets in times of market stress or smart contract vulnerabilities.[12]

Figure 1 details the flow of a Defi lending transaction (FSB, 2023). For our research, it

[11]See Cornelli et al. (2024) for a detailed explanation of the dynamic interest rate mechanisms in Aave.
[12]For further details, see `https://aave.com/docs/primitives/safety-module`.

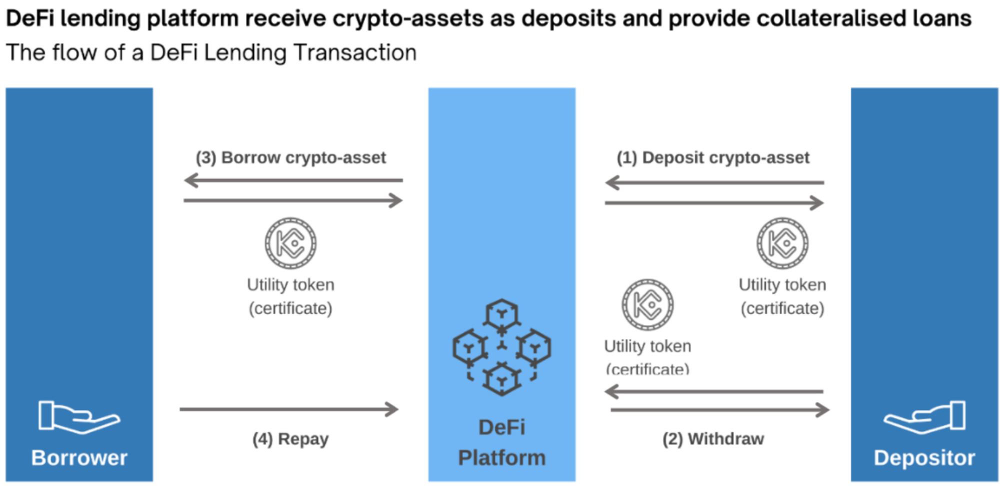

Figure 1: Source: Financial Stability Board (FSB, 2023) "The Financial Stability Risks of Decentralised Finance"

is essential to understand the sources of variation in the APY received by investors when depositing in DeFi protocols. In Aave, interest accrual for depositors is facilitated through aTokens, a form of interest-bearing tokens that are minted when users deposit assets into Aave's lending pools. These aTokens represent the depositor's claim on the underlying asset, plus any interest earned, and are key to tracking the accumulation of interest over time.[13]

When users deposit assets such as USDC or DAI, they receive an equivalent amount of aTokens (e.g., aUSDC or aDAI) in return. The value of aTokens remains constant relative to the deposited asset (1 aUSDC = 1 USDC), but the balance of aTokens in a depositor's wallet increases continuously as interest is earned. This increase reflects the APY, which is dynamically adjusted based on the supply and demand of the asset in the pool.

The APY accrues in real-time, with the interest being continuously compounded and reflected in the growing balance of aTokens. Unlike traditional finance, where the interest might be credited periodically (e.g., monthly or annually), in Aave, the compounding process is automated and is provided block by block, as each new Ethereum block is mined. This means that the interest earned is integrated into the balance of aTokens, and depositors can withdraw not only their principal but also any accrued interest at any time.[14] Moreover, aTokens can be transferred or used in other DeFi applications, so that the accrued interest is accessible at all times.

[13] For further details, see `https://aave.com/docs/developers/smart-contracts/tokenization`.

[14] For example, if an investor deposits 1,000 USDC into Aave with an APY of 5%, they receive 1,000 aUSDC. As interest accrues, their aUSDC balance gradually increases over time. After one year, assuming the APY remains stable at 5%, the depositor's aUSDC balance will reflect a 5% increase, resulting in approximately 1,050 aUSDC. The depositor can redeem these aTokens for an equivalent amount of USDC at any time, with the accumulated interest already accounted for.

2.4 Testable Hypotheses

We aim to study the demand for safety within the crypto ecosystem and propose a key role of DeFi lending pools, which offer a simple investment option with built-in features designed to minimize risk. First, we examine whether crypto investors treat DeFi lending pools as a safe investment by investigating if they respond to measures of safety, i.e., whether investors increase their deposits in these pools when seeking safety.

To prove this central hypothesis, we conduct several tests. The rationale underlying our baseline tests is as follows. Like other institutional investors, crypto institutional investors demand safe assets for standard monetary services such as storing value or cash flows. However, their options within the crypto ecosystem are limited and feature non-standard characteristics. Moreover, exiting crypto markets to invest in traditional safe assets, to eventually enter again the crypto ecosystem, is not frictionless because of the existing costs, the uncertainty related to tax, and regulatory treatments of capital gains.

If crypto investors turn to certain crypto investments to meet their demand for safety, we would expect these investments to respond to measures of (exogenous) demand for safety such as the money premium. This response would manifest in the APY as it automatically responds to the availability of funds in the pool (new deposits). We mainly focus on the APY, given the recent studies suggesting that TVL is a noisier measure (Chiu et al., 2023; Aquilina et al., 2023; FSB, 2023; ESMA and EBA, 2025). As mentioned earlier, we hypothesize that an increase in the demand for safety should be associated with a lower interest rate of the perceived crypto-safe investment. Due to their centrality in the DeFi ecosystem and their contractual characteristics, which are designed to mitigate risks (e.g., over-collateralization), our first testable hypothesis focuses on DeFi *lending* pools.

Hypothesis 1 *An increase in the demand for safety (lower money premium) is associated with a lower return (APY) on Defi lending pools.*

Additionally, we recognize the relative price stability of top stablecoins compared to other crypto assets (e.g., BTC and ETH), as they are pegged to US dollar, providing an additional layer of safety.[15] Therefore, we explore whether investors' search for safety is facilitated by the use of stablecoins.

Our second testable hypothesis posits that *stablecoin* lending pools are treated as having an added layer of safety and thus respond more to demand for safety.

[15] Price stability is particularly valuable for institutional investors, as they operate and have reporting obligations in US dollars.

Hypothesis 2 *All else equal, the response to an increase in the demand for safety is stronger for stablecoins lending pools.*

It is important to emphasize that the proposed hypotheses do not imply a *substitution* between traditional safe assets (e.g., T-bills, CDs, CPs) and crypto investments, such as DeFi lending pools. Arguably, in the absence of frictions between crypto and traditional markets, investors would resort to traditional safe assets as the crypto ecosystem lacks the capacity to offer substitutes for traditional private safe assets. Hence, the safety we attribute to crypto investments is confined *within* the crypto ecosystem.

The second part of our empirical analysis investigates what features of DeFi pools satisfy the demand of investors seeking safety. We examine both time-series heterogeneity during periods of market stress of both crypto-specific events, such as Terra, FTX, and SVB collapses, or hacker attacks, and broader market uncertainty episodes. Moreover, we leverage the granularity of our data to document the cross-sectional heterogeneity of pools, including factors like category (e.g., Lending, Staking), token denomination (e.g., USDT, USDC, USDT-USDC-DAI), and blockchain (e.g., Ethereum, Polygon).

The cross-sectional analysis is a key contribution of our paper, as it helps uncover the role these factors may play in investors' preference for certain crypto assets when searching for safety. For example, if investors turn to stablecoins for their safe asset investments, we expect them to prefer those with lower-risk features. All else equal, the (implicit) backing of financial institutions could make USDC more attractive than USDT. However, it is unclear whether credible backing within the crypto ecosystem functions in a similar way as in traditional markets, as investors may consider other attributes. Notably, if investors place greater trust in the protocol's backing, they may be indifferent between stablecoins, considering pools information-insensitive at the token level. This would also suggest that the credibility of protocols matters more than that of the tokens' issuers. Furthermore, investors' perception of safety may depend on the blockchain hosting the protocol, as each blockchain has different features and vulnerabilities (blockchain risk). Overall, we expect safety-seeking investors to treat protocols hosted on blockchains with lower risk as safer, unless the protocol credibility, again, is the most relevant attribute.

3 Data and Descriptive Statistics

3.1 Data

We collected daily data on all lending and non-lending pools from DefiLlama API for the longest time series available, namely from February 2022 to December 2024. We filtered pools that include at least one of the key stablecoins, USDT, USDC, and DAI, and the two largest cryptos, BTC and ETH, as well as their synthetic representations (e.g., WBTC, M.USDC). For each pool, we know the identity of the protocol that operates it—also called "project"—(e.g., Aave, Compound) and the blockchain hosting the pool (e.g., Ethereum). A single protocol can have multiple pools on different chains. Each pool has a certain token denomination that can be "single" (sometimes called single-name pools), so only one token can be deposited (e.g., USDT), or "multiple", when investors can deposit multiple tokens in the same pool (e.g., USDT-USDC). DeFiLlama also provides a variable that categorizes pools as either stablecoin pools or non-stablecoin pools. The dataset includes various pool characteristics, such as the DeFi category (e.g., lending, staking, dexes, etc.).

We cleaned the data by discarding pools for which the category is "cross-chain" (to avoid double counting), "unknown" or is related to NFTs. We drop pools whose APY is above the 95% percentile of the aggregate APY distribution (i.e., above 118.08), and retain only the top 25% largest pools that account for more than 98% of total value locked of the Defi ecosystem. Log changes in TVL and cumulative market cap are winsorized at 1% level.

We complement the data on market capitalizations at the token level from CoinGecko API. Bitcoin volatility is from T3Index, while Bitcoin and Ethereum futures funding rates are from Binance. Hacker attacks are from DefiLlama. Data regarding T-bill yields, VIX, and commercial papers is from FRED, OIS rates are from Eikon/Refinitiv, whereas government debt outstanding is from the US Fiscal Data, and T-bills auction data is from the US Treasury. Finally, the dataset is collapsed from daily to weekly frequency by taking the last NYSE trading day of the week. The final sample at the weekly level encompasses 91,811 observations, 1,359 pools, 194 protocols, 44 blockchains, and 669 symbols.

3.2 Summary Statistics

In Table 1, we report the summary statistics for the variables used in our empirical analysis. The frequency is weekly and the time ranges from February 2022 to December 2024. In the top panel, we show the figures for the entire sample, whereas in the two bottom ones, we split the sample between stablecoin and non-stablecoin lending pools.

[Table 1 about here.]

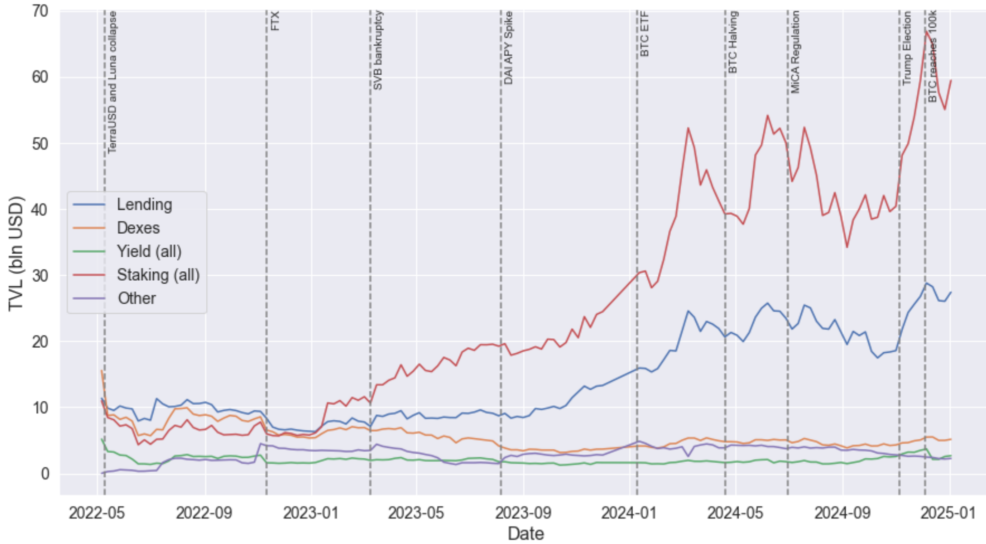

Figure 2: Total Value Locked (TVL) over time by category.

The sample is fairly evenly split between stablecoin and non-stablecoin pools. On average, the APY for non-stablecoin pools is about half the APY of stablecoin pools. This is most likely due to the volumes of both the pool (TVL) and of the cumulative total market capitalization of the tokens in these pools (e.g., BTC and ETH) being much higher, and this might bring down the APY since such tokens are not "scarce". Additionally, investors in non-stablecoin pools also obtain an (expected) return when using their tokens for speculative purposes.

[Table 2 about here.]

In Table 2, we report the unique values of pools, blockchains, and symbols/tokens for different subsamples as we use these dimensions both for our fixed effects and for our heterogeneity analysis. Notably, the distribution is relatively uniform across subsamples, which means that we do not have a concentration of unique characteristics (e.g., chains or protocols) in some specific subsamples.

To have a sense of the relative importance of the various categories, Figure 2 displays the time series evolution of TVL by category. Staking pools have the largest market share with roughly 60 bln USD at the end of 2024, followed by lending pools with almost 30 bln USD. TVL is measured as the total amount deposited in the pools, multiplied by the current price of the tokens. As a result, its value fluctuates with market prices, which is particularly relevant for non-stablecoin pools, such as ETH staking.

In Figure 3, we observe that in the first part of the sample period, the APY in the two samples often moves in opposite directions, whereas in the second part, their movements

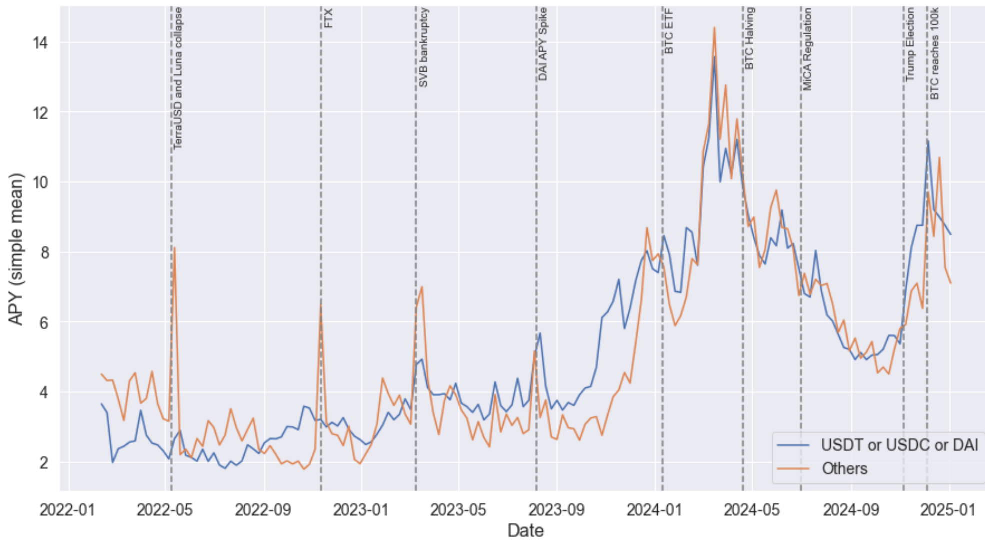

Figure 3: Annualized Percentage Yield (APY) of stablecoin pools over time for "USDT", "USDC", and "DAI" denominated pools versus the others.

become more correlated. In terms of levels, they do not differ significantly, as both exhibit an increasing trend, indicating a rise in borrowing activity relative to the deposited amount. When the APY is low in the first part of the sample period, investors deposit more than they borrow, whereas in the latter part of the period, borrowing outpaces deposits, likely driven by rising market prices of BTC and ETH.

