Bank Risk-Taking, Monetary Policy, and Information Shocks: Evidence from Securities Holdings

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Abstract

We study how ECB monetary policy announcements affect banks' securities portfolios by distinguishing between pure monetary policy shocks and information shocks. Using high-frequency euro-area monetary policy surprises and security-level data on French banks' bond holdings, we show that pure monetary tightening increases bond holdings without altering portfolio composition, consistent with a quantity adjustment. In contrast, information shocks reduce holdings but induce well-capitalized banks to reallocate toward riskier, higher-yield, shorter-maturity bonds issued by non-bank financial institutions. Overall, monetary policy affects banks' securities portfolios along two distinct margins: quantity adjustments driven by interest rate changes and capital-dependent risk reallocation driven by information.

Keywords: monetary policy, bank risk-taking, trading, bank lending.

JEL codes: E52, G21.

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1 Introduction

Understanding how monetary policy affects banks' balance sheets is central to the study of monetary transmission. While a large literature has documented how policy shocks influence bank lending and credit supply (Holmstrom & Tirole, 1997; Kashyap & Stein, 2000; Jiménez et al., 2014, 2020), banks also adjust the composition of their assets along the securities margin. Securities account for more than 20% of total assets in both Europe and the United States and constitute a key interface between monetary policy, asset prices, and bank risk-taking (Mayer et al., 2017; Bubeck et al., 2020). Changes in policy rates and central bank communication affect expected returns, valuation gains and losses, regulatory capital positions, and risk premia, potentially inducing substantial reallocations within banks' security portfolios. Examining this portfolio margin is therefore essential to understand how monetary policy reshapes risk allocation within the banking sector.

Empirically, studying this channel requires a careful identification of the shocks embedded in monetary policy announcements. The standard approach relies on high-frequency surprises around central bank decisions (Gürkaynak et al., 2005, 2007; Altavilla et al., 2019), which have proven effective in measuring the impact of policy on financial markets. Yet, recent research shows that these surprises capture more than unexpected rate changes: they also reflect information about economic fundamentals revealed through central bank communication (Nakamura & Steinsson, 2018; Jarociński & Karadi, 2020; Bauer & Swanson, 2023b; Miranda-Agrippino & Ricco, 2023). As a consequence, conventional measures may combine mechanical policy effects with information-driven revisions in expectations. While this insight has reshaped the interpretation of asset price responses, its implications for banks' quantity adjustments and portfolio choices remain largely unexplored.

This issue is particularly relevant during the ECB tightening cycle that began in 2022. After a prolonged period of near-zero rates, the ECB increased policy rates rapidly to counter elevated inflation. During this episode, announcements were closely scrutinized not only for their immediate rate implications, but also for the signals they conveyed about inflation persistence, growth prospects, and the strength of the disinflation process. Properly separating changes in the policy stance from the informational content of communication is therefore crucial for interpreting how banks adjusted their bond holdings during the tightening phase.

Against this backdrop, we examine how the 2022 ECB tightening cycle affected banks' bond holdings, explicitly separating pure monetary policy shocks from central bank information shocks using the decomposition of Jarociński & Karadi (2020). We combine this identification strategy with granular security-level data on French banks' bond portfolios (PROTIDE), matched to bond characteristics from the ECB's CSDB and supervisory balance sheet information. This framework allows us to analyze both adjustments in the aggregate level of bond holdings and shifts in portfolio composition along key dimensions—including credit

risk, yield, issuer sector, and maturity—while controlling for time-varying bond characteristics. The French banking sector provides a particularly suitable laboratory: the prevalence of the universal banking model (Dereeper et al., 2020; Nicolas & Weill, 2026) implies large and actively managed securities portfolios, making portfolio reallocation a quantitatively important margin of adjustment during monetary tightening.

Our empirical strategy exploits the panel structure of security-level holdings. Baseline regressions estimate average security-level responses to announcement-driven shocks. To identify heterogeneous reallocation behavior, we introduce security-time fixed effects so that identification relies on within-security reallocations across banks holding the same bond at a given point in time. This specification absorbs time-varying bond characteristics and valuation effects, isolating cross-bank differences driven by balance sheet strength. It also allows us to compare reallocations across securities subject to identical regulatory risk weights (Becker & Ivashina, 2015), thereby controlling for regulatory incentives.

We obtain three main findings. First, separating pure monetary shocks from information shocks is crucial for interpreting average portfolio responses. Using conventional high-frequency surprises (Altavilla et al., 2019), policy announcements appear to reduce aggregate bond holdings. However, once we implement the decomposition of Jarociński & Karadi (2020), the two components operate in opposite directions. A one-standard-deviation pure monetary tightening increases bond holdings by about 1.2%, whereas an information shock of similar magnitude reduces holdings by roughly 6.5%. Because conventional measures largely load on the information component during our sample, they mask the positive quantity response associated with mechanical rate changes. This result shows that failing to disentangle these shocks can lead to misleading conclusions about how banks adjust their securities portfolios during tightening episodes.

Second, portfolio adjustments are heterogeneous across banks, but only in response to the informational component of policy announcements. Controlling for security-time fixed effects, better-capitalized banks increase their holdings relative to less-capitalized peers following positive information shocks. Quantitatively, a one-standard-deviation information shock leads well-capitalized banks to expand their holdings of a given bond by approximately 13% relative to weaker banks. In contrast, capitalization does not significantly affect responses to pure monetary shocks. This pattern suggests that balance sheet strength primarily shapes banks' ability to absorb and act upon revisions in macroeconomic expectations rather than their reaction to mechanical changes in interest rates.

Third, this heterogeneous response operates through active risk reallocation. Following positive information shocks, well-capitalized banks tilt their portfolios toward higher-yield and speculative-grade bonds, as well as bonds issued by non-bank financial institutions. Importantly, these shifts in credit risk are accompanied by reductions in maturity and duration exposure, indicating that the observed behavior does not reflect a mechanical search for yield through longer maturities. Instead, it is consistent with multidimensional portfolio optimization in response to improved economic prospects. By contrast, pure monetary

shocks are associated with more conservative reallocations, consistent with a flight-to-quality adjustment.

A battery of robustness checks confirms these conclusions. The results hold when measuring holdings by the number of securities (thus isolating a pure quantity margin), when replacing capital with deposit funding as an alternative proxy for balance sheet capacity, when alternative measures of monetary policy shocks are used, and when jointly including pure monetary and information shocks in the same specification.

Taken together, our findings show that monetary policy affects banks' securities portfolios through two distinct channels. Pure monetary shocks primarily influence the scale of bond holdings and are associated with more conservative tilts among stronger banks. Information shocks, by contrast, activate an information-driven reallocation channel that increases portfolio risk conditional on balance sheet strength. Ignoring this decomposition may therefore lead to misleading conclusions about bank risk-taking during tightening cycles.