Figure 4 shows the 3-month money premium as well as its components, namely the T-bill yield and the OIS rate, with this latter being reported with the negative sign for clarity. The money premium measures the excess demand for safety of investors as it subtracts from the T-bill yield (the preferred safe assets) the OIS rate which is a measure of the expected federal funds rates in a given period. Crucially, OIS contracts are highly liquid and have extremely low credit risk.[16] Hence, the subtraction of the OIS strips out of the T-bill yield all the variation due to the interest rate and singles out its idiosyncratic characteristics (Sunderam, 2015; Kacperczyk et al., 2021). From the start of the sample until mid-2023, the money premium series is characterized by large negative swings whereas more recent periods appear relatively more stable. Indeed, the T-bill and the OIS increased with respect to the start of the sample to eventually stabilize. This suggests that in the first part of the sample, demand for safe assets was higher, as investors were willing to pay a greater safety premium on T-bills bonds, whereas the opposite occurred in the second part.

Figure 5 displays the distributions of the APY – our main dependent variable – for a selection of samples we use in our empirical analysis. Notably, the distributions of the APY

[16]Notionals are never exchanged and there is no cash exchange upfront. For these reasons, OIS contracts are not used as collateral or store of value.

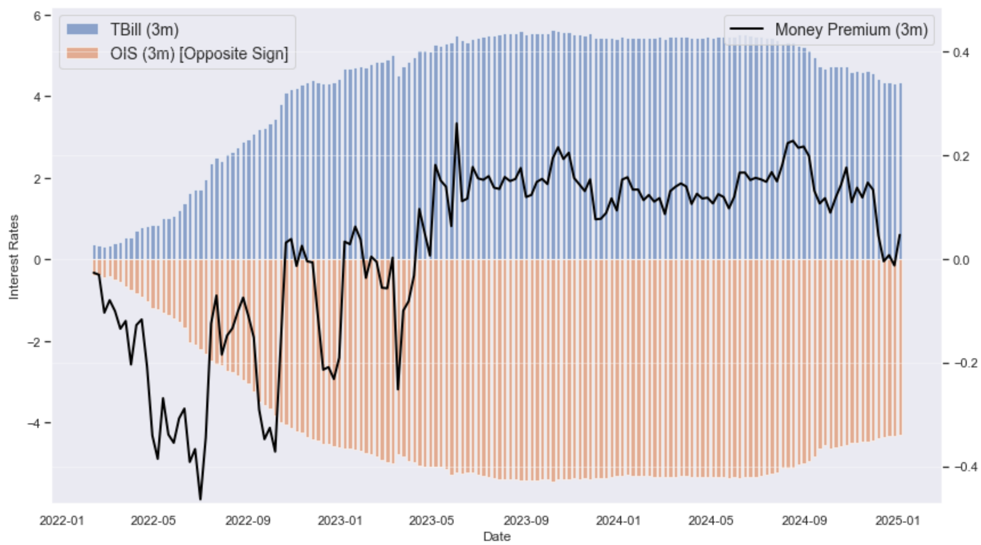

Figure 4: 3-month T-bills yield and 3-month OIS rate [opposite sign] on the left axis and 3-month Money Premium (T-bills minus OIS) on the right axis.

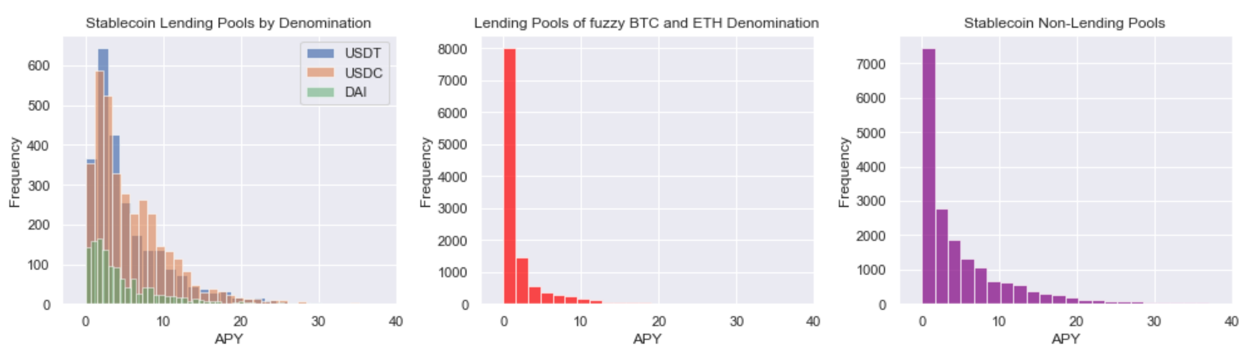

Figure 5: Histograms of APY for different sample splits. x-axes are truncated.

are quite similar for the main stablecoin lending and non-lending pools, with a relatively fatter tail for the latter. Conversely, the distribution of the APY for stablecoin non-lending pools presents a thinner tail. Remarkably, the APY of the BTC and ETH lending pools is highly concentrated between 0 and 5%, with a relatively thinner tail.

4 Main Empirical Results

To empirically investigate the hypotheses laid out in Section 2.4, we estimate the following baseline specification:

$$
\begin{aligned}
\text{APY}_{pckt} = \beta_0 &+ \beta_1 \cdot \text{Money Premium}_{t-1} + \beta_2 \cdot \text{Bitcoin Volatility}_{t-1} \\
&+ \beta_3 \cdot \Delta \log(\text{Market Capitalization})_{pck,t-1} + \beta_4 \cdot \text{APY}_{pck,t-1} \\
&+ \mu_p + \gamma_c + \theta_k + \tau_{woy} + \epsilon_{pckt}
\end{aligned} \tag{1}
$$

The *APY* is the annualized percentage yield at the pool level. In particular, p stands for protocol, c for blockchain, k symbol(s)/token(s) denomination, and t for year-week. The *Money Premium* is the 3-month spread between the T-bill yield and the overnight-index swap (OIS) rate, and captures the excess demand for safety. As a control, we include *Bitcoin Volatility* to capture crypto market conditions. This variable accounts for possible variation in the APY due to crypto market volatility. The $\Delta \log($*Market Capitalization*$)$ is the change in the market capitalization of all the tokens in which the pool is denominated and captures possible changes in the APY due to the relative importance of some tokens with respect to others as well as changes in the total supply of these tokens. In addition, we add protocol, blockchain, token(s), and week-of-the-year fixed effects to better identify the effects of the money premium on APY. In some tighter specifications, we also use protocol-time fixed effects. Data is at the weekly level as in the literature (e.g., see Sunderam, 2015; Kacperczyk et al., 2021). In all specifications, standard errors are clusters at the protocol-year-week level.[17]

Table 3 reports the estimates of the specification (1). In the first column, we consider the sample of lending pools, whose denomination is either USDT, USDC, or DAI, and find a highly significant and positive coefficient for β_1. A positive coefficient implies that when the money premium becomes more negative (i.e., demand for safety increases), the APY decreases as investors deposit more into the pools, accepting lower yields in exchange for safety. In the second column, we enlarge the sample and consider all stablecoin lending pools. The coefficient is slightly smaller but still highly significant. The effects are economically sizable as a one standard deviation increase in the demand for safety (i.e., 0.167) leads to a decrease in the APY of 0.9%, 15% of its unconditional mean of 6%. In the third column, we include all the stablecoin pools as before but we select them within all the categories excluding only "Lending". In this case, the coefficient is roughly one-third of the previous one, with a lower significance. In the fourth column, we discard from the sample not only lending pools but also the ones that are akin to lending, such as "Yield Aggregator" and "Yield".[18] In this latter case, the coefficient and the t-statistics attached to the money

[17] Our results are robust to different specifications that run on the entire sample and use various interaction terms to identify how different pools respond to the demand for safety (see Table B.16 in Appendix B).

[18] Yield and Yield Aggregator protocols are akin to lending protocol, with the difference being on the

premium are smaller and insignificant. This suggests that stablecoins non-lending pools do not cater to the demand for safety. In the fifth column, we test whether lending pools whose denominations appear with the "BTC" or "ETH" stamps respond to the excess demand for safety. As for the previous tests, this is motivated by the idea that only stablecoin pools should provide safety to investors, consistently with Hypothesis 2. Alternatively, one might think that early crypto adopters (or more generally, crypto-bullish investors) would see BTC and ETH pools as a safer option. For instance, they could consider Ethereum staking pools as an alternative yield-generating safe asset. We find support for the former as these pools do not cater to the excess demand for safety.

[Table 3 about here.]

Note that we use the money premium as a measure of demand for safety rather than a crypto-specific safety measure. An indirect measure for crypto-related safety demand could be derived from ETH futures funding rates, which capture speculative demand in crypto markets (similar to Gorton et al., 2022a). We make this choice because we want to capture broader demand-for-safety motives that might not directly arise from crypto markets. A helpful comparison might be US investors operating in a developing country with highly volatile markets and capital controls. Similarly to crypto markets, US investors cannot frictionlessly move their funds in and out of the country and so seek a safe alternative within that country. Their demand for safety arises from country-specific factors (e.g., a local political crisis) as well as from shocks coming from elsewhere (e.g., the US). We argue that similar dynamics characterize our setting.

Nevertheless, we find similar results when replacing the money premium with the ETH futures funding rates, suggesting a flight-to-quality when the speculative opportunities are low. To better disentangle the differences between the two measures, we also orthogonalize the money premium by using the ETH futures rates and show that a sizeable part of the variation driving our baseline results is not driven by crypto-specific factors (i.e., the future funding rates) but by external ones orthogonal to crypto speculation. These results are robust to the inclusion of the BTC futures funding rate and the level of short-term interest rates (Federal Funds rates), which represent the opportunity cost of holding money (Nagel, 2016).[19] This means that the money premium allows to capture a more comprehensive demand for safety and suggests that crypto markets, despite being highly segmented, are not

yield generation. For lending pools, the yield is generated by interest-bearing deposits, where users lend assets to borrowers in exchange for interest. Yield protocols provide investors with automated optimization services to diversify their investments. Their portfolios include different pools, such as lending pools, but also staking, and others. For these reasons, they have some overlap with the lending pools.

[19]See Table C.17 and C.18 in Appendix C.

completely separated from traditional financial markets (as in Auer et al., 2022; Copestake et al., 2024). In Section 5, we deepen this discussion by presenting evidence on the significant participation of institutional investors in the crypto space, with a particular focus on DeFi.

The rest of the analysis is structured as follows. In the next subsection, we instrument the money premium with the amount of commercial paper outstanding to address possible endogeneity concerns. Next, we provide evidence that indicates that our results are linked to institutional demand for safety by adopting a narrower measure of safety that is based on institutional demand for short-term T-bills at auctions and by sorting pools by flows. Subsequently, we exploit the granularity of our data to document the shocks that affect the safety status of stablecoin lending pools, and what characteristics matter the most for investors seeking safety within crypto markets. Finally, we conclude our discussion by showing the evolution of the crypto money premium attached to safe pools and adding further robustness tests to support our findings.

4.1 Instrumental Variables Approach

In the empirical baseline specification (1), we implicitly make the mild assumption that weekly variations in the money premium, so in the demand for safety, do not depend on the one-week-ahead variations in the DeFi pools. Nevertheless, to address potential other concerns, we further advance toward identification by estimating a set of instrumental variable regressions.

In the first set of regressions, we instrument the money premium using the total amount of commercial paper outstanding (CP). In the second set, we instrument the money premium by using the total amount of asset-backed commercial paper outstanding (ABCP).[20] To the extent that commercial papers are imperfect substitutes for government-issued safe assets, instrumenting the T-bill-OIS spread (money premium) with CP absorbs the variation that is only due to the demand for safety satisfied by private safe assets. The exclusion restriction relies on the fact that the commercial papers issuances at weekly frequency are not due to one-period-ahead weekly variations in DeFi pools (APY and TVL), as corporates use CP to satisfy short-term "real economy" working capital needs (Calomiris et al., 1995; Kahl et al., 2015). As for ABCP, similar considerations apply, as they are issued by banks to facilitate corporate financing of trade receivables and thus also satisfy short-term working capital needs.

Formally, we instrument the money premium by using both the log change in commer-

[20]We use the variable "Commercial Paper Outstanding" [COMPOUT] from FRED, Federal Reserve Bank of St. Louis (`https://fred.stlouisfed.org/series/COMPOUT`) and the variable "Asset-Backed Commercial Paper Outstanding" [ABCOMP] (`https://fred.stlouisfed.org/series/ABCOMP`).

cial papers and their log level. We estimate the IV specification on four representative subsamples, namely the USDT, USDC, and DAI single-name lending pools, all stablecoin lending pools and, as a placebo, all lending ETH/BTC pools and all lending and non-lending ETH/BTC pools. Indeed, if this methodology properly isolates the variation in the money premium that is due to the demand for safety, as postulated in Hypothesis 2, BTC and ETH pools should not cater to the demand for safety. In this section, we show the main IV results, while we report additional IV specifications in which we instrument alternative measures of safety demand in Appendix E.

[Table 4 about here.]

Table 4 displays the results of instrumenting the 3-month money premium. In all the estimates the instrument is strong as the F-statistics of the first-stage regressions largely exceed the standard critical values. The first two columns show that the effect of the money premium on the APY is positive and significant when the instrument is the amount outstanding of commercial papers. Remarkably, the magnitude of the coefficients is higher than for the OLS specification in Table 3 (see columns (1) and (2)). As placebo tests, the third and fourth columns report the same specification for the samples of BTC and ETH pools. As expected, the instrumented money premium does not have a significant coefficient, in line with the view that these lending pools do not cater to safety demand. This is consistent with the result of columns (5) and (6) of Table 3. The estimates in columns (5) to (8) using the amount outstanding of asset-backed commercial papers, show similar results.

5 Institutional Demand for Safety

Our analysis employs the money premium as a measure of investors' demand for safety, drawing on the broader literature on safe assets. The validity of this measure in the crypto space hinges on the extent of institutional participation in DeFi markets, where the demand for safety may manifest through preferences for lower-risk, yield-generating protocols. Survey data suggests significant institutional involvement in digital assets. Specifically, 58% of the 1,052 institutional investors surveyed across the US, Europe, and Asia reported exposure to digital assets, with 40% engaging in DeFi, peaking at 50% in Europe (Fidelity Digital Assets, 2022). The most recent survey in 2024 further highlights that digital asset investment remains concentrated among high-net-worth investors, crypto hedge funds, crypto venture capital firms, and financial advisors (Fidelity Digital Assets, 2024). While overall DeFi participation among institutional investors declined in 2023, yield-generating protocols remained an exception, growing to 41% – the highest share of DeFi-related institutional activity. In addition, OECD (2022) uses Chainalysis data to show that the prominence of institutional investors is reflected in the fact that, in 2021, transactions exceeding $1 million accounted for 80–90% of total DeFi transaction volume, while those exceeding $10 million represented over 60%. Overall, such evidence confirms the role of institutional activity in the DeFi space.[21]

While the money premium remains our primary measure of investors' demand for safety, we now present an alternative test using an institutional-investor-based measure of demand for safety. We do so using weekly US Treasury auction data, which provide information on the allocation of short-term T-bills across investor categories. Specifically, we use the weekly change in the amount of T-bills (with maturities of up to three months) allotted to investment funds, such as hedge funds and mutual funds. In Table 3, we run our baseline specification by replacing the money premium with this measure of institutional safety demand and we find similar results (see columns from (1) to (6)). To ensure we are not capturing spurious relations, as placebo tests, we use the amount allotted to the Federal Reserve that buys T-bills for conducting open market operations (see columns from (7) to (12)). As expected, the results are not significant.

[Table 5 about here.]

Next, we focus on crypto markets and try to identify the pools that are more likely to be used by institutional investors. To explore this dimension, we try to distinguish between pools with higher institutional activity and those with greater retail participation. Since there is no explicit data about investors' profiles, we use absolute changes in TVL as an indicator of the type of investors trading with the pools. Larger TVL changes are likely associated with investors moving larger amounts of capital, which we interpret as indicative of institutional activity (as leading crypto data providers, e.g., as Chainalysis, do). Based on this measure, we sorted pools by the median absolute changes in TVL and computed the percentiles, identifying pools with greater "institutional" activity (top 5%, 10%, 15%) and with more "retail" activity (bottom 5%, 10%, 15%).

Table 6 reports our estimates. We find that stablecoin lending pools with greater institutional activity exhibit a stronger response to demand for safety compared to those with higher retail participation. The coefficient in columns (1) to (3) is positive, significant, and larger in magnitude, reinforcing this effect. In contrast, the results for non-stablecoin lending pools align with our baseline findings, showing that regardless of the investor composition, these pools do not accommodate the demand for safety.

[Table 6 about here.]

[21] Using the same data source, Copestake et al. (2024) show that the synchronization of crypto and global equity markets is explained by the share of institutional investors trading in the former.

6 Time Series Heterogeneity

We move to explore the time heterogeneity of our results and examine whether stablecoin lending pools are treated as safe at all times and what happens when uncertainty increases. The literature on safe assets highlights that during periods of heightened uncertainty, private safe assets lose their safety status, as increased uncertainty renders them information-sensitive, leading to the reemergence of adverse selection (Dang et al., 2015; Moreira and Savov, 2017; Kacperczyk et al., 2021). To the extent that the market has a prominent institutional investor presence, a similar dynamic should arise for the crypto investments that investors treat as safe. This effect could be even more pronounced in DeFi markets, as they are less mature and frequently subject to hacker attacks. Critically, stablecoin lending pools should respond to broader episodes of market stress – such as elevated levels of the VIX – like traditional private safe asset markets.

[Table 7 about here.]

Our sample is well suited to examine the time-variation in the demand for safety, as it includes three major crypto shocks: (i) Terra, the first large-scale collapse of an algorithmic stablecoin, (ii) FTX, the failure of a major exchange due to fraud, and (iii) SVB, the collapse of a traditional bank that triggered the de-pegging of one of the largest stablecoins, revealing the significance of crypto ecosystem's linkages with the traditional banking sector. In addition to these systemic events, we use a novel dataset to study investors' responses to crypto hacks.

In Table 7, we focus on the three major crypto shocks as well as on a measure of aggregate market stress that is not crypto-specific, the VIX. In columns (1) and (2), we interact the money premium with a *Crypto Shocks* dummy that is equal to one in the calendar month of the FTX, SVB, and Terra shocks. In columns (4) to (6), we employ a similar specification using the VIX. Specifically, the variable *High VIX* is equal to one in the period in which it is in the top 25 percentile in our sample period. Regardless of whether we focus on the variable *Crypto Shocks* or *High VIX*, our findings indicate that, during periods of heightened uncertainty, investors treat stablecoin lending pools as less safe. In the crypto market, this effect likely manifests as investors exiting the ecosystem in favor of safer fiat currencies. The evidence on VIX corroborates the idea that institutional investors have demand safety motives arising from external factors. Consistent with our earlier results, this dynamic does not apply to BTC and ETH pools (columns (3) and (6)).

[Table 8 about here.]

In Table 8, we extend our analysis using more granular data on crypto hacks, focusing on incidents that resulted in losses exceeding USD 100 million, identifying 16 weeks with such events. The detailed nature of the dataset allows us to examine attacks specifically targeting DeFi protocols (columns (3) and (4)). Our findings indicate that during a DeFi-related hack, stablecoin lending pools experience significant disruptions, as investors withdraw their deposits, leading to a rise in APY. This effect is more pronounced when the demand for safety is elevated, suggesting that the ability of stablecoin pools to serve as a safe asset deteriorates when concerns about cybersecurity risk materialize as losses. In particular, the coefficient in Column (3), which isolates hacks related to DeFi, shows a negative and significant effect on stablecoin pools, as well as on the interaction terms with the money premium. Notably, we find no comparable response in non-stablecoin lending pools, suggesting they serve investors who have factored in the higher risk of their investments.

Figure 6 shows that, consistently with our regression results, the APY for stablecoin lending pools does not seem to respond to the money premium around these shocks. Indeed, in most cases, the APY varies substantially more than the money premium.

7 Cross-Sectional Heterogeneity

In this section, we leverage the granularity of the dataset to investigate which pool characteristics investors value as safety attributes. Building on our baseline results, first, we examine the role of token denomination in lending pools and specifically consider whether investors exhibit preferences for a particular type of tokens (e.g., stablecoins) and whether they differentiate among tokens within the same category (e.g., preferring one stablecoin over another). To do so, we focus on the sub-sample of single-name USDT, USDC, and DAI pools. To account for time-varying factors that may influence demand within a given protocol, we refine our main specification (1) by incorporating protocol-time fixed effects.

In Table 9, the interaction coefficient of the first column confirms the prime importance of stablecoin-denominated pools in responding to the demand for safety within lending pools, in line with Hypothesis 2. In columns (2) to (5), we focus on the top stablecoins for market size and find that investors essentially treat them equally despite their distinctly different characteristics, risks and value propositions. We find the same results in column (6), where we switch back to our baseline set of fixed effects. These results are overall consistent with Hypothesis 2 and confirm that stablecoin lending pools share a key characteristic of traditional private safe assets, namely information insensitivity (Dang et al., 2015; Gorton and Pennacchi, 1990; Holmstrom, 2015).

[Table 9 about here.]

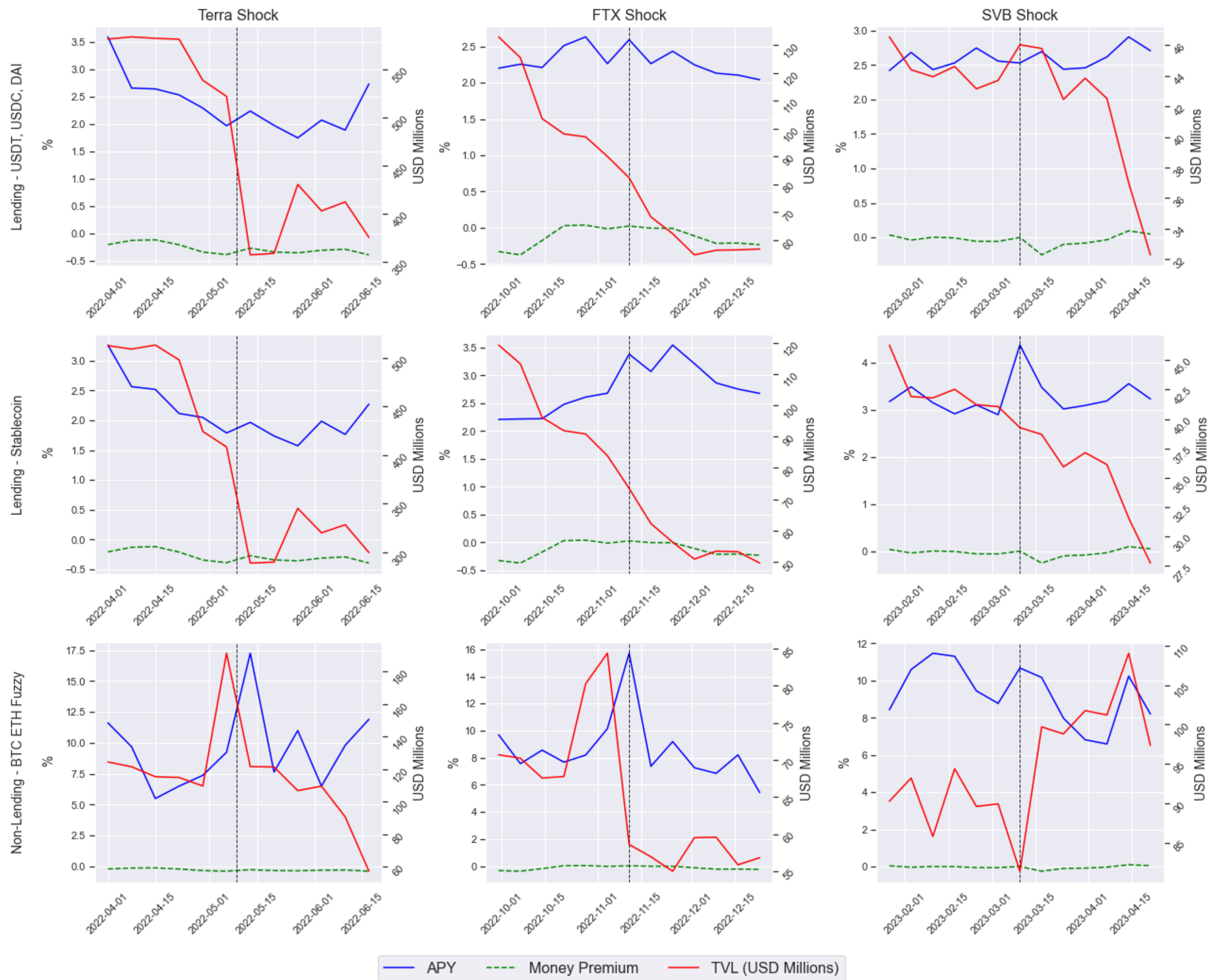

Figure 6: Dynamics of APY, TVL and Money Premium around the three main crypto shocks for different sample splits.

Although the lending category is the largest for stablecoin pools (see Figure 2), we next explore whether other categories cater to safety demand. In Table 10, we present the results for the first battery of tests about category heterogeneity. Consistently with Hypothesis 1, we find that lending pools are the preferred investment by investors when compared to all the other categories (column (1)). This is confirmed for single-name stablecoin pools (column (2)) and for all stablecoin pools (column (3)) but not for the control group of ETH and BTC pools (column (4)). When restricting the sample to only stablecoins pools, there is some evidence that both "Dexes" and "Yield" respond to the demand for safety to some extent. As for "Dexes", the smaller coefficient suggests that the responsiveness of this category is relatively limited than for lending pools. As for the "Yield" category, the results are consistent as they have some level of overlapping with lending pools, as they offer these pools as part of their portfolios.[22]

Next, we focus on a specific category, namely "Staking", which holds the largest market share within the DeFi ecosystem. Crypto staking refers to the process of locking crypto-assets to participate in the validation and security of Proof-of-Stake (PoS) and PoS-like blockchain networks. In return, stakers are granted validator privileges and earn block rewards. For instance in ETH staking pools, investors generate yield by delegating their tokens which validators use to support network operations. While this category shares certain features with lending pools, its design inherently exposes investors to the market risk of the staked asset, primarily ETH price fluctuations. In contrast, market risk is largely mitigated in stablecoin lending pools. Additionally, the deposited value in stablecoin lending pools is backed by the over-collateralization design.

In Table 11, we present the results for the category "Staking", including "Liquid Staking" and "Staking Pool". For convenience, we report again our main results for the stablecoin lending pools in column (1). In columns (2) and (3), we find that an increase in demand for safety leads to higher APY on staking pools, as the coefficient is negative and significant. In columns (4) and (5), we restrict the analysis to pools hosted only on the Ethereum blockchain and find similar results. We conclude that staking pools are not treated as safe, arguably because of the inherent exposure they have to the underlying token.

[Table 10 about here.]

[Table 11 about here.]

Next, we look at whether protocols matter for investors. In Table 12, we interact the money premium with a variable that classifies pools as belonging to Aave, Compound, or

[22]Note that in the category "Yield" we also include "Yield Aggregator" as they share very similar characteristics. See also Footnote 18.

others. In particular, we present the interaction with the ten largest lending protocols by market size. In line with the anecdotal evidence, we find that pools belonging to Aave are the ones that respond the most to the demand for safety when compared to all the other protocols (columns (1) and (2)). Aave is one of the largest lending protocols and, while spread across many blockchains, it operates predominantly on Ethereum, which is the largest and treated as the safest blockchain (see below). This parallels the idea that large financial institutions issue assets that are treated as safer than assets issued by other financial institutions (Kacperczyk et al., 2021). It is worth noting that the preference for Aave fades away when comparing single-name lending pools and all stablecoin lending pools. Investors seem to move away from older protocols (e.g., Aave-v2), but also leave other protocols (e.g., JustLend) that are more centralized and on smaller chains when the demand for safety increases.

We now focus on blockchain heterogeneity to investigate whether it plays a role (similarly to Anadu et al., 2023). The test is motivated by the different risks attached to each technology. In Table 13, we add the interactions with the largest blockchains and conclude that there is a preference for investors in search of safety to deposit into lending protocols hosted on Ethereum and a dis-preference for the Tron blockchain. This suggests that the blockchain on which the pools operate is not merely a technical feature.

[Table 12 about here.]