This paper contributes to several strands of literature. First, we contribute to the literature on the identification of monetary policy shocks. Recent work emphasizes that monetary policy announcements embed both unexpected policy changes and central bank information about economic fundamentals (Nakamura & Steinsson, 2018; Jarociński & Karadi, 2020; Bauer & Swanson, 2023b; Miranda-Agrippino & Ricco, 2023). While this distinction has been shown to matter for asset prices and macroeconomic outcomes, little is known about how it shapes banks' balance sheet adjustments. We show that failing to separate pure monetary shocks from information shocks can lead to qualitatively incorrect conclusions about banks' risk-taking behavior. In particular, conventional surprise measures mask a risk-taking channel that operates specifically through the informational component of policy announcements.

Second, we contribute to the literature on heterogeneous monetary transmission through bank balance sheets. A large body of work shows that capital, liquidity, and deposit funding shape how banks adjust lending in response to monetary shocks (Holmstrom & Tirole, 1997; Jiménez et al., 2012; Gambacorta & Shin, 2018; Drechsler et al., 2018). However, this literature focuses primarily on credit supply and funding structure. Much less is known about how balance sheet strength affects adjustments on the asset allocation margin within securities portfolios. We document that capitalization does not materially alter responses to pure monetary tightening, but strongly conditions responses to information shocks, identifying a novel channel through which balance sheet strength interacts with central bank communication rather than mechanical rate changes.

Third, we contribute to the growing literature exploiting granular securities holdings data to study banks' portfolio behavior. Prior work largely focuses on periods of monetary easing or financial stress and often finds that weaker banks increase securities holdings for liquidity or balance sheet repair motives (Peydró et al., 2021, 2026). In contrast, we study a tightening cycle and document a risk-reallocation mechanism driven by well-capitalized banks. Our findings show that stronger banks increase credit risk

exposure following positive information shocks while containing duration risk, consistent with active portfolio optimization rather than regulatory arbitrage or mechanical search-for-yield behavior. This evidence highlights the role of securities portfolios as an independent channel of monetary transmission.

The remainder of the paper is organized as follows. Section 2 describes the identification of monetary policy shocks and discusses the role of central bank information in monetary policy announcements. Section 3 presents the data sources and documents key stylized facts on banks' bond holdings over the recent tightening cycle. Section 4 outlines the empirical strategy. Section 5 reports and discusses the results. Section 6 concludes.

2 Monetary Policy Shocks and the Role of Information

A large empirical literature identifies the effects of monetary policy using high-frequency changes in financial market prices around central bank announcements. Seminal contributions by Gürkaynak et al. (2005) and Gürkaynak et al. (2007) show that monetary policy announcements generate sizable and immediate movements in interest rates and asset prices, providing a powerful identification strategy for monetary policy shocks. Subsequent work has refined these measures and expanded their use across macroeconomic and financial applications. In particular, Altavilla et al. (2019) construct high-frequency monetary policy surprises for the euro area based on changes in overnight indexed swap (OIS) rates, which have become a standard input in studies of monetary transmission. Using high-frequency changes in OIS rates across maturities measured within narrow intraday windows around ECB policy announcements and subsequent press conferences, they apply a principal component analysis to identify a small set of orthogonal monetary policy surprises associated with the current policy stance, forward guidance, and asset purchase programs.

A growing body of research, however, emphasizes that monetary policy announcements convey more than unexpected changes in the policy stance. Central banks also reveal information about their assessment of current and future macroeconomic conditions. As shown by Nakamura & Steinsson (2018), monetary policy announcements can shift expectations about the economic outlook, making it difficult to interpret high-frequency surprises as pure policy shocks. Similarly, Bauer & Swanson (2023b) and Bauer & Swanson (2023a) demonstrate that central bank communication and signaling play a key role in shaping financial market responses to policy announcements. This concern has motivated a re-examination of the identification of monetary policy shocks. Miranda-Agrippino & Ricco (2021) propose alternative identification strategies that explicitly account for informational effects, showing that ignoring these components can lead to misleading inferences about the effects of monetary policy. More recently, Miranda-Agrippino & Ricco (2023) further document that information shocks are quantitatively important and vary over the monetary policy cycle.

In the euro-area context, Jarociński & Karadi (2020) provide a tractable and influential decomposition of high-frequency monetary policy surprises into two orthogonal components: a pure monetary policy shock, capturing unexpected changes in the policy stance, and a central bank information shock, capturing revisions in market expectations about macroeconomic fundamentals revealed by the central bank. Formally, the decomposition exploits a constrained VAR estimated on high-frequency changes in interest rates and equity prices around policy announcements, where sign restrictions on their joint responses are used to disentangle monetary-driven shocks from information-driven shocks. In particular, a contractionary monetary policy shock is identified by an increase in interest rates accompanied by a decline in equity prices, while an information shock is characterized by a positive comovement between rates and equity prices, reflecting improved macroeconomic expectations revealed by the central bank

This decomposition has been shown to reconcile several puzzling findings in the literature, including the so-called "financial conditions puzzle" (Andrade & Ferroni, 2021), whereby contractionary policy surprises are sometimes associated with rising asset prices and easing financial conditions. This distinction is particularly relevant for banks' balance sheet decisions and portfolio choice. While pure monetary policy shocks primarily affect banks through changes in interest rates and funding conditions, information shocks alter banks' beliefs about macroeconomic risk, asset payoffs, and the resilience of the financial system. As a result, the two components may have qualitatively different implications for banks' bond demand and risk-taking behavior.

Based on the Jarociński and Karadi (2020) decomposition, Figure 1 depicts the evolution of pure monetary policy shocks and central bank information shocks between 2018 and 2024. Two salient features emerge. First, pure monetary policy shocks are concentrated at the onset of the tightening cycle, indicating that early interest rate increases were associated with sizable unexpected changes in the policy stance. Second, as the cycle progresses, information shocks become increasingly prominent, suggesting that monetary policy announcements progressively conveyed information about the central bank's assessment of macroeconomic conditions and economic resilience. In addition, for comparison purposes, a large positive pure monetary policy shock is observed during the Covid-19 crisis. This does not imply a restrictive monetary policy stance; rather, it reflects instances in which ECB announcements were perceived as less accommodative than market expectations at the time, despite the overall highly expansionary policy environment.

Although pure monetary policy shocks and information shocks are identified contemporaneously and are orthogonal by construction, their time-varying relative magnitudes are informative about how financial markets interpret interest rate changes across different phases of the cycle. In the early stages of tightening, when inflationary pressures were elevated and uncertainty surrounding the future path of policy rates was high, monetary policy announcements generated large pure monetary surprises. As policy normalization proceeded and the trajectory of policy rates became more predictable, comparable rate increases tended

to generate smaller pure monetary shocks but increasingly conveyed information about macroeconomic resilience and the central bank's confidence in its outlook. This descriptive evidence underscores the importance of disentangling monetary and information components when studying the transmission of monetary policy to banks' portfolio decisions.