[Table 13 about here.]

Another dimension worth exploring is the composition of the APY. The APY offered by lending pools consists of one primary component referred to as the "APY Base" which, for many pools, is the sole determinant of the yield. Some pools, however, offer an additional component known as the "APY Reward," designed to incentivize deposit inflows, often from competing pools. Unlike the "APY Base," which is determined by market forces (i.e., as a function of the utilization rate of the pool), the "APY Reward" is discretionary and typically set by the protocol or governance mechanism. The distinction between the two components allows us to disentangle whether our results are driven by investors' behavior (deposit and borrowing activities) or protocols' strategy. In Table 14, we regress them independently to understand which of the two is driving our main results (Table 14). We find that only the "APY Base" of stablecoin lending pools responds to the demand for safety, whereas the "APY Reward" behaves oppositely.

[Table 14 about here.]

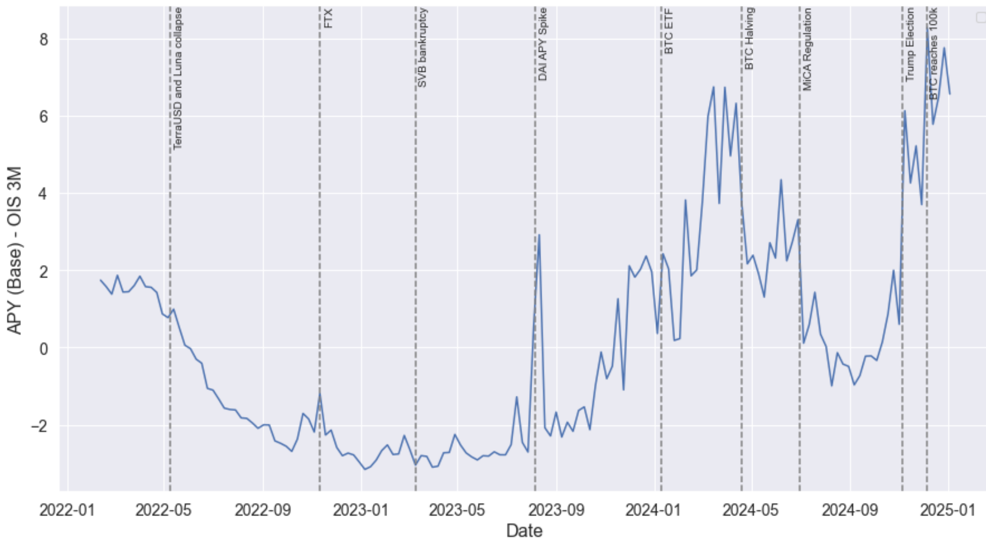

Figure 7: Crypto Money Premium: APY Base of USDT, USDC, DAI lending pools on Ethereum chain minus OIS 3M.

8 Crypto Money Premium

Since we have characterized what assets are treated as safe, we can now compute the "Crypto Money Premium."[23] To do so, we take the average APY of the safest pools identified in our analysis, namely single-name stablecoin lending pools on Ethereum, and subtract a benchmark yield; i.e., the OIS rate. As mentioned before, OIS contracts have close to no credit risk, the notional value is never swapped, there is no cash exchange upfront, and contracts are fully collateralized or centrally cleared. For these reasons, it is often used as a preferred benchmark (see Gorton et al., 2022b; Sunderam, 2015; Kacperczyk et al., 2021).[24]

Figure 7 shows the time series of the crypto money premium, which remains negative from the second half of 2022 until early 2024. This period partially overlaps with the money premium turning negative in early 2022 and staying below zero until mid-2024 (see Figure 4). Overall, the crypto money premium exhibits greater volatility, consistent with the higher volatility of the crypto market. The standard deviation of the crypto money premium is 2.8 while it is 0.17 for the 3-month money premium (i.e., T-bill yield - OIS rate).

We also identify major events in the crypto markets over our sample period. Consistently with our findings on the response of stablecoin lending pools to shocks (see Section 6), we observe that yields increase, albeit modestly, following major crypto shocks such as FTX, SVB, and Terra. This effect arises because, as single-name stablecoin lending pools become

[23]Note that this measure can also be interpreted as a convenience yield (e.g., see Gorton et al., 2022b).

[24]In Appendix D, we report the crypto money premium by token. We also compute another crypto money premium by using a different benchmark measure, yet dynamics do not change significantly.

more information-sensitive, investors withdraw funds, reducing the availability of tokens in the pools and driving the APY up. An evident spike in the crypto money premium occurred when MarkerDAO decided to increase the APY offered on its DAI pools in August 2023.[25] This event triggered a surge in demand for DAI pools and a consequent spike in USDT and USDC APYs as investors were shifting their funds to DAI pools.[26]

Finally, 2024 was characterized by two big events that affected the crypto money premium. The first is the MiCA Regulation in Europe, which imposes stricter rules on stablecoin issuers and digital assets more broadly. As a result, investors shifted from USDT to USDC, as USDC is issued by Circle, a US-regulated entity that adheres to strict reserve backing and transparency requirements. Unlike USDT, which has faced scrutiny over its reserve disclosures, USDC provides regular attestations of its fiat backing and is held primarily in regulated US financial institutions, making it more aligned with MiCA's regulatory framework. The second event is the election of Donald Trump as President of the United States. Market optimism, driven by his pro-crypto stance, resulted in a sharp increase in the crypto money premium. This surge may have been fueled by substantial borrowing, as investors withdrew stablecoins from pools to fund speculative strategies. An increase in the borrowing demand not matched by higher deposits drives up the utilization rate which increases the APY.

9 Robustness Tests

In our baseline tests, we use the APY as the primary dependent variable instead of the TVL, as the latter is a noisier measure and is prone to biases (Chiu et al., 2023; Aquilina et al., 2023; FSB, 2023; ESMA and EBA, 2025). Notably, the APY is not simply the yield that remunerates investors for their deposit of tokens in the pool but is a function of the utilization rate, which is the ratio between the quantity borrowed and deposited in the pools.

Nevertheless, for completeness, Table 15 presents the baseline specification estimated with the log change in TVL instead of APY as the dependent variable. We find that the effect of the money premium is overall significant and negative (apart from column (4)), consistent with our main findings. Indeed, the higher the excess demand for safety (lower the money premium) the higher the change in TVL, which means that more investors deposit their tokens in these pools. In line with the main results in the previous tables, we do not find evidence of the TVL of BTC and ETH pools responding to the excess demand for safety (columns (5) and (6)).

[Table 15 about here.]

[25]See `https://www.ccn.com/analysis/makerdao-spikes10-overnight-mkr-price-up/`.

[26]See Figure D.12 in Appendix D to see the crypyo money premium by token.

10 Conclusions

Safe assets, typically issued by governments or reputable financial institutions, play a crucial role in any financial system, by providing services such as store of value or collateral. When there is a shortage of public supply or investors cannot access these assets, the private sector issues imperfect substitutes.

In this paper, we focus on the crypto ecosystem as a unique and unexplored environment to study the demand for safety. Unlike traditional assets, crypto assets lack characteristics like government backing, stable payoffs, and explicit maturity, raising important questions about what crypto investors treat as safe.

Using a granular dataset on DeFi pools, we show that stablecoin lending pools cater to institutional investors' demand for safety. Crucially, these pools are not direct substitutes for traditional safe assets, but the response of the ecosystem to support investors that cannot frictionlessly resort to traditional safe assets.

References

Aiello, Darren, Scott R. Baker, Tetyana Balyuk, Marco Di Maggio, Mark J. Johnson, and Jason D. Kotter, 2022, Who Invests in Crypto? Wealth, Financial Constraints, and Risk Attitudes, Last revised: November 1, 2023. Available at SSRN: `https://ssrn.com/abstract=4289649`.

Anadu, Kenechukwu, Pablo D. Azar, Marco Cipriani, Thomas M. Eisenbach, Catherine Huang, Mattia Landoni, Gabriele La Spada, Marco Macchiavelli, Antoine Malfroy-Camine, and J. Christina Wang, 2023, Runs and Flights to Safety: Are Stablecoins the New Money Market Funds?, Staff Report 1073, Federal Reserve Bank of New York, Revised April 2024.

Aquilina, Matteo, Jon Frost, and Andreas Schrimpf, 2023, Addressing the risks in crypto: laying out the options, *BIS Bulletin* .

Auer, Raphael, Marc Farag, Ulf Lewrick, Lovrenc Orazem, and Markus Zoss, 2022, Banking in the shadow of Bitcoin? The institutional adoption of cryptocurrencies, BIS Working Papers 1013, Bank for International Settlements.

Calomiris, Charles W., Charles P. Himmelberg, and Paul Wachtel, 1995, Commercial paper, corporate finance, and the business cycle: a microeconomic perspective, *Carnegie-Rochester Conference Series on Public Policy* 42, 203–250.

Campello, Murillo, William Cong, and Diemo Dietrich, 2024, Regulatory Uncertainty and FinTech Innovation, *FEB-RN Research Paper No. 15/2024* .

Capponi, Agostino, Ruizhe Jia, and Shihao Yu, 2024, Price Discovery on Decentralized Exchanges, *SSRN Electronic Journal* Available at SSRN: https://ssrn.com/abstract=4236993 or http://dx.doi.org/10.2139/ssrn.4236993.

Carapella, Francesca, Edward Dumas, Jacob Gerszten, Nathan Swem, and Larry Wall, 2022, Decentralized Finance (DeFi): Transformative Potential & Associated Risks Finance and Economics Discussion Series (FEDS).

Chiu, Jonathan, Charles Kahn, and Thorsten V. Koeppl, 2022, Grasping decentralized finance through the lens of economic theory, *Canadian Journal of Economics/Revue canadienne d'économique* 55, 1702–1728.

Chiu, Jonathan, and Thorsten Koeppl, 2019, Blockchain-Based Settlement for Asset Trading, *The Review of Financial Studies* 32, 1716–1753.

Chiu, Jonathan, Thorsten Koeppl, Hanna Yu, and Shengxing Zhang, 2023, Understanding DeFi Through the Lens of a Production-Network Model, Staff working paper, Bank of Canada, Last updated: August 15, 2023.

Chiu, Jonathan, and Cyril Monnet, 2024, Public and Private Money Creation for Distributed Ledgers: Stablecoins, Tokenized Deposits, or Central Bank Digital Currencies?, *Bank of Canada* University of Bern, Study Center Gerzensee.

Christensen, Jens H. E, and Nikola Mirkov, 2022, The Safety Premium of Safe Assets, Working Paper 2019-28, Federal Reserve Bank of San Francisco.

Cipriani, Marco, and Gabriele La Spada, 2021, Investors' appetite for money-like assets: The MMF industry after the 2014 regulatory reform, *Journal of Financial Economics* 140, 250–269.

Cochrane, John H., 1989, The Return of the Liquidity Effect: A Study of the Short-Run Relation Between Money Growth and Interest Rates, *Journal of Business and Economic Statistics* 7, 75–83.

Cong, Lin William, Wayne Landsman, Edward Maydew, and Daniel Rabetti, 2023, Tax-loss harvesting with cryptocurrencies, *Journal of Accounting and Economics* 76, 101607.

Copestake, Alexander, Davide Furceri, and Tammaro Terracciano, 2024, The Crypto Cycle and Institutional Investors, Working paper.

Cornelli, Giulio, Leonardo Gambacorta, Rodney Garratt, and Alessio Reghezza, 2024, Why DeFi lending? Evidence from Aave V2, BIS Working Papers 1183, Bank for International Settlements.

Dang, Tri Vi, Gary Gorton, and B Holmström, 2015, Ignorance, debt and financial crises, Working Paper.

Dang, Tri Vi, Gary Gorton, Bengt Holmström, and Guillermo Ordoñez, 2017, Banks as Secret Keepers, *American Economic Review* 107, 1005–29.

De Simone, Lisa, Peiyi Jin, and Daniel Rabetti, 2024, Tax Avoidance with DeFi Lending, *SSRN Electronic Journal* .

ESMA, and EBA, 2025, Joint Report: Recent developments in crypto-assets (Article 142 of MiCAR).

Faig, Miquel, 1989, Seasonal Fluctuations and the Demand for Money, *Quarterly Journal of Economics* 104, 847–861.

Fidelity Digital Assets, 2022, Exploring Institutional Interest in Blockchain Applications and Digital Asset Uses: Additional Insights from the Fidelity Digital Assets 2022 Institutional Investor Digital Assets Study, Accessed: YYYY-MM-DD.

Fidelity Digital Assets, 2024, Institutional Investor Digital Assets Study: Key Findings, Accessed: 2025-02-27.

FSB, Financial Stability Board, 2023, The Financial Stability Risks of Decentralised Finance, Reports to the g20.

Gorton, Gary, 2017, The History and Economics of Safe Assets, *Annual Review of Economics* 9, 547–586.

Gorton, Gary, Stefan Lewellen, and Andrew Metrick, 2012, The Safe-Asset Share, *American Economic Review* 102, 101–06.

Gorton, Gary, and Andrew Metrick, 2012, Securitized banking and the run on repo, *Journal of Financial Economics* 104, 425–451.

Gorton, Gary, and George Pennacchi, 1990, Financial intermediaries and liquidity creation, *The Journal of Finance* 45, 49–71.

Gorton, Gary B, Elizabeth C Klee, Chase P Ross, Sharon Y Ross, and Alexandros P Vardoulakis, 2022a, Leverage and Stablecoin Pegs, Working Paper 30796, National Bureau of Economic Research.

Gorton, Gary B., Chase P. Ross, and Sharon Y. Ross, 2022b, Making Money, NBER Working Papers 29710, National Bureau of Economic Research, Inc.

Greenwood, Robin, Samuel Hanson, and Jeremy C. Stein, 2015, A Comparative-Advantage Approach to Government Debt Maturity, *Journal of Finance* 70, 1683–1722.

Greenwood, Robin, Samuel Hanson, and Jeremy C. Stein, 2018, The Federal Reserve's Balance Sheet as a Financial-Stability Tool, in *Innovative Federal Reserve Policies During the Great Financial Crisis*, chapter 3, 63–124 (World Scientific Publishing Co. Pte. Ltd.).

Harvey, Campbell R., Ashwin Ramachandran, and Joseph Santoro, 2021, DeFi and the Future of Finance, *SSRN Electronic Journal* Available at SSRN: https://ssrn.com/abstract=3711777 or http://dx.doi.org/10.2139/ssrn.3711777.

Heimbach, Lioba, and Wenqian Huang, 2024, DeFi leverage, BIS Working Papers 1171, Bank for International Settlements.

Holmstrom, Bengt, 2015, Understanding the role of debt in the financial system, BIS Working Papers 479, Bank for International Settlements.

Kacperczyk, Marcin, Christophe Perignon, and Guillaume Vuillemey, 2021, The Private Production of Safe Assets, *Journal of Finance* 76, 495–535.

Kahl, Matthias, Anil Shivdasani, and Yihui Wang, 2015, Short-Term Debt as Bridge Financing: Evidence from the Commercial Paper Market, *The Journal of Finance* 70, 211–255.

Krishnamurthy, Arvind, and Annette Vissing-Jorgensen, 2012, The Aggregate Demand for Treasury Debt, *Journal of Political Economy* 120, 233 – 267.

Krishnamurthy, Arvind, and Annette Vissing-Jorgensen, 2015, The impact of Treasury supply on financial sector lending and stability, *Journal of Financial Economics* 118, 571–600.

Lehar, Alfred, and Christine A Parlour, 2022, Systemic fragility in decentralised markets, BIS Working Papers 1062, Bank for International Settlements.

Liu, Jiageng, Igor Makarov, and Antoinette Schoar, 2023, Anatomy of a Run: The Terra Luna Crash, NBER Working Papers 31160, National Bureau of Economic Research, Inc.

Makarov, Igor, and Antoinette Schoar, 2022, Cryptocurrencies and Decentralized Finance (DeFi), *SSRN Electronic Journal* Available at SSRN: https://ssrn.com/abstract=4104550 or http://dx.doi.org/10.2139/ssrn.4104550.

Moreira, Alan, and Alexi Savov, 2017, The Macroeconomics of Shadow Banking, *The Journal of Finance* 72, 2381–2432.

Mota, Lira, 2023, The Corporate Supply of (Quasi) Safe Assets, Available at SSRN: `https://ssrn.com/abstract=3732444` or `http://dx.doi.org/10.2139/ssrn.3732444`.

Nagel, Stefan, 2016, The Liquidity Premium of Near-Money Assets, *The Quarterly Journal of Economics* 131, 1927–1971.

OECD, 2022, Institutionalisation of Crypto-Assets and DeFi–TradFi Interconnectedness.

Poole, William, and Charles Lieberman, 1972, Improving Monetary Control, *Brookings Papers on Economic Activity* 1972, 293–342.

Rivera, Thomas, Fahad Saleh, and Quentin Vandeweyer, 2023a, Equilibrium in a DeFi Lending Market, *SSRN Electronic Journal* .

Rivera, Thomas, Fahad Saleh, and Quentin Vandeweyer, 2023b, Equilibrium in a DeFi Lending Market, *SSRN Electronic Journal* Available at SSRN: https://ssrn.com/abstract=4389890 or http://dx.doi.org/10.2139/ssrn.4389890.

Saengchote, Kanis, 2023, Decentralized lending and its users: Insights from compound, *Journal of International Financial Markets, Institutions and Money* 87.

Sunderam, Adi, 2015, Money Creation and the Shadow Banking System, *The Review of Financial Studies* 28, 939–977.

Vuillemey, Guillaume, 2024, The Origins of Limited Liability: Catering to Safety Demand with Investors' Irresponsibility, HEC Paris Research Paper EEH-24-00137, HEC Paris, Forthcoming in *Explorations in Economic History*.

Table 1: **Summary Statistics**. Data is from February 2022 to December 2024. The frequency is weekly.

	Obs.	Mean	STD	Min	25%	50%	75%	Max
Full Sample								
Money Premium$_{3m}$	91 811	0.078	0.130	-0.464	0.045	0.119	0.152	0.261
VIX	90 536	17.14	4.55	11.93	13.51	16.03	19.85	33.40
BTC Volatility	91 227	59.35	10.26	38.05	53.75	58.27	63.96	100.97
Number of unique pools	1 359							
APY	91 811	6.354	9.986	0.000	0.739	3.110	7.676	118.001
Market Capitalizaion (cum, mln USD)	75 726	77 891.1	168 013.5	0.0	4 188.0	25 733.7	84 406.8	3 958 332.3
TVL (mln USD)	91 811	78.9	832.5	0.0	1.7	4.2	14.8	39 648.0
Stablecoin Lending Pools								
Number of unique pools	125							
APY	9 767	5.993	6.953	0.000	1.840	3.782	8.123	110.068
APY (Base)	9 635	4.650	5.283	0.000	1.432	3.139	6.208	84.031
APY (Reward)	5 242	2.553	5.758	0.000	0.000	0.453	2.477	94.024
Market Capitalizaion (cum, mln USD)	8 622	49 200.0	38 200.0	0.0	25 100.0	34 800.0	82 700.0	140 000.0
TVL (mln USD)	9 767	48.4	178.0	0.0	1.9	5.7	27.1	2 960.0
Non Stablecoin Lending Pools								
Number of unique pools	215							
APY	11 627	2.225	4.954	0.000	0.029	0.410	2.112	110.382
APY (Base)	11 222	1.302	2.865	0.000	0.026	0.263	1.496	56.788
APY (Reward)	5 595	2.001	5.205	0.000	0.000	0.093	1.716	108.293
Market Capitalizaion (cum, mln USD)	6 933	114 804.4	249 572.1	0.1	3 934.6	8 883.0	173 232.6	1 979 166.3
TVL (mln USD)	11 627	146.2	543.1	0.0	2.3	7.9	42.4	6 377.4

Table 2: **Unique Values**. The samples are defined as follows: The *Full Sample* includes everything. The *Lending Pools* sample only the pools whose category is "Lending". The *USDT, USDC, DAI Lending Pools* only single name lending pools whose denomination is either in USDT, USDC or DAI. *Stablecoin Lending Pools* includes all lending pools classified as stablecoin pools. *BTC ETH Lending Pools* encompasses all the lending pools whose token denomination (symbol) contains either BTC, ETH or any of their representations (e.g., W.BTC).

	Pools	**Chains**	**Projects/Protocols**	**Symbols/Tokens**
Full Sample	1359	44	194	668
Lending Pools	340	31	58	102
USDT, USDC, DAI Lending Pools	83	17	31	3
Stablecoin Lending Pools	125	21	35	34
BTC ETH Lending Pools	214	27	54	67

Table 3: **APY in DeFi pools and demand for safety.** The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., Lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
Money Premium$_{t-1}$	5.960***	5.428***	2.160***	0.207	0.196	-5.381***
	(9.30)	(8.55)	(3.94)	(0.34)	(0.87)	(-6.89)
BTC Volatility$_{t-1}$	0.040***	0.0386***	0.0131*	-0.000	0.0120***	0.008
	(5.47)	(4.83)	(1.87)	(-0.03)	(3.94)	(0.99)
ΔMarket Capitalization$_{pck,t-1}$	2.629	2.974	2.738	4.563*	0.822**	3.416***
	(0.96)	(1.32)	(1.22)	(1.68)	(2.25)	(4.67)
APY$_{pck,t-1}$	0.554***	0.583***	0.515***	0.494***	0.638***	0.489***
	(14.08)	(15.41)	(18.33)	(13.77)	(13.81)	(28.53)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.604	0.639	0.599	0.619	0.740	0.532
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		

Table 4: **Instrumental Variable Regressions.** The instrument in the top panel (columns (1) to (4)) is Commercial Paper Outstanding. The instrument in the bottom panel (columns (5) to (8)) is Asset-backed Commercial Paper Outstanding. We instrument the money premium by using both the log change in commercial papers and their log level. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., lending). *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Standard errors are clustered at the protocol-year-week level.

.

	(1)	(2)	(3)	(4)
	APY	APY	APY	APY
Pools:	Single	All	All	All
	USDT;USDC;DAI	SC pools	BTC;ETH	BTC;ETH
Instrument:	Commercial Paper Outstanding	Commercial Paper Outstanding	Commercial Paper Outstanding	Commercial Paper Outstanding
Money Premium$_{t-1}$	7.680***	6.961***	-1.076	-1.927
	(3.180)	(3.010)	(-0.930)	(-1.080)
BTC Volatility$_{t-1}$	0.052***	0.049***	0.005	0.031**
	(2.950)	(2.890)	(0.810)	(2.290)
ΔMarket Capitalization$_{pck,t-1}$	1.334	2.035	0.853**	3.075***
	(0.450)	(0.810)	(2.320)	(4.560)
APY$_{pck,t-1}$	0.543***	0.574***	0.638***	0.496***
	(12.400)	(13.940)	(13.780)	(28.820)
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	7074	8380	6663	42366
R^2	0.373	0.401	0.415	0.268
DeFi Category	Lending	Lending	Lending	ALL
F First Stage	29.491	29.197	49.073	124.918

	(5)	(6)	(7)	(8)
	APY	APY	APY	APY
Pools:	Single	All	All	All
	USDT;USDC;DAI	SC pools	BTC;ETH	BTC;ETH
Instrument:	Asset-backed CP Outstanding	Asset-backed CP Outstanding	Asset-backed CP Outstanding	Asset-backed CP Outstanding
Money Premium$_{t-1}$	10.550***	9.847***	0.445	-6.593***
	(8.150)	(8.200)	(1.140)	(-6.910)
BTC Volatility$_{t-1}$	0.070***	0.067***	0.013***	-0.002
	(6.610)	(6.310)	(3.550)	(-0.280)
ΔMarket Capitalization$_{pck,t-1}$	-0.828	0.267	0.816**	3.142***
	(-0.290)	(0.120)	(2.240)	(4.720)
APY$_{pck,t-1}$	0.523***	0.559***	0.638***	0.491***
	(12.710)	(14.180)	(13.810)	(29.050)
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	7074	8380	6663	42366
R^2	0.365	0.394	0.416	0.269
DeFi Category	Lending	Lending	Lending	ALL
F First Stage	398.682	407.977	467.902	1040.740

Table 5: **APY in DeFi pools and Demand for Safety of Institutional Investors.** The variable *Institutional Safety Demand* is computed as the lagged change in the amount of T-bills (up to 3-month maturity) allocated to investment funds in the weekly auctions. The variable *Federal Reserve Demand* is computed as the lagged change in the amount of T-bills (up to 3-month maturity) allocated to Federal Reserve Banks (SOMA) and is used for a placebo test. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., Lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		
ΔInstitutional Safety Demand$_{t-1}$	-1.247***	-1.156***	0.042	-0.164	0.262	0.610
	(-2.790)	(-2.730)	(0.090)	(-0.300)	(1.150)	(0.860)
BTC Volatility$_{t-1}$	0.001	0.003	-0.004	-0.002	0.011***	0.048***
	(0.120)	(0.520)	(-0.920)	(-0.350)	(4.220)	(6.340)
ΔMarket Capitalization$_{pck,t-1}$	7.452**	6.591***	4.128*	4.753*	0.815**	3.347***
	(2.540)	(2.730)	(1.860)	(1.770)	(2.230)	(4.490)
APY$_{pck,t-1}$	0.595***	0.613***	0.519***	0.495***	0.638***	0.494***
	(15.300)	(16.730)	(18.510)	(13.800)	(13.800)	(28.570)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.595	0.633	0.598	0.619	0.740	0.530
	(7)	(8)	(8)	(10)	(11)	(12)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		
ΔFederal Reserve Demand$_{t-1}$	-0.392	-0.583	0.023	0.052	-0.219*	0.067
	(-0.970)	(-1.490)	(0.100)	(0.180)	(-1.680)	(0.240)
BTC Volatility$_{t-1}$	0.001	0.004	-0.004	-0.002	0.011***	0.048***
	(0.280)	(0.680)	(-0.930)	(-0.350)	(4.200)	(6.360)
ΔMarket Capitalization$_{pck,t-1}$	7.304**	6.603***	4.133*	4.694*	0.679**	3.373***
	(2.470)	(2.690)	(1.870)	(1.760)	(1.980)	(4.430)
APY$_{pck,t-1}$	0.593***	0.611***	0.519***	0.495***	0.638***	0.494***
	(15.240)	(16.640)	(18.510)	(13.800)	(13.800)	(28.560)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.595	0.633	0.598	0.619	0.740	0.530

Table 6: **APY in DeFi protocols and Demand for Safety: Institutional vs Retail activity.** The table examines the impact of safety demand on APY for pools with greater institutional activity (top 5%, 10% and 15%) and greater retail activity ((top 5%, 10% and 15%). The distinction is made based on the median average change of total value locked. Panel A includes all stablecoin lending pools containing USDC, USDCT, and DAI. Panel B includes consists of all lending pools containing BTC and ETH. *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	Panel A: Stablecoin Lending Pools					
	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Money Premium$_{t-1}$	4.095***	3.886***	3.890***	2.398**	2.508**	0.268
	(3.90)	(5.67)	(5.92)	(2.53)	(2.25)	(0.39)
BTC Volatility$_{t-1}$	0.02	0.02*	0.02**	0.02	0.02	-0.00
	(1.50)	(1.84)	(1.97)	(1.40)	(1.53)	(-0.30)
ΔMarket Capitalization$_{t-1}$	0.71	4.27**	3.85*	1.46	4.44	1.31
	(0.18)	(2.18)	(1.73)	(0.29)	(0.69)	(0.64)
APY$_{t-1}$	0.549***	0.641***	0.641***	0.810***	0.837***	0.746***
	(9.29)	(18.20)	(20.62)	(17.10)	(15.61)	(7.87)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	607	1334	1762	1486	923	438
R^2	0.649	0.688	0.789	0.864	0.907	0.712
Pool Size	Top 5	Top 10	Top 15	Bottom 15	Bottom 10	Bottom 5
N Pools	8	14	20	19	13	7
	Panel B: BTC, ETH, Lending Pools					
	(7)	(8)	(9)	(10)	(11)	(12)
	APY	APY	APY	APY	APY	APY
Money Premium$_{t-1}$	-0.032*	-0.126	0.036	-1.312	-1.574	-2.166
	(-1.85)	(-1.57)	(0.31)	(-1.39)	(-1.45)	(-0.96)
BTC Volatility$_{t-1}$	-0.00	-0.00	0.00	0.01	-0.00	-0.00
	(-0.43)	(-0.02)	(1.10)	(0.77)	(-0.28)	(-0.14)
ΔMarket Capitalization$_{t-1}$	-0.00	-0.10	-0.23	0.65	1.31	-1.60
	(-0.09)	(-0.91)	(-1.22)	(0.64)	(1.08)	(-0.59)
APY$_{t-1}$	0.970***	0.798***	0.897***	0.669***	0.668***	0.740***
	(53.00)	(21.90)	(19.27)	(6.55)	(5.48)	(4.21)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	528	1006	1409	1056	765	340
R^2	0.979	0.872	0.941	0.732	0.718	0.724
Pool Size	Top 5	Top 10	Top 15	Bottom 15	Bottom 10	Bottom 5
N Pools	11	22	33	33	23	11