In the remainder of the paper, we exploit this decomposition to distinguish between quantity adjustments driven by interest rate changes and risk-taking responses driven by the informational content of monetary policy announcements.

3 Data and Stylized Facts

3 .1 Databases

Our analysis combines four complementary data sources covering banks' security holdings, security characteristics, bank balance sheets, and monetary policy shocks. Definitions of the main variables are provided in Table 1.

The core dataset is the French securities holdings database PROTIDE (PROduction de statistiques de TItres en DÉtention), which reports the outstanding amount of securities held by banks resident in France at the unconsolidated level. PROTIDE provides quarterly information at the International Securities Identification Number (ISIN) level and is available from 2008 onward. This granular structure allows us to track banks' holdings of individual securities over time and to analyze portfolio adjustments in response to monetary policy announcements. Importantly, securities are recorded at market value rather than book value. While PROTIDE does not indicate whether securities are classified as trading, available-for-sale, or held-to-maturity, its coverage spans the main categories of securities defined under French accounting standards, including trading securities, available-for-sale securities, held-to-maturity securities, and securities related to portfolio management activities.[1]

We complement these holdings data with detailed security-level information from the ECB's Centralised Securities Database (CSDB). CSDB is a comprehensive reference database covering financial instruments issued worldwide and provides detailed information on security characteristics. By matching each ISIN in PROTIDE with CSDB, we obtain data on bond maturity, yield, price, duration, and credit rating, as well

[1] Trading securities are instruments held with the intention of being sold in the short term and managed as part of a trading portfolio. Available-for-sale securities are held neither for trading nor to maturity and may be sold in response to liquidity needs or changes in market conditions. Held-to-maturity securities are debt instruments that the institution has the positive intention and ability to hold until maturity. Securities related to portfolio management activities are held within the framework of medium- to long-term portfolio management, outside trading activities, in accordance with French regulatory classifications.

as issuer characteristics, including the issuer's sector of activity based on the ESA classification. This merge allows us to study not only changes in the volume of securities held by banks, but also shifts in portfolio composition along multiple risk dimensions.

Bank-level characteristics are drawn from the French unified reporting system for financial institutions (RUBA), which collects unconsolidated balance sheet and income statement information for all banks resident in France. This source enables us to construct standard indicators of banks' financial soundness and business models, including capitalization, liquidity, profitability, non-performing loans, size, and the relative importance of loans and deposits in total assets. These variables are used to assess heterogeneous responses of banks to monetary policy and information shocks.

Finally, we rely on high-frequency monetary policy shocks from Jarociński & Karadi (2020), obtained from the authors' publicly available repository.[2] These shocks build on the euro-area monetary policy surprise measures of Altavilla et al. (2019) and decompose them into two orthogonal components: a pure monetary policy shock, capturing unexpected changes in the policy stance, and a central bank information shock, capturing information about macroeconomic conditions revealed by ECB announcements. This decomposition allows us to distinguish between the effects of interest rate changes and the informational content of monetary policy decisions. Monetary policy surprises are measured in basis points and are scaled to the volatility of the one-year OIS surprise, such that a one-unit change can be interpreted as a one–basis-point OIS-equivalent surprise around ECB policy announcements. Since PROTIDE is available at a quarterly frequency, we aggregate monetary policy shocks to the quarterly level.

After merging the four datasets, we implement several data treatments to focus on economically relevant holdings. First, we restrict the sample to bonds, which account for approximately 85% of banks' total securities portfolios and are the asset class most directly affected by monetary policy through interest rates and valuation effects. Second, we exclude short positions, identified by negative outstanding amounts, as these reflect trading strategies distinct from investment-driven portfolio choices. Third, we focus on private banks and exclude public banks to abstract from securities holdings related to public policy mandates. Finally, we remove intragroup holdings, which may reflect internal funding or balance sheet management strategies unrelated to market-based responses to monetary policy.

The availability of detailed security characteristics in CSDB from December 2017 determines the start of our sample period. Our analysis therefore covers the period from the fourth quarter of 2017 to the second quarter of 2024. The sample end coincides with June 2024, when the ECB initiated the first policy rate cut of the easing cycle, lowering the main refinancing operations rate from 4.50% to 4.25%. Summary statistics for the final sample are reported in Table 2.

[2] `https://github.com/marekjarocinski/jkshocks_update_ecb`.

3 .2 Stylized Facts

Based on the datasets described above, we first document the aggregate evolution of French banks' bond holdings around monetary policy announcements before turning to a more granular analysis. Figure 2 documents a non-monotonic evolution of banks' aggregate bond holdings. Aggregate bond holdings decline during the year preceding the ECB's first policy rate hike in June 2022 and subsequently recover over the following year, nearly returning to their pre-tightening level. This evolution coincides with pronounced movements in bond prices. As shown in Figure 3, bond prices start to decline well before the first rate hike, consistent with markets anticipating monetary policy normalization ahead of June 2022. Given that PROTIDE reports bond holdings at market value, these valuation effects are likely to account for a substantial share of the observed decline in aggregate bond holdings prior to the tightening cycle.

Additional descriptive evidence sheds light on the nature of the post-tightening recovery. Figure 4 shows that bond yields begin to rise at the time of the first rate increase and continue to rise thereafter, with cumulative changes exceeding three percentage points during the tightening period. Figure 5 further shows that the average residual maturity of banks' bond portfolios declines after policy rates increase, suggesting that banks expand their bond holdings while limiting their exposure to interest rate risk. At the same time, the composition of bond holdings changes. Figure 6 indicates that the recovery in global bond portfolios after the start of the tightening cycle is partly due to bonds issued by non-bank financial institutions (NBFI). Finally, Figure 7 reveals that securitized bonds account for a significant portion of the increase in bond portfolios following monetary tightening.

Taken together, these stylized facts point to three salient features of banks' bond portfolios over the tightening episode. First, aggregate bond holdings respond strongly to anticipated changes in monetary conditions through valuation effects. Second, the subsequent recovery in bond holdings is not confined to a single issuer category: while government securities continue to account for a substantial share of banks' portfolios, higher-yielding segments gain relative importance, notably bonds issued by non-bank financial institutions as well as securitized instruments. Third, this expansion is accompanied by active adjustments in portfolio maturity, consistent with banks re-optimizing their duration exposure in response to changing monetary conditions.

These descriptive patterns raise the question of how much of the observed evolution in banks' bond holdings reflects changes in monetary policy stance as opposed to information revealed by monetary policy announcements, and whether banks adjust only the scale of their bond portfolios or also their composition along risk dimensions. The next section outlines the empirical strategy used to address these questions."

4 Empirical Strategy

In order to study the impact of monetary policy announcements on banks' securities portfolios, we use detailed data on banks and securities, examining both overall reactions and heterogeneous adjustments to securities portfolios according to the characteristics of banks and securities. Our empirical strategy proceeds in three steps. We first document the average responses of banks' securities holdings to monetary policy surprises. We then introduce heterogeneity at the bank level by allowing monetary policy shocks to interact with bank capital, which reflects the strength of banks' balance sheets. Finally, we analyze the composition of the portfolio and the risk-taking of banks, taking into account monetary shocks, bank characteristics, and bond attributes.

A key feature of our empirical strategy is the distinction between pure monetary policy shocks and central bank information shocks. To motivate this distinction, we first estimate the effects of monetary policy surprises using the high-frequency surprise measure proposed by Altavilla et al. (2019), which captures unexpected changes in the euro-area monetary policy stance at ECB announcement dates. Our baseline specification relates bank b's holdings of security s at time t to this monetary policy surprise:

$$Ln(holdings)_{bst} = \beta_1 MPS_{t-1} + \Gamma X_{b_{t-1}} + \lambda M_{t-1} + \alpha_b + \alpha_s + \varepsilon_{bst}, \tag{1}$$

where $Ln(Holdings)_{bst}$ denotes the log of the outstanding amount of security s held by bank b at time t, MPS_{t-1} is the monetary policy surprise, and $X_{b_{t-1}}$ is a matrix of lagged bank control variables. M_{t-1} is a matrix of macro controls consisting of inflation and GDP growth. α_b and α_s denote bank and security fixed effects, respectively. In our regressions, we go from a specification with only bank controls to fully saturating the specifications with bank fixed effects, security fixed effects and macro controls.

As explained in section 2 , the monetary policy surprise measure can combine unexpected changes in the policy stance with information revealed by the central bank about macroeconomic and financial conditions. To disentangle these two components, we next replace the aggregate surprise measure with the decomposition proposed by Jarociński & Karadi (2020). Following their approach, monetary policy surprises are decomposed into a pure monetary policy component ($PMPS_{t-1}$), capturing unexpected changes in the policy stance, and an information component ($CBIS_{t-1}$), capturing revisions in market expectations about the economic outlook revealed by ECB announcements. These two components are orthogonal by construction and may affect banks' balance sheets through distinct channels. We estimate the following specification:

$$Ln(holdings)_{bst} = \beta_1 PMPS_{t-1} + \beta_2 CBIS_{t-1} + \Gamma X_{b_{t-1}} + \lambda M_{t-1} + \alpha_b + \alpha_s + \varepsilon_{bst}. \tag{2}$$

Because monetary policy surprises are defined at the announcement-date level, they are collinear with security-time fixed effects. As a result, the specifications in Equations 1 and 2 do not control for time-varying security characteristics and are intended to provide descriptive evidence on the net response of banks' securities holdings to monetary policy announcements. The identification of underlying portfolio adjustment mechanisms is addressed in subsequent specifications that exploit bank-level heterogeneity and securities characteristics.

To assess whether banks' responses to monetary policy announcements depend on balance sheet strength, we next introduce bank-level heterogeneity by interacting monetary policy shocks with bank capitalization. For clarity of interpretation, we estimate separate specifications for pure monetary policy shocks and information shocks:

$$Ln(holdings)_{bst} = \beta_1 \, PMPS_{t-1} \times Well - capitalized_{bt-1} + \Gamma X_{b_{t-1}} + \alpha_b + \alpha_{st} + \varepsilon_{bst}, \tag{3}$$

$$Ln(holdings)_{bst} = \beta_1 \, CBIS_{t-1} \times Well - capitalized_{bt-1} + \Gamma X_{b_{t-1}} + \alpha_b + \alpha_{st} + \varepsilon_{bst}. \tag{4}$$

In these specifications, $Well - capitalized_{bt-1}$ captures bank b's balance sheet strength measured prior to the monetary policy announcement, and α_{st} denotes security-time fixed effects. These fixed effects absorb unobserved time-varying security characteristics (i.e. risk, price, liquidity, outstanding volumes and level of issuance (the supply of securities), allowing us to identify differential responses across banks holding the same security at a given point in time.

Finally, we investigate how banks adjust the composition of their bond portfolios by interacting monetary policy shocks and bank capitalization with security characteristics. We again estimate separate specifications for pure monetary policy shocks and information shocks.

$$Ln(holdings)_{bst} = \beta_1 PMPS_{t-1} \times Well - capitalized_{bt-1} \times Z_{s_{t-1}} + \Gamma X_{b_{t-1}} + \alpha_b + \alpha_{st} + \varepsilon_{bst}, \tag{5}$$

$$Ln(holdings)_{bst} = \beta_1 CBIS_{t-1} \times Well - capitalized_{bt-1} \times Z_{s_{t-1}} + \Gamma X_{b_{t-1}} + \alpha_b + \alpha_{st} + \varepsilon_{bst}, \tag{6}$$

where $Z_{s,t-1}$ denotes security characteristics including yield, credit rating, maturity, and issuer type. By absorbing all bank-specific and security-time specific heterogeneity, the inclusion of bank fixed effects and security-time fixed effects ensures that identification exploits within-security, within-time reallocations across banks with different capital levels. We always include the lower level of interactions if we analyze

the triple interaction, unless they are absorbed by fixed effects. These final specifications enable us to assess whether monetary policy announcements trigger a risk-taking channel that results in a change in the composition of the securities portfolio.

5 Empirical Results

5 .1 Baseline Effects of Monetary Policy Surprises on Banks' securities Holdings

We begin by examining the baseline response of banks' bond holdings to monetary policy surprises. At this stage, we abstract from bank-level heterogeneity and portfolio composition to clarify the information embedded in alternative monetary policy surprise measures over our sample period. Since monetary policy surprises are defined at the announcement-date level, they are collinear with security-time fixed effects. We therefore estimate specifications with bank and security fixed effects.

Table 3 reports the estimations of equations 1 and 2. Using the monetary policy surprise measure proposed by Altavilla et al. (2019) in columns (1)-(4), we find that unexpected policy tightenings are associated with a statistically significant decline in banks' holdings of individual securities across all specifications. This negative effect is robust to the inclusion of bank and time fixed effects, macro controls (i.e., inflation and GDP growth), and a comprehensive set of bank-level controls. Among these controls, only profitability, measured by return on assets, enters positively and significantly in the most saturated specification, indicating that more profitable banks hold larger bonds positions on average.

To clarify the mechanisms underlying this baseline response, we next decompose monetary policy surprises into a pure monetary policy shock (PMPS) and a central bank information shock (CBIS) following Jarociński & Karadi (2020) in columns (5)-(8). The two shocks turn out to have opposite effects on banks' bond holdings. In column (8), our more saturated specification, pure monetary policy shocks are associated with an increase in holdings, whereas information shocks are associated with a decline. Quantitatively, a one–basis-point pure monetary policy surprise increases holdings by about 0.3 %, while a one–basis-point information shock reduces holdings by approximately 1.4 %. Using the sample standard deviations of the quarterly shocks ($\sigma(PMPS) = 4.03$ and $\sigma(CBIS) = 4.66$), a pure monetary shock of one standard deviation, corresponding to an unexpected tightening equivalent to approximately four basis points of the one-year OIS surprise, increases securities holdings by approximately 1.2 %. Conversely, an informational shock of one standard deviation, i.e., an increase of 4.7 basis points of the one-year OIS surprise, reduces holdings by approximately 6.5%.