Table 7: **APY in DeFi protocols and demand for safety during periods of higher uncertainty**. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. *Controls (incl. levels and interactions)* indicates that some control variables and their interaction terms are omitted for brevity. High VIX indicates the top 25% of the VIX index distribution. Crypto Shocks corresponds to months of Terra, FTX, and SVB turmoil. Defi Category specifies which pools are included in the regression (e.g., lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the project-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single USDT;USDC;DAI	SC Pools with USDT;USDC;DAI	All BTC;ETH	Single USDT;USDC;DAI	SC Pools with USDT;USDC;DAI	All BTC;ETH
Money Premium$_{t-1}$	5.391***	4.987***	0.191	7.845***	6.899***	0.134
	(8.67)	(8.36)	(0.86)	(8.17)	(7.66)	(0.33)
BTC Volatility$_{t-1}$	0.038***	0.037***	0.012***	0.040***	0.038***	0.012***
	(5.72)	(5.09)	(4.13)	(5.26)	(4.56)	(3.69)
ΔMarket Capitalization$_{pck,t-1}$	2.187	2.786	0.753**	1.563	2.292	0.784**
	(0.80)	(1.23)	(2.10)	(0.58)	(1.03)	(2.17)
APY$_{pck,t-1}$	0.540***	0.574***	0.638***	0.541***	0.575***	0.638***
	(14.02)	(15.28)	(13.80)	(13.87)	(15.19)	(13.80)
Money Premium$_{t-1}\times$ Crypto Shocks	-10.81***	-9.690***	-0.910			
	(-5.15)	(-4.56)	(-0.99)			
Crypto Shocks	-2.778***	-2.359***	-0.150			
	(-6.56)	(-5.06)	(-0.71)			
High VIX $\times$ Money Premium$_{t-1}$				-9.439***	-8.052***	-0.097
				(-8.39)	(-7.04)	(-0.18)
High VIX				-1.357***	-1.229***	-0.064
				(-4.21)	(-3.71)	(-0.50)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	6663	7074	8380	6663
R^2	0.611	0.644	0.740	0.609	0.643	0.740
DeFi Category	Lending	Lending	Lending	Lending	Lending	Lending

Table 8: **APY in DeFi Protocols and Demand for Safety During Hacks**. The table examines the impact of safety demand on APY during hacks events. The "USDT;USDC;DAI" sample includes single pools denominated either in USDT, USDC, or DAI. The "BTC;ETH" sample consists of pools containing BTC and ETH. Columns (1)(2) assess the impact of "All" hacks, Columns (3)-(4) only DeFi-specific hacks, and columns (5)-(6) on non-DeFi-related security breaches. DeFi Category specifies which pools are included in the regression (e.g., Lending). Hacks data are from DefiLlama. We select hacks with losses exceeding USD 100 million. *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	Single	All	Single	All
	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH
Money Premium$_{t-1}$	6.288***	0.252	6.262***	0.217	5.977***	0.223
	(9.06)	(1.06)	(9.15)	(0.96)	(9.28)	(0.95)
BTC Volatility$_{t-1}$	0.038***	0.012***	0.037***	0.012***	0.040***	0.012***
	(5.31)	(3.94)	(5.31)	(3.99)	(5.46)	(3.93)
ΔMarket Capitalization$_{pck,t-1}$	2.883	0.819**	2.654	0.819**	2.610	0.826**
	(1.08)	(2.25)	(0.97)	(2.27)	(1.00)	(2.25)
APY$_{pck,t-1}$	0.552***	0.638***	0.550***	0.638***	0.554***	0.638***
	(14.04)	(13.80)	(13.99)	(13.80)	(14.04)	(13.80)
Money Premium$_{t-1}\times$ Hacks (All)	-3.192**	-0.277				
	(-2.35)	(-0.44)				
Hacks (All)	-0.387	0.020				
	(-0.92)	(0.14)				
Money Premium$_{t-1}\times$ Hacks (DeFi)			-6.492***	-0.165		
			(-3.69)	(-0.14)		
Hacks (DeFi)			-1.299**	0.003		
			(-2.01)	(0.01)		
Money Premium$_{t-1}\times$ Hacks (Non-DeFi)					-0.243	-0.498
					(-0.12)	(-0.72)
Hacks (Non-DeFi)					0.079	0.052
					(0.15)	(0.37)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	6663	7074	6663	7074	6663
R^2	0.605	0.740	0.605	0.740	0.604	0.740
DeFi Category	Lending	Lending	Lending	Lending	Lending	Lending

Table 9: **APY in DeFi Protocols and Demand for Safety: Tokens Heterogeneity**. The sample includes all stablecoin and non-stablecoin lending pools. The dummy variable Stablecoin is equal to 1 for all stablecoin pools. USDC/USDT/DAI are dummies equal to 1 for single-name pools denominated in specific stablecoins. Standard errors are clustered at the project-year-week level. *** p<0.01, ** p<0.05, * p<0.10.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	All	All	All	All	All	All
Money Premium$_{t-1}$						1.907***
						(5.22)
BTC Volatility$_{t-1}$						0.027***
						(5.46)
ΔMarket Capitalization$_{pck,t-1}$	-1.461**	-1.607**	-1.508**	-1.532**	-1.486**	0.625
	(-2.23)	(-2.44)	(-2.28)	(-2.32)	(-2.26)	(1.29)
APY$_{pck,t-1}$	0.547***	0.550***	0.551***	0.551***	0.546***	0.620***
	(16.85)	(17.01)	(17.03)	(17.03)	(16.82)	(19.91)
Money Premium$_{t-1}\times$ Stablecoin	3.066***					
	(8.02)					
Money Premium$_{t-1}\times$ USDC Dummy		1.661***			3.232***	2.958***
		(5.21)			(7.20)	(6.91)
Money Premium$_{t-1}\times$ USDT Dummy			1.151***		2.870***	2.476***
			(3.84)		(6.79)	(6.13)
Money Premium$_{t-1}\times$ DAI Dummy				1.274***	3.136***	3.189***
				(2.97)	(5.88)	(5.73)
FE: token chain +	protocol-year-week	protocol-year-week	protocol-year-week	protocol-year-week	protocol-year-week	protocol week
N	13930	13930	13930	13930	13930	15043
R^2	0.804	0.803	0.803	0.803	0.804	0.697
DeFi Category	Lending	Lending	Lending	Lending	Lending	Lending

Table 10: **APY in DeFi Protocols and Demand for Safety: Category Heterogeneity**. The dummy variables (Dexes, Lending, Yield) represent the largest types of DeFi categories that see the use of both stablecoins and BTC and ETH. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. *Controls (incl. levels and interactions)* indicates that some control variables and their interaction terms are omitted for brevity. Standard errors are clustered at the project-year-week level. *** p<0.01, ** p<0.05, * p<0.10.

	(1)	(2)	(3)	(4)
	APY	APY	APY	APY
Pools:	All	Single	All	BTC;ETH
		USDT;USDC;DAI	SC pools	All
Money Premium$_{t-1}$	-1.155	2.506***	2.288***	-6.343***
	(-1.25)	(3.47)	(3.89)	(-4.10)
Dexes × Money Premium$_{t-1}$	-2.555***	2.837**	1.566***	-5.180***
	(-3.93)	(2.30)	(2.61)	(-6.14)
Lending × Money Premium$_{t-1}$	2.691***	5.164***	4.932***	-1.078**
	(7.37)	(9.08)	(10.65)	(-2.01)
Yield × Money Premium$_{t-1}$	0.652	5.685***	5.493***	-4.745***
	(1.28)	(7.80)	(8.49)	(-6.26)
BTC Volatility$_{t-1}$	0.014**	0.026***	0.024***	0.009
	(2.46)	(4.52)	(4.49)	(1.23)
Δ Market Capitalization$_{pck,t-1}$	2.657***	0.830	2.929*	3.110***
	(4.42)	(0.47)	(1.72)	(4.67)
APY$_{pck,t-1}$	0.537***	0.567***	0.531***	0.492***
	(40.04)	(15.84)	(22.35)	(29.11)
FE: protocol chain category week token	Yes	Yes	Yes	Yes
N	72767	11780	24046	42366
R^2	0.579	0.603	0.605	0.553
DeFi Category	All	All	All	All

Table 11: **APY in DeFi Protocols and Demand for Safety: Focus on Staking**. "All Staking" includes the pools in the categories "Staking Pools" and "Liquid Staking". Column (1) reports the baseline results for comparison purposes. Columns (2) includes pools both in "Staking Pools" and "Liquid Staking", while Column (3) only the latter. Columns (4) and (5) only include pools hosted on the Ethereum blockchain. Standard errors are clustered at the project-year-week level. *** p<0.01, ** p<0.05, * p<0.10.

	(1)	(2)	(3)	(4)	(5)
	APY	APY	APY	APY	APY
Pools:	Stablecoins	All	All	Ethereum Chain	Ethereum Chain
DeFi Category:	Lending	All Staking	Liquid Staking	All Staking	Liquid Staking
Money Premium$_{t-1}$	5.428***	-1.677***	-1.655***	-1.817***	-1.800***
	(8.55)	(-3.87)	(-3.71)	(-4.10)	(-3.93)
BTC Volatility$_{t-1}$	0.038***	-0.020***	-0.019***	-0.021***	-0.021***
	(4.83)	(-4.00)	(-3.78)	(-4.17)	(-3.94)
ΔMarket Capitalization$_{pck,t-1}$	2.974	0.477	0.469	0.209	0.200
	(1.32)	(1.22)	(1.13)	(0.56)	(0.50)
APY$_{pck,t-1}$	0.583***	0.596***	0.602***	0.574***	0.580***
	(15.41)	(9.27)	(8.91)	(8.64)	(8.28)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes
N	8380	1244	1150	1151	1057
R^2	0.639	0.709	0.716	0.573	0.579

Table 12: **APY in DeFi Protocols and Demand for Safety: Protocol Heterogeneity**. The table examines how different DeFi lending protocols respond to safety demand, interacting the money premium with protocol dummies for the ten largest lending protocols. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., All, Lending). Standard errors are clustered at the project-year-week level. *** p<0.01, ** p<0.05, * p<0.10.

	(1)	(2)	(3)	(4)	(5)
	APY	APY	APY	APY	APY
Pools:	All	All SC pools	Single USDT;USDC;DAI	All SC pools	All BTC;ETH
Money Premium$_{t-1}$	-1.095**	2.818***	6.188***	5.835***	0.132
	(-2.05)	(6.08)	(8.27)	(8.04)	(0.29)
Aave v2 × Money Premium$_{t-1}$	3.362***	0.339	-2.011***	-2.152***	0.313
	(5.64)	(0.64)	(-2.85)	(-3.15)	(0.68)
Aave v3 × Money Premium$_{t-1}$	5.022***	3.144***	0.668	0.984	0.444
	(5.59)	(3.12)	(0.61)	(0.92)	(0.82)
Compound v2 × Money Premium$_{t-1}$	4.237***	1.691***	-1.096	-0.860	0.216
	(6.82)	(2.82)	(-1.50)	(-1.20)	(0.48)
Compound v3 × Money Premium$_{t-1}$	2.278	0.119	0.452	0.800	0.930
	(1.26)	(0.06)	(0.23)	(0.42)	(1.01)
JustLend × Money Premium$_{t-1}$	0.788	-2.762***	-5.112***	-4.681***	0.0790
	(1.11)	(-3.61)	(-5.56)	(-5.32)	(0.15)
Morpho Aave × Money Premium$_{t-1}$	6.927***	5.852***	3.472	3.734*	-0.235
	(3.77)	(2.65)	(1.54)	(1.67)	(-0.41)
Spark × Money Premium$_{t-1}$	2.500	1.566	-4.581	1.456	0.449
	(1.02)	(0.89)	(-1.44)	(0.76)	(0.53)
Tectonic × Money Premium$_{t-1}$	1.589**	-1.423**	-3.683***	-3.270***	0.214
	(2.37)	(-2.29)	(-4.79)	(-4.38)	(0.45)
Venus Core Pool × Money Premium$_{t-1}$	3.005***	1.843	-0.546	-0.287	0.190
	(3.02)	(1.35)	(-0.39)	(-0.20)	(0.35)
BTC Volatility$_{t-1}$	0.013**	0.019***	0.033***	0.033***	0.010***
	(2.22)	(3.59)	(4.62)	(4.17)	(3.49)
ΔMarket Capitalization$_{pck,t-1}$	2.500***	3.001*	2.207	2.589	0.865**
	(4.05)	(1.77)	(0.78)	(1.13)	(2.33)
APY$_{pck,t-1}$	0.578***	0.601***	0.606***	0.618***	0.697***
	(44.17)	(26.49)	(15.49)	(16.87)	(16.25)
FE: top-protocol chain token week	Yes	Yes	Yes	Yes	Yes
N	72767	24046	7074	8380	6663
R^2	0.568	0.587	0.591	0.631	0.730
DeFi Category	All	All	Lending	Lending	Lending

Table 13: **APY in DeFi Protocols and Demand for Safety: Chain Heterogeneity**. The dummy variables represent the largest blockchains by market size. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. *Controls (incl. levels and interactions)* indicates that some control variables and their interaction terms are omitted for brevity. Category specifies which pools are included in the regression (e.g., lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)
	APY	APY	APY	APY
Pools:	Single	All	Single	All
	USDT;USDC;DAI	SC pools	USDT;USDC;DAI	SC pools
Money Premium$_{t-1}$	4.818***	3.198***	5.550***	4.858***
	(8.13)	(7.19)	(8.09)	(7.32)
Arbitrum × Money Premium$_{t-1}$	-0.108	0.205	0.381	0.861
	(-0.14)	(0.32)	(0.53)	(1.19)
BSC × Money Premium$_{t-1}$	-1.917***	-0.619	0.309	0.716
	(-3.02)	(-1.13)	(0.30)	(0.70)
Ethereum × Money Premium$_{t-1}$	0.884*	0.722	1.173**	1.590***
	(1.93)	(1.52)	(2.15)	(3.05)
Tron × Money Premium$_{t-1}$	-3.775***	-2.075**	-4.401***	-3.674***
	(-4.72)	(-2.57)	(-4.97)	(-4.41)
BTC Volatility$_{t-1}$	0.026***	0.024***	0.040***	0.038***
	(4.50)	(4.45)	(5.48)	(4.83)
ΔMarket Capitalization$_{pck,t-1}$	0.770	2.865*	2.614	2.937
	(0.43)	(1.68)	(0.96)	(1.31)
APY$_{pck,t-1}$	0.572***	0.540***	0.553***	0.582***
	(16.03)	(22.88)	(14.04)	(15.38)
Controls:	Yes	Yes	Yes	Yes
FE: protocol token week	Yes	Yes	Yes	Yes
N	11780	24046	7074	8380
R^2	0.602	0.603	0.604	0.640
DeFi Category	All	All	Lending	Lending