These opposite responses can be rationalized by the distinct nature of the two components. A pure

monetary policy shock primarily affects discount rates and yields, mechanically increasing the attractiveness of fixed-income securities through higher promised returns, which can lead to an expansion in bond holdings. By contrast, the negative average response of bond-level holdings to information shocks does not reflect adverse macroeconomic news. In the spirit of Jarociński & Karadi (2020), positive information shocks capture optimistic signals about macroeconomic and financial conditions revealed by ECB announcements and are typically associated with higher asset prices and compressed risk premia. In such an environment, bonds—particularly relatively safe or low-yielding securities—may become less attractive at the margin, as their risk-adjusted returns decline relative to alternative assets. As a result, favorable information shocks can induce a reallocation of balance sheet capacity away from securities, leading to a reduction in observed bond holdings even though asset prices rise and macro-financial conditions improve.

Because these baseline specifications do not include security-time fixed effects, they do not fully absorb time-varying security characteristics or price movements. As a result, the estimated coefficients capture average responses of bond holdings to monetary policy announcements, potentially reflecting both quantity adjustments and valuation effects. To disentangle the underlying mechanisms and assess how banks with different balance sheet characteristics adjust their portfolios, we next turn to an analysis of bank-level heterogeneity. In this section, we introduce security-time fixed effects to isolate within-security reallocations across banks holding the same security.

5 .2 Bank-Level Heterogeneity

We now examine whether banks' responses to monetary policy announcements vary with balance sheet strength by interacting monetary policy shocks with bank capitalization. The latter is known to be a key measure of banks' financial soundness (Holmstrom & Tirole, 1997; Freixas & Rochet, 2008). This analysis sheds light on the role of banks' risk-bearing capacity in shaping the transmission of monetary and information shocks. To measure bank capitalization, we introduce a dummy variable *Well-capitalized* that takes the value 1 whether the bank capital ratio belongs to the last quartile of the distribution and 0 otherwise. All specifications include bank controls, bank fixed effects and security-time fixed effects, thereby controlling for unobserved bank characteristics and time-varying bond attributes, including valuation effects.

Table 4 reports the results. Columns (1) and (2) separately interact bank capitalization with pure monetary policy shocks and information shocks, respectively. The estimates reveal a clear asymmetry between the two components of monetary policy surprises. While the interaction between bank capitalization and pure monetary policy shocks is small and statistically insignificant, the interaction between bank capitalization and information shocks is positive and statistically significant. Quantitatively, the estimated coefficient of 0.028 in column (2) implies that, following a one–basis-point information shock, banks in the top quartile

of capitalization increase their holdings of a given bond by about 2.8 % relative to less-capitalized banks. Using the standard deviation of the information shock, this corresponds to an increase of roughly 13 % for well-capitalized banks.

This pattern indicates that balance sheet strength matters primarily for the transmission of the informational content of monetary policy announcements. Positive information shocks are associated with a compression of risk premia, which lowers the marginal return to holding relatively safe bonds but simultaneously reduces the cost of bearing risk. Well-capitalized banks, which face looser balance sheet constraints, respond by expanding their bond holdings relative to less-capitalized banks, consistent with a greater willingness to reallocate balance sheet capacity following favorable macro-financial news. By contrast, pure monetary policy shocks—capturing unexpected changes in the policy stance—do not generate differential responses across banks once security-time fixed effects are included. This suggests that changes in interest rates alone affect banks' bond holdings primarily through common price and yield effects, rather than through heterogeneous balance sheet channels.

The heterogeneous response of well-capitalized banks to information shocks raises the question of how these banks adjust the composition of their bond portfolios. An expansion in bond holdings may reflect a shift toward riskier securities rather than a uniform increase across all bonds. We therefore turn to an analysis of portfolio composition and bank risk-taking to examine whether banks reallocate their holdings along key risk dimensions in response to monetary and information shocks.

5 .3 Portfolio Composition and Bank Risk-Taking

We next examine how banks adjust the composition of their bond portfolios in response to monetary policy and information shocks. To this end, we estimate triple-interaction models between monetary policy shocks, bank capitalization, and bond risk characteristics. Three different variables are used to capture banks' risk taking: *High yield* is a dummy that takes the value 1 whether the bond' yield to maturity belongs to the last quartile of the distribution and 0 otherwise; *NBFI* is a dummy that takes the value 1 whether the issuer of the bond is a NBFI and 0 otherwise and *Speculative grade* is a dummy that takes the value 1 whether the rating of the bond is speculative grade and 0 otherwise.[3] These specifications allow us to assess whether the heterogeneous response of well-capitalized banks documented above reflects changes in portfolio risk rather than uniform adjustments in holdings.

Table 5 presents the results. Columns (1)–(3) focus on pure monetary policy shocks and interact them with bank capitalization and alternative measures of bond risk—high-yield status, speculative-grade rating, and issuance by non-bank financial institutions (NBFIs). Columns (4)–(6) replicate the same specifications

[3] See Table 1 for details on the variables.

using information shocks. Across all risk dimensions, the estimates reveal a striking contrast between the two types of monetary policy surprises. Following pure monetary policy shocks, the triple-interaction coefficients are consistently negative for riskier bonds. For instance, in column (1), the coefficient on the interaction between pure monetary shocks, bank capitalization, and high-yield bonds is -0.058. This estimate implies that a one–basis-point unexpected tightening reduces the holdings of high-yield bonds by about 5.8 % for well-capitalized banks relative to less-capitalized banks. Using the standard deviation of the pure monetary shock, a one-standard-deviation tightening translates into a relative decline of about 23 %. Similar negative effects are observed for speculative-grade bonds and bonds issued by NBFIs.

These results indicate that, although pure monetary policy shocks are associated with an expansion in overall bond holdings, well-capitalized banks reallocate more their portfolios toward safer securities. This stronger flight-to-quality response reflects differences in adjustment capacity rather than greater fragility. Following unexpected tightening, rising interest rates reduce bond prices and increase the cost of portfolio rebalancing, as selling riskier securities may crystallize valuation losses. With fewer binding balance-sheet constraints, well-capitalized banks are better able to absorb these losses and actively rebalance portfolio risk, whereas less-capitalized banks, despite potentially stronger incentives to de-risk, may face constraints that limit active reallocations within their securities portfolios.

In sharp contrast, information shocks generate the opposite composition effects. The triple-interaction coefficients between information shocks, bank capitalization, and bond risk measures are all positive and statistically significant. For instance, the coefficient of the triple interaction involving information shocks, bank capitalization, and high-yield is estimated at 0.022 in column (4), implying that a one–basis-point information shock raises holdings of high-yield bonds by about 2.2 % for well-capitalized banks relative to others. A one-standard-deviation information shock therefore leads to an increase of about 10 %. Similar patterns are observed for speculative-grade bonds and bonds issued by NBFIs.

These estimates indicate that positive information shocks encourage well-capitalized banks to shift their portfolios toward riskier securities. In line with the interpretation of Jarociński & Karadi (2020), favorable macro-financial information compresses risk premia and lowers the perceived cost of bearing risk. Well-capitalized banks, which face looser balance-sheet constraints, are thus better positioned to exploit these conditions by reallocating their bond portfolios toward higher-yield and riskier segments. This interpretation is consistent with Abbassi et al. (2016), who show that banks with stronger balance sheets are more able to actively adjust their securities portfolios in response to changes in financial conditions.

Taken together, these results show that pure monetary and information shocks affect banks' bond portfolios along fundamentally different dimensions. Pure monetary shocks induce a cautious reallocation toward safer assets, consistent with a flight-to-quality response, whereas information shocks activate a risk-taking channel that operates through portfolio composition and is conditional on banks' balance sheet

strength.

5 .4 Interest Rate Risk Management

The results presented above are identified from within-security reallocations across banks and therefore cannot be mechanically driven by differences in bond maturity or duration. Nonetheless, examining how interest rate exposure co-moves with portfolio risk provides additional insight into the investment strategies of well-capitalized banks operating in a high interest rate environment. Rather than offering an alternative explanation, this analysis clarifies how banks jointly manage different dimensions of risk when responding to favorable macro-financial information conveyed by monetary policy announcements.

Table 6 explores this dimension by interacting monetary policy surprises, bank capitalization, and two measures of interest rate exposure. In this regard, *Long maturity* is a dummy that takes the value 1 whether the residual maturity of the bond belongs to the last quartile of the distribution and 0 otherwise, while *Long duration* is a dummy that takes the value 1 whether the duration of the bond belongs to the last quartile of the distribution and 0 otherwise. Columns (1) and (2) focus on pure monetary policy shocks, while Columns (3) and (4) consider information shocks.

The results provide no evidence that well-capitalized banks systematically adjust interest rate exposure in response to pure monetary policy shocks. The triple interactions between pure monetary shocks, bank capitalization, and either residual maturity or duration are statistically insignificant. This finding suggests that, following unexpected changes in the policy stance, portfolio adjustments by well-capitalized banks do not primarily operate through active management of interest rate risk. By contrast, information shocks are associated with a significant reduction in interest rate exposure among well-capitalized banks. The triple interaction between information shocks, bank capitalization, and both residual maturity and duration is negative and statistically significant.

Importantly, this reduction in interest rate exposure does not contradict the evidence of increased risk-taking documented above. Instead, it highlights a multi-dimensional portfolio optimization strategy. When monetary policy announcements convey favorable macro-financial information, well-capitalized banks increase exposure to higher-yield and riskier bonds while simultaneously containing interest rate risk. In an environment characterized by elevated interest rates and heightened valuation sensitivity, such behavior is consistent with an active rebalancing of portfolios that exploits improved risk–return trade-offs without disproportionately increasing exposure to further rate fluctuations.

Overall, these findings reinforce the interpretation of an information-driven portfolio reallocation channel. Maturity adjustments become relevant only when monetary policy announcements convey information about the future economic outlook, not when they solely reflect unexpected changes in the policy stance.

Hence, well-capitalized banks do not merely respond mechanically to changes in interest rates; rather, they actively optimize portfolio composition across risk dimensions, combining greater risk-taking with a cautious management of interest rate exposure under tightening monetary conditions.

5 .5 Robustness Checks

This section assesses the robustness of our main findings with respect to other measures of bond holdings, bank soundness, monetary policy shocks, and the use of alternative specifications. Across all robustness exercises, the central distinction between pure monetary policy shocks and information shocks and its implications for bond holdings by banks is not called into question.

Although the inclusion of security-time fixed effects in our baseline specifications already absorbs time-varying securities characteristics and price movements, thereby ruling out valuation effects as a mechanical driver of our results, we further explore an alternative dimension of bond holdings based on quantities rather than market values. Specifically, we replace *Ln(holdings)* with *Ln(securities)* that is the log of the number of bonds held by each bank. Columns (1) and (2) of Table 7 report the corresponding interaction specifications between bank capitalization and pure monetary policy shocks and information shocks, respectively. The results closely mirror those obtained using outstanding amounts. Pure monetary policy shocks continue to affect the overall scale of bond holdings, while information shocks generate heterogeneous responses across banks, with well-capitalized institutions adjusting their portfolios more actively. This confirms that our findings do not reflect valuation effects but capture active portfolio choices along both value and quantity margins.

We next examine whether our results depend on the specific proxy used to capture banks' balance sheet capacity. As an alternative to bank capital, we focus on deposit funding, which provides stable resources that can support portfolio rebalancing and risk-bearing capacity (Cornett et al., 2011; Gambacorta & Marques-Ibanez, 2011; Dagher & Kazimov, 2015). We introduce the variable *High deposit* that takes the value 1 whether the bank deposit ratio belongs to the last quartile of the distribution and 0 otherwise. Columns (3) and (4) of Table 7 report the interaction results obtained when replacing bank capital with deposits for pure monetary and information shocks, respectively. The conclusions remain unchanged: the interaction between deposits and information shocks is positive and statistically significant, whereas the corresponding interaction with pure monetary policy shocks remains insignificant. To further assess robustness, Table 8 replicates the triple-interaction specifications on bond risk characteristics presented in the main analysis, replacing bank capital with deposits throughout. The resulting estimates are quantitatively and qualitatively similar to those obtained with capital, indicating that the information-driven portfolio reallocation channel operates whenever banks have sufficient balance sheet resources, regardless of whether

these resources take the form of loss-absorbing capital or stable funding.

While our baseline specifications already incorporate bank and security-time fixed effects, our findings on banks' risk-taking based on triple interactions remain robust when we introduce additional fixed effects. In particular, adding bank-time fixed effects accounts for unobserved, time-varying heterogeneity at the bank level, such as changes in bank risk, while including security-bank fixed effects controls for time-invariant heterogeneity in the matching between banks and securities, for instance reflecting differences in banks' specialization across certain securities.[4]

In the baseline specification, we aggregate event-level monetary policy shocks to the quarterly frequency by summing all surprises occurring within a given quarter, thereby capturing the cumulative unexpected monetary and informational content of monetary policy announcements over that period. As a robustness check, we construct an alternative measure based on the average shock per policy event within each quarter, which isolates the average intensity of surprises and abstracts from variation in the number of announcements. Re-estimating our baseline regressions using this alternative aggregation yields coefficient estimates that are quantitatively similar and statistically indistinguishable from the baseline results.[5] This indicates that our findings are not driven by variation in the frequency of policy events within a quarter, but rather by the underlying unexpected monetary and information components themselves.