Table 14: **APY in DeFi Protocols and Demand for Safety: APY Base vs. Reward Components**. The table examines the impact of safety demand on both the base and reward components of APY. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The"SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., Lending). *** $p<0.01$, ** $p<0.05$, * $p<0.10$. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY (Base)	APY (Reward)	APY	APY (Base)	APY (Reward)
Pools:	Single	Single	Single	All	All	All
	USDT;USDC;DAI	USDT;USDC;DAI	USDT;USDC;DAI	BTC;ETH	BTC;ETH	BTC;ETH
Money Premium$_{t-1}$	5.960***	7.906***	-1.481***	0.196	-0.0453	-0.0955
	(9.30)	(10.87)	(-4.26)	(0.87)	(-0.20)	(-0.27)
BTC Volatility$_{t-1}$	0.040***	0.051***	-0.014**	0.012***	0.006**	0.011***
	(5.47)	(6.35)	(-2.10)	(3.94)	(2.35)	(2.64)
ΔMarket Capitalization$_{pck,t-1}$	2.629	3.637	-3.025**	0.822**	0.281	1.083*
	(0.96)	(1.34)	(-2.09)	(2.25)	(0.80)	(1.68)
APY$_{pck,t-1}$	0.554***	0.414***	0.192***	0.638***	0.323***	0.306***
	(14.08)	(9.37)	(11.37)	(13.81)	(6.37)	(4.89)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	6964	3449	6663	6464	3303
R^2	0.604	0.483	0.644	0.740	0.605	0.608
DeFi Category	Lending	Lending	Lending	Lending	Lending	Lending

Table 15: **TVL in DeFi Protocols and Demand for Safety**. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The"SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. DeFi Category specifies which pools are included in the regression (e.g., lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	ΔTVL	ΔTVL	ΔTVL	ΔTVL	ΔTVL	ΔTVL
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
Money Premium$_{t-1}$	-0.153***	-0.133***	-0.038*	-0.029	-0.069*	-0.032
	(-3.13)	(-3.00)	(-1.86)	(-1.21)	(-1.82)	(-1.47)
BTC Volatility$_{t-1}$	0.0007	0.0005	0.00042*	0.0006**	-0.0019***	-0.0005**
	(1.20)	(0.93)	(1.74)	(2.11)	(-3.77)	(-2.14)
ΔMarket Capitalization$_{pck,t-1}$	-0.057	-0.0007	-0.073	-0.053	0.092*	-0.036*
	(-0.29)	(-0.00)	(-1.22)	(-0.76)	(1.82)	(-1.94)
ΔTVL$_{pck,t-1}$	-0.175***	-0.165***	0.017	0.033*	-0.059***	0.059***
	(-9.98)	(-10.05)	(1.01)	(1.84)	(-2.79)	(5.11)
TVL$_{pck,t-1}$	-0.032***	-0.031***	-0.015***	-0.015***	-0.046***	-0.021***
	(-8.98)	(-9.58)	(-11.37)	(-9.85)	(-12.99)	(-14.77)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.0828	0.0787	0.0459	0.0508	0.152	0.139
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		

Appendix A Additional Figures

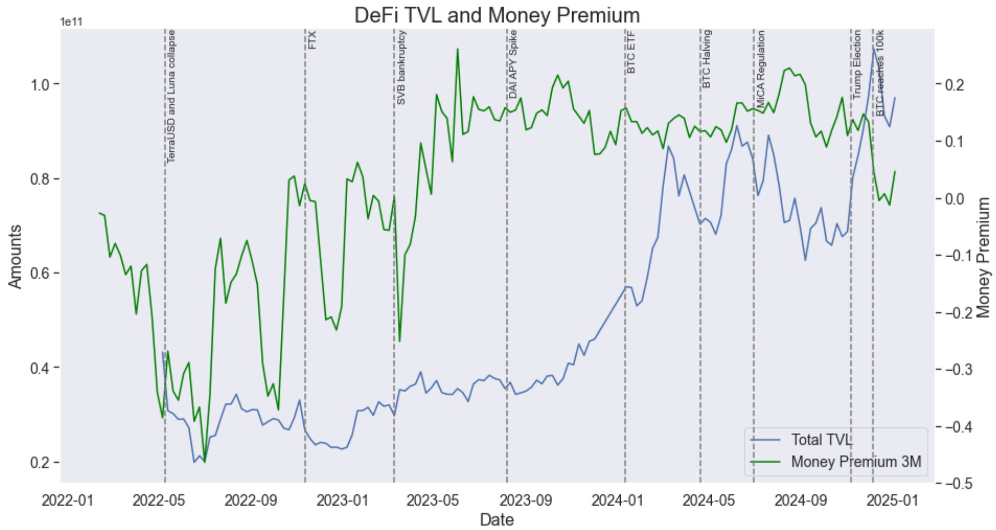

Figure A.8: Relationship between Total Value Locked in Defi and Money Premium. The x-axis shows the total value locked in all pools (lending, non-lending, stablecoins, and non-stablecoins), while the y-axis represents the money premium.

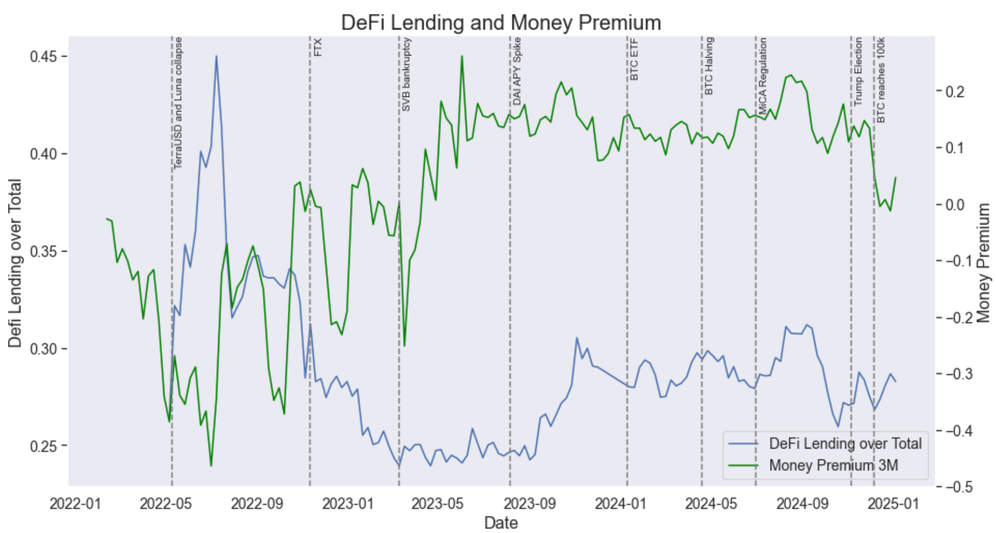

Figure A.9: Relationship between DeFi lending and Money Premium. The left y-axis shows the percentage of DeFi lending, while the right y-axis represents the money premium.

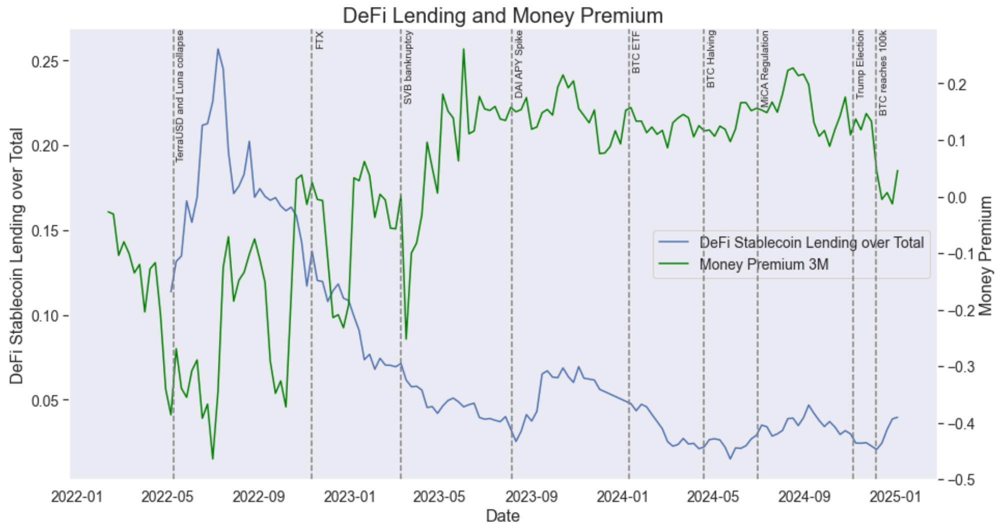

Figure A.10: Relationship between DeFi stablecoin lending and Money Premium. The x-axis shows the percentage of DeFi stablecoin lending, while the y-axis represents the money premium.

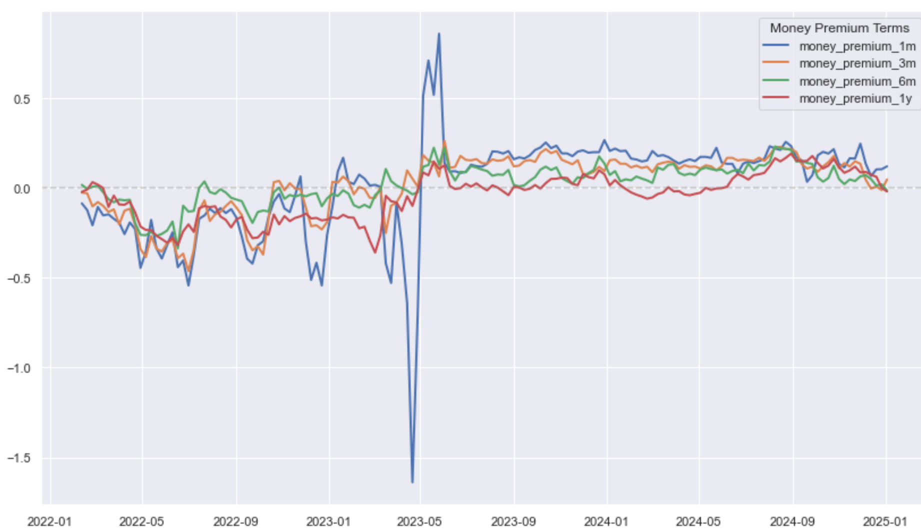

Figure A.11: Money premiums at different horizons.

Appendix B Alternative Specifications

Table B.16: **APY in DeFi pools and Demand for Safety: Full Sample Tests**. For these tests, we include all lending and non-lending pools in our sample. In each column, we interact the money premium with the sub-samples used in our baseline specifications (Table 3). *SC Lending* includes all lending pools denominated in stablecoins (USDT, USDC, DAI or a combination of them); All pools denominated in stablecoins that are not classified as lending are included in *SC Non-Lending*. *BTC;ETH Lending* include lending pools denominated in ETH and BTC. The pools denominated in ETH and BTC for which the category of the pools is different from lending, are included in *BTC;ETH Non-Lending*. *Single-Token SC lending* include lending pools denominated in only one stablecoin. *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1) APY	(2) APY	(3) APY	(4) APY	(5) APY	(6) APY
Money Premium$_{t-1}$ · SC Lending	2.886***	2.649***	3.604***			
	(8.840)	(3.970)	(9.570)			
Money Premium$_{t-1}$ · Single-Token SC Lending				3.292***	3.056***	2.849***
				(10.090)	(4.980)	(3.600)
Money Premium$_{t-1}$ · SC Non-Lending	1.679***	-0.487	0.074	1.683***	-0.487	0.074
	(3.470)	(-0.790)	(0.090)	(3.470)	(-0.830)	(0.090)
Money Premium$_{t-1}$ · BTC;ETH Lending	-7.170***	-1.226*		-6.956***	-1.222*	-1.121
	(-13.580)	(-1.710)		(-13.720)	(-1.820)	(-1.440)
Money Premium$_{t-1}$ · BTC;ETH Non-Lending	-1.978***	-4.722***	-4.596***	-1.974***	-4.724***	-4.597***
	(-2.950)	(-6.600)	(-5.640)	(-2.940)	(-6.890)	(-5.640)
Controls:	Yes	Yes	Yes	Yes	Yes	Yes
FE:	No	token chain protocol year-week	token chain protocol- year-week	No	token chain protocol year-week	token chain protocol- year-week
N	72769	72767	67643	72769	72767	67643
R^2	0.525	0.587	0.643	0.525	0.587	0.643

Appendix C Demand for Speculation and Decomposition of Demand for Safety

Table C.17: **APY in DeFi pools and Demand for Safety: Decomposing Safety in Crypto and Traditional Markets.** Top panel reports results using the ETH-USDT futures funding rate as the main explanatory variable. Bottom panel decomposes the Money Premium into two parts. Specifically, we regress the Money Premium onto the ETH-USDT futures funding rate and computed the fitted values (which are linear combination of ETH-USDT futures funding rate) and the residuals (which represent the variation of the Money Premium orthogonal to the ETH-USDT futures funding rate). The "USDT;USDC;DAI" sample includes single pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		
ETH-USDT futures funding rate$_{t-1}$	5.453***	4.828***	3.526***	2.398**	0.690*	-0.941
	(5.160)	(4.300)	(4.310)	(2.510)	(1.740)	(-1.090)
BTC Volatility$_{t-1}$	-0.003	-0.000	-0.005	-0.003	0.010***	0.049***
	(-0.580)	(-0.010)	(-1.280)	(-0.580)	(4.100)	(6.350)
ΔMarket Capitalization$_{pck,t-1}$	4.793*	4.512*	2.902	3.815	0.555	3.582***
	(1.690)	(1.930)	(1.310)	(1.430)	(1.530)	(4.890)
APY$_{pck,t-1}$	0.568***	0.594***	0.515***	0.493***	0.638***	0.494***
	(14.490)	(15.780)	(18.410)	(13.780)	(13.820)	(28.600)
FE: project chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.600	0.637	0.599	0.619	0.740	0.530

	(7)	(8)	(8)	(10)	(11)	(12)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC pools	SC pools	SC pools	BTC;ETH	BTC;ETH
DeFi Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		
Residuals$_{t-1}$	4.845***	4.475***	1.086*	-0.868	-0.116	-6.496***
	(7.190)	(7.280)	(1.940)	(-1.360)	(-0.450)	(-7.270)
Fitted values$_{t-1}$	11.560***	10.090***	7.569***	5.522***	1.556*	0.122
	(4.900)	(4.040)	(4.160)	(2.590)	(1.740)	(0.060)
BTC Volatility$_{t-1}$	0.031***	0.031***	0.004	-0.010	0.009***	-0.002
	(4.540)	(4.480)	(0.530)	(-1.280)	(3.320)	(-0.170)
ΔMarket Capitalization$_{pck,t-1}$	2.179	2.621	2.409	4.247	0.532	2.656***
	(0.800)	(1.170)	(1.080)	(1.570)	(1.460)	(3.740)
APY$_{pck,t-1}$	0.547***	0.578***	0.514***	0.494***	0.638***	0.489***
	(13.910)	(15.180)	(18.320)	(13.780)	(13.810)	(28.650)
FE: project chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.606	0.640	0.599	0.620	0.740	0.533