Finally, in the main analysis, heterogeneous effects of monetary policy announcements are estimated by interacting bank characteristics separately with pure monetary policy shocks and information shocks, reflecting the conceptual distinction between the two components that are orthogonal to each other. As an additional robustness check, we re-estimate our baseline interaction specifications by including interaction terms for both pure monetary policy shocks and information shocks simultaneously within the same regression. These results confirm our main findings.[6] The interaction between bank capitalization and information shocks remains positive and statistically significant, while the corresponding interaction with pure monetary policy shocks remains insignificant. Similarly, the compositional effects identified in the triple-interaction specifications persist when both shocks are included jointly. Taken together, these results indicate that our conclusions are not driven by valuation effects, the choice of balance sheet proxy, or the omission of interaction terms, and that the heterogeneous risk-taking response we document is specifically linked to the informational content of monetary policy announcements rather than to unexpected changes in the policy stance.

[4] Results are not presented, but are available upon request.
[5] Results are not presented but available upon request.
[6] Results are not presented but available upon request.

6 Conclusion

This paper examines how ECB monetary policy announcements affect banks' bond portfolios by explicitly distinguishing between pure monetary policy shocks and information shocks embedded in central bank communication. Combining high-frequency identification with granular security-level data on French banks' bond holdings, we provide new evidence that monetary policy operates through two distinct and economically meaningful channels that differ sharply in their implications for banks' portfolio choices and risk-taking.

Our results show that pure monetary policy shocks primarily affect the scale of banks' bond holdings. Unexpected monetary tightening leads banks to expand the volume of bonds held, but does not induce systematic changes in portfolio composition once security-level characteristics are held constant. By contrast, information shocks have limited effects on bond holdings but generate pronounced within-portfolio reallocations. Following positive information shocks, well-capitalized banks tilt their bond portfolios toward riskier segments, including higher-yield and speculative-grade securities, bonds issued by non-bank financial institutions, and shorter maturities. These patterns point to an information-driven risk-taking channel that operates conditional on banks' balance sheet strength.

A key implication of our findings is that commonly used monetary policy surprise measures can obscure the underlying transmission mechanisms. Over our sample period, monetary policy surprises largely reflect the informational content of ECB announcements, thereby masking the opposing quantity effects of pure monetary policy shocks. Failing to disentangle these components may therefore lead to incorrect conclusions about banks' responses to monetary tightening and the nature of risk-taking during policy normalization episodes.

More broadly, our results suggest that bank risk-taking is shaped less by interest rate changes per se than by the macro-financial information conveyed by central banks. Monetary tightening accompanied by favorable signals about economic resilience can encourage well-capitalized banks to reallocate toward riskier assets, even in an environment of rising policy rates. This finding qualifies the conventional view of the monetary policy risk-taking channel and highlights the central role of communication and expectations in shaping financial stability outcomes.

Finally, this paper contributes to the literature by focusing on an increasingly important but still underexplored margin of monetary transmission: banks' securities portfolios. As securities holdings account for a growing share of banks' balance sheets, understanding how monetary policy affects both the scale and the risk composition of these portfolios is essential for assessing the broader consequences of monetary policy decisions.

Several avenues for future research emerge from our analysis. Extending the framework to other euro-

area countries would help assess the generality of our findings and the role of institutional heterogeneity. Moreover, linking banks' portfolio reallocations to subsequent lending behavior and risk outcomes would further clarify how securities holdings interact with credit supply and financial stability. More broadly, our results underscore the importance of incorporating the informational effects of central bank communication into analyses of monetary policy transmission.

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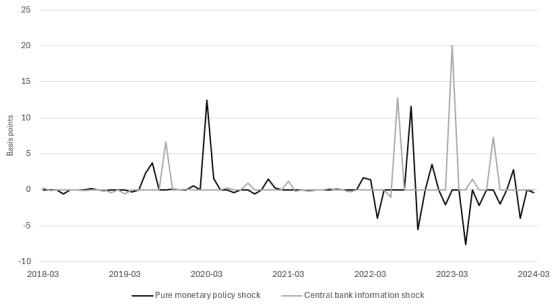
7 Figures and Tables

Figure 1: Jarociński & Karadi (2020) Decomposition of Monetary Surprises in the Wake of the ECB's 2022 Rate Hike



Note: Pure monetary policy shocks and central bank information shocks are constructed following the "poor man's" sign-restriction approach of Jarociński & Karadi (2020). The shocks are obtained from the first principal component of high-frequency monetary policy event-window changes in overnight index swap (OIS) rates with maturities of 1, 3, and 6 months and 1 year, and are scaled to match the standard deviation of the 1-year OIS event-window surprise.

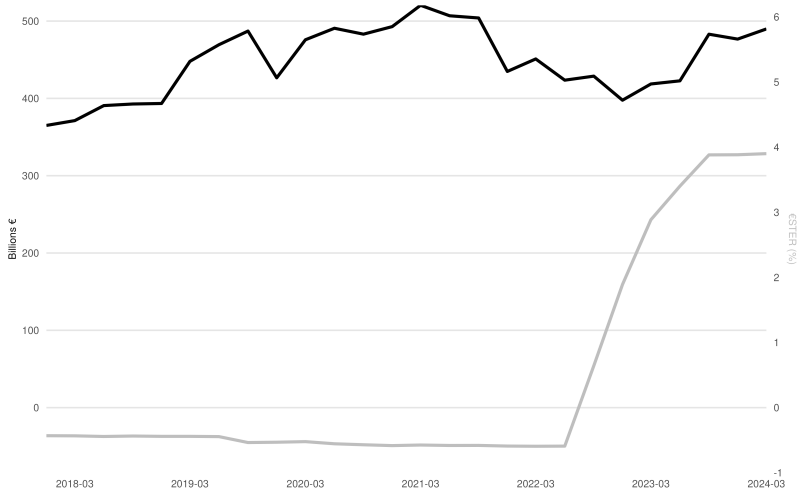
Table 1: Variables Definitions

	Definition
Security variables	
Ln(holdings)	The log of the oustanding amount of bonds at the ISIN level.
Residual maturity	The residual maturity of the bond.
Duration	The average maturity of the bond's cash flows weighted by their present value.
Yield to maturity	The total return anticipated on the bond if it is held until it matures.
Speculative grade	A dummy that takes the value 1 whether the rating of the bond is lower than AAA, AA, or A.
Bank variables	
Capital ratio	The ratio of own funds over total assets of the bank.
Liquidity ratio	The ratio of liquid assets (cash and balance with central bank) over total assets of the bank.
ROA	The total net income over total assets of the bank.
NPL ratio	The non-performing loan ratio of the bank.
LTA ratio	The ratio of loans over total assets of the bank.
Deposit ratio	The ratio of deposits over total assets of the bank.
Ln(total assets)	The log of the total assets of the bank.
Monetary policy variables	
MPS	Monetary policy surprises according to Altavilla et al. (2019).
PMPS	Pure monetary policy shock orthogonal to central bank information according to Jarociński & Karadi (2020).
CBIS	Pure central bank information shock orthogonal to monetary policy surprises according to Jarociński & Karadi (2020).