Table C.18: **APY in DeFi Protocols and Demand for Safety: Decomposition with additional covariates** . The table report results using decomposition of the Money Premium. Specifically, we regress the Money Premium onto the ETH-USDT futures funding rate and computed the fitted values (which are linear combination of ETH-USDT futures funding rate) and the residuals (which represent the variation of the Money Premium orthogonal to the ETH-USDT futures funding rate). It also includes Federal funds rates and BTC-USDT futures funding rates. The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT", "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. Defi Category specifies which pools are included in the regression (e.g., Lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the project-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	All	All	All	All
	USDT;USDC;DAI	SC Pools	SC Pools	SC Pools	BTC;ETH	BTC;ETH
Category	Lending	Lending	No Lending	No Lending	Lending	No Lending
				No Yield		
L.Residuals$_{t-1}$	5.281***	4.943***	1.125	-0.747	0.308	-4.771***
	(6.650)	(6.500)	(1.630)	(-0.920)	(0.760)	(-4.150)
L.Fitted values$_{t-1}$	-1.013	-0.404	6.581***	7.007***	1.425	0.519
	(-0.390)	(-0.150)	(3.040)	(3.050)	(1.320)	(0.170)
BTC Volatility$_{t-1}$	0.029***	0.029***	0.003	-0.010	0.007***	-0.007
	(4.160)	(4.220)	(0.500)	(-1.300)	(2.680)	(-0.630)
ΔMarket Capitalization$_{t-1}$	3.531	3.659	2.474	4.135	0.508	2.642***
	(1.290)	(1.620)	(1.100)	(1.530)	(1.380)	(3.720)
APY$_{pck,t-1}$	0.544***	0.576***	0.514***	0.494***	0.637***	0.489***
	(13.940)	(15.180)	(18.300)	(13.780)	(13.810)	(28.640)
BTC-USDT Futures Funding Rate$_{t-1}$	7.436***	6.297***	0.595	-0.766	0.386	1.044
	(5.180)	(4.200)	(0.420)	(-0.490)	(0.580)	(0.620)
Fed Funds Rate$_{t-1}$	-0.014	-0.030	-0.003	-0.024	-0.073*	-0.255**
	(-0.190)	(-0.410)	(-0.040)	(-0.270)	(-1.750)	(-2.010)
FE: project chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	8380	15666	11526	6663	35703
R^2	0.608	0.642	0.599	0.620	0.740	0.533

Appendix D Additional Crypto Money Premia

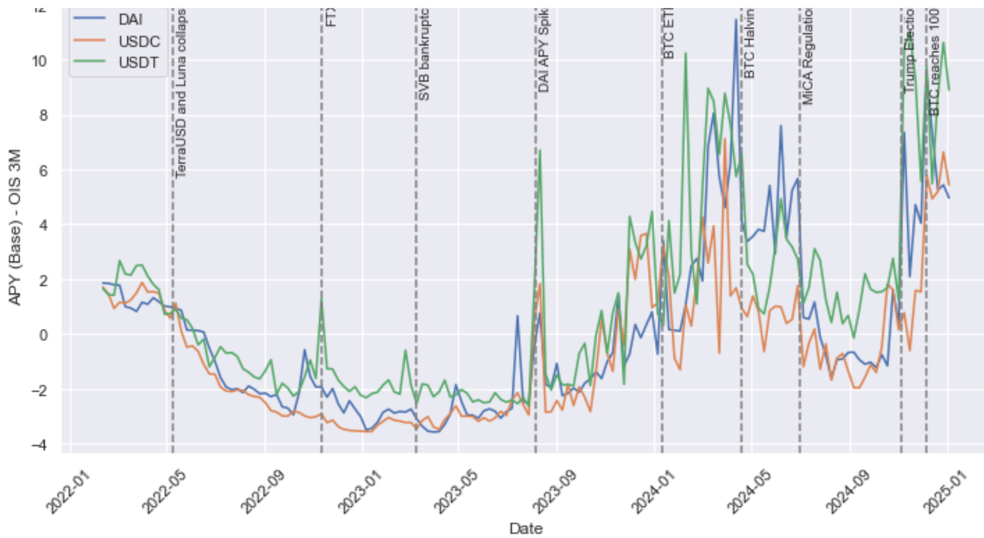

Figure D.12: Crypto Money Premium by Token: APY Base of USDT, USDC, DAI lending pools on Ethereum chain minus OIS 3M by token.

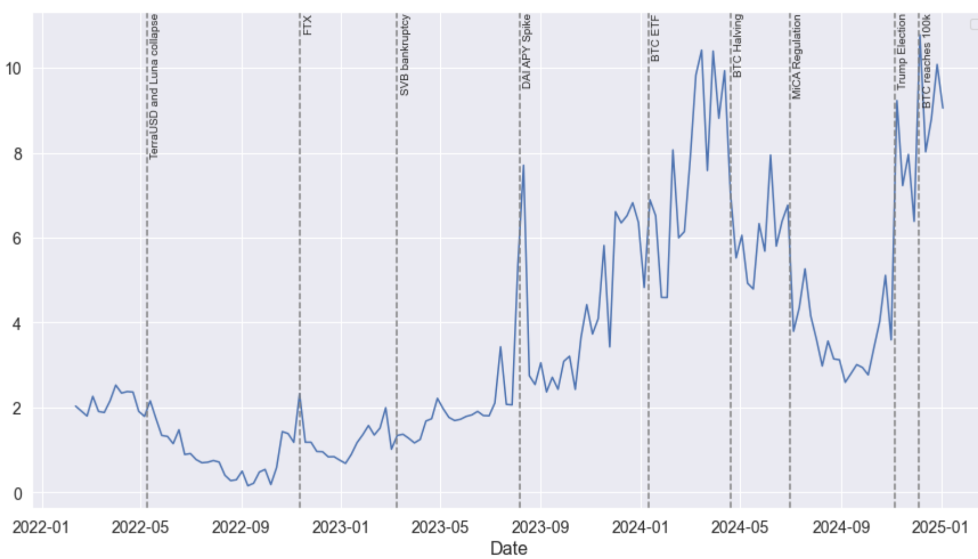

Figure D.13: APY Base of USDT, USDC, DAI lending pools on Ethereum chain minus APY Base of BTC, ETH lending pools.

Appendix E Alternative Measures of Demand for Safety

In this section, we run several additional specifications to further document the response of DeFi pools to the demand for safety. Furthermore, we run a battery of robustness tests to check that our findings hold to different specifications.

Table E.19: **Alternative measures of the Demand for Safety.** The "USDT;USDC;DAI" sample includes *single* pools denominated either in USDT, USDC, or DAI. The "SC pools" sample consists of all pools that include either versions of USDT, USDC, or DAI individually, or any combination of these tokens with each other or another token (e.g., "M.USDT" or "USDT-USDC-DAI"). The "BTC;ETH" sample is defined equivalently for pools containing BTC and ETH. DeFi Category specifies which pools are included in the regression (e.g., lending). *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the protocol-year-week level.

	(1)	(2)	(3)	(4)	(5)	(6)
	APY	APY	APY	APY	APY	APY
Pools:	Single	All	Single	All	Single	All
	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH
Money Premium (1M)$_{t-1}$	2.042***	0.216*				
	(6.76)	(1.90)				
Money Premium (6M)$_{t-1}$			6.630***	0.130		
			(7.73)	(0.42)		
ΔGovernment Debt$_{t-1}$					65.06**	1.628
					(2.50)	(0.09)
BTC Volatility$_{t-1}$	0.012**	0.011***	0.021***	0.011***	0.016***	0.011***
	(2.26)	(4.41)	(3.51)	(4.14)	(3.18)	(4.36)
ΔMarket Capitalization$_{pck,t-1}$	3.853	0.864**	4.200	0.818**	-0.429	0.771**
	(1.38)	(2.38)	(1.50)	(2.23)	(-0.16)	(2.04)
APY$_{pck,t-1}$	0.569***	0.638***	0.571***	0.638***	0.519***	0.637***
	(14.41)	(13.81)	(14.66)	(13.80)	(13.44)	(13.76)
FE: protocol chain token week	Yes	Yes	Yes	Yes	Yes	Yes
N	7074	6663	7074	6663	7000	6625
R^2	0.368	0.416	0.369	0.416	0.385	0.415
DeFi Category	Lending	Lending	Lending	Lending	Lending	Lending

In Table E.19, we consider alternative measures of the demand for safety, namely the money premium at 1 month (as in Sunderam, 2015), at 6 months, and the log change in the total amount of US government bonds outstanding (as in Kacperczyk et al., 2021). While the interpretation of the money premium is the same across maturities, the rationale for using US government bonds is that a lower supply of public safe assets increases the unmet demand for safety, thereby increasing the appetite for private safe assets. Regarding the money premium measures, we would generally expect our results to be unaffected by their maturity. However, the 1-month premium was subject to idiosyncratic shocks around May 2023 (see Figure A.11), leading us to interpret the results for this maturity with greater caution. The estimates show that our results are robust to different measures of the demand for safety. The sign and significance of the coefficients are in line with the main results (columns (1), (3), and (5)), and the placebos tests corroborate the idea that BTC and ETH pools do not cater to safety demand (columns (2), (4) and (6)).

Furthermore, we employ the same identification strategy of Section 4.1 with the alternative measures of safety demand in Table E.20. As for the main IV estimates, the instruments (commercial paper outstanding and ABCP outstanding) are always relevant, with the only exception of column (1) where the F statistics of the first stage is 9.5. As expected, the results are consistent with the ones of Table E.19, and the same considerations of Section

4.1 apply.

Table E.20: **Instrumental Variable Regressions Using Alternative Measures of Safety Demand**. The instrument in columns (1) and (2) is Commercial Paper Outstanding. The instrument in columns (3) and (4) is Asset-backed Commercial Paper Outstanding. The “USDT;USDC;DAI” sample includes single pools denominated either in USDT, USDC, or DAI. The “BTC;ETH“ sample consists of all pools that include either versions of BTC and ETH, individually, or any combination of these tokens with each other or another token. Category specifies which pools are included in the regression (e.g., lending). Standard errors are clustered at the protocol-year-week level.*** p<0.01, ** p<0.05, * p<0.10.

	(1)	(2)	(3)	(4)
	APY	APY	APY	APY
Pools:	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH
DeFi Category	Lending	Lending	Lending	Lending
Instruments:	CP Outstanding	CP Outstanding	ABCP Outstanding	ABCP Outstanding
Money Premium (1M)$_{t-1}$	3.086*	-0.953	8.075***	0.312
	(1.73)	(-1.03)	(7.99)	(1.17)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	7074	6663	7074	6663
R^2	0.365	0.411	0.354	0.416
F First Stage	9.09	12.22	24.72	52.76
	(5)	(6)	(7)	(8)
	APY	APY	APY	APY
Money Premium (6M)$_{t-1}$	7.165**	-1.559	14.80***	0.633
	(2.13)	(-1.02)	(7.73)	(1.09)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	7074	6663	7074	6663
R^2	0.369	0.415	0.354	0.416
F First Stage	26.59	25.240	113.82	155.23
	(9)	(10)	(11)	(12)
	APY	APY	APY	APY
ΔGovernment Debt$_{t-1}$	-45.73	85.60	379.6***	-56.64
	(-0.34)	(0.99)	(3.84)	(-1.33)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	7000	6625	7000	6625
R^2	0.384	0.414	0.373	0.414
F First Stage	261.33	315.75	39.27	67.40

Finally, in Table E.21, we replicate the tests in Table E.20 using the change in TVL as the dependent variable. As noted earlier, TVL is a noisy measure, requiring caution in interpreting the results. To mitigate some of this noise, we focus on the period starting in January 2023, which corresponds to a relatively more mature stage of the DeFi ecosystem. We find a negative coefficient for our measure of safety demand for the stablecoin lending pools as expected, and in some instances also a significant one. For the placebo tests, the coefficient is significant in some cases but with a positive sign. Overall, the results, confirm that only stablecoins lending pools respond to the demand for safety.

Table E.21: **Instrumental Variable Regressions Using TVL as the Dependent Variable**. The instrument in columns (1)–(4) is Commercial Paper Outstanding, while in columns (5)–(8), it is Asset-backed Commercial Paper Outstanding. The "USDT;USDC;DAI" sample includes single pools denominated in USDT, USDC, or DAI. The "BTC;ETH" sample consists of pools that include BTC or ETH, either individually or in combination. The sample period starts at January 2023. Defi Category include Lending, Yield and Yield Aggregator. Standard errors are clustered at the protocol-year-week level. *** $p<0.01$, ** $p<0.05$, * $p<0.10$.

	(1)	(2)	(3)	(4)
	ΔTVL	ΔTVL	ΔTVL	ΔTVL
Pools:	USDT;USDC;DAI	BTC;ETH	USDT;USDC;DAI	BTC;ETH
DeFi Category	Lending	Lending	Lending	Lending
Instruments:	CP Outstanding	CP Outstanding	ABCP Outstanding	ABCP Outstanding
Money Premium$_{t-1}$	-0.067	0.333***	-0.623***	-0.192
	(-0.51)	(2.78)	(-2.62)	(-0.82)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	10594	13963	10594	13963
R^2	0.047	0.035	0.036	0.041
F First Stage	215.61	130.61	42.43	19.70
	(5)	(6)	(7)	(8)
	ΔTVL	ΔTVL	ΔTVL	ΔTVL
Money Premium (6M)$_{t-1}$	-0.086	0.552**	-1.860**	-0.135
	(-0.28)	(2.41)	(-2.50)	(-0.20)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	10594	13963	10594	13963
R^2	0.047	0.035	0.041	0.046
F First Stage	61.25	40.54	14.23	4.92
	(9)	(10)	(11)	(12)
	ΔTVL	ΔTVL	ΔTVL	ΔTVL
ΔGovernment Debt$_{t-1}$	-31.52***	-0.656	-3.167	6.573*
	(-3.20)	(-0.08)	(-0.78)	(1.94)
Controls:	Yes	Yes	Yes	Yes
FE: protocol chain token week	Yes	Yes	Yes	Yes
N	10594	13963	10594	13963
R^2	0.047	0.035	0.046	0.041
F First Stage	38.02	16.43	245.11	148.50