Table 2: Summary Statistics

	Mean	Median	Sd	Min	Max
Security variables					
Ln(holdings)	6.88	6.95	2.72	0.55	12.39
Residual maturity (years)	6.22	4	7.50	0.08	35.08
Duration (years)	5.66	4.09	5.57	0.30	33.58
Yield to maturity (%)	2.40	1.39	3.47	-1.15	18.37
Speculative grade (0/1)	0.22	0	0.41	0	1
Bank variables					
Capital ratio (%)	5.90	4.74	3.41	2.66	19.11
Liquidity ratio (%)	22.95	20.31	12.84	3.53	80.88
ROA (%)	0.23	0.18	0.32	-0.72	2.57
NPL ratio (%)	2.38	2.23	1.16	0	8.78
LTA ratio (%)	23.46	19.05	19.62	0.95	75.90
Deposit ratio (%)	20.81	16.61	15.21	1.52	78.85
Ln(total assets)	19.87	20.88	1.69	15.06	21.28
Monetary policy variables					
MPS (basis points)	2.52	0.23	6.54	-6.11	24.50
PMPS(Basis points)	0.69	0	4.03	-7.63	13.06
CBIS (Basis points)	1.83	0	4.65	-1.01	20.02

Figure 2: Banks' Securities Holdings and the Euro Interbank Refinancing Rate

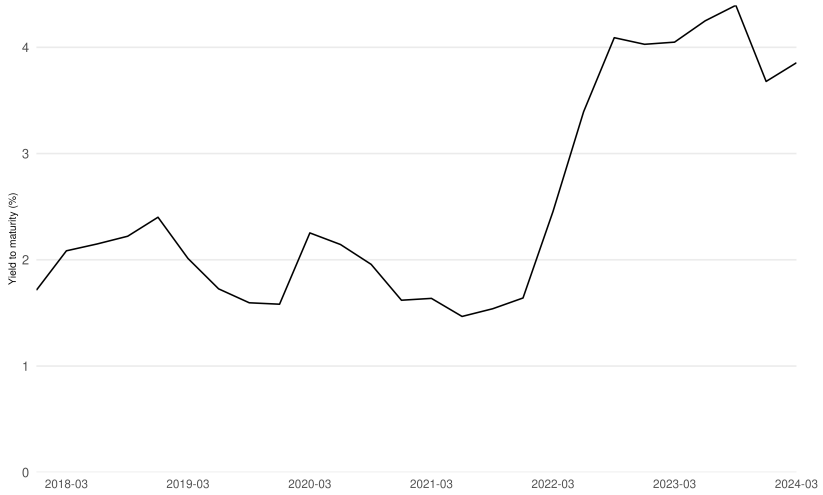


Note: The outstanding securities amounts are in billion euros and the €STR is the benchmark interest rate that reflects the cost of overnight borrowing applied by banks in the eurozone. Sources: the authors' calculations based on PROTIDE and Webstat (Banque de France).

Figure 3: Evolution of the Average Bond Prices

Sources: the authors' calculations based on PROTIDE and CSDB.

Figure 4: Evolution of the Average Bond Yields

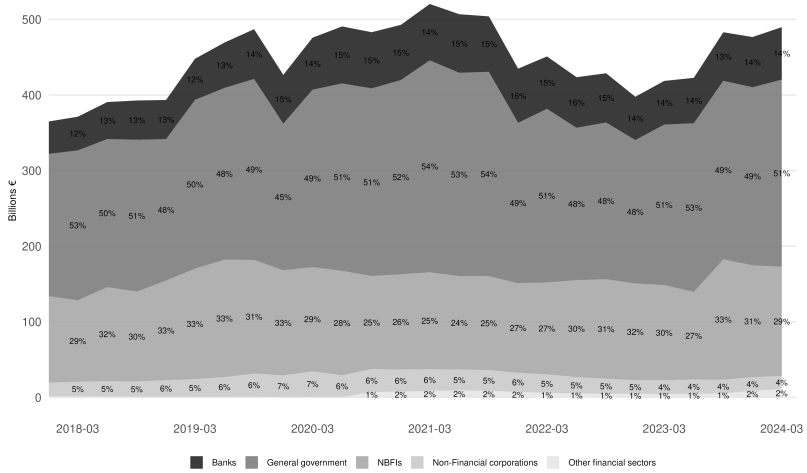


Sources: the authors' calculations based on PROTIDE and CSDB.

Figure 5: Evolution of the Average Residual Maturity of bonds

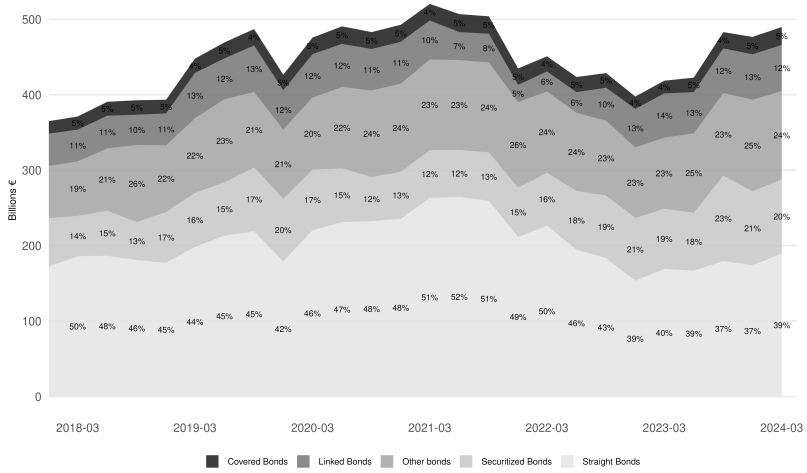
Sources: the authors' calculations based on PROTIDE and CSDB.

Figure 6: Banks' Securities Holdings by Issuer Sector



Note: the classification is based on the ESA's sectoral classification. Sources: the authors' calculations based on PROTIDE and CSDB.

Figure 7: Banks' Securities Holdings by Bond Type



Note: the classification is based on the CSDB's primary asset classification. Sources: the authors' calculations based on PROTIDE and CSDB.

Table 3: Effects of Monetary Policy Surprises on Banks' Securities Holdings

Dependent variable=	Ln(holdings)$_{bst}$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MPS$_{t-1}$	-0.007***	-0.009***	-0.008***	-0.007***				
	(0.001)	(0.002)	(0.002)	(0.002)				
PMPS$_{t-1}$					0.004	0.009*	0.008***	0.003**
					(0.006)	(0.005)	(0.002)	(0.001)
CBIS$_{t-1}$					-0.016***	-0.023***	-0.021***	-0.014***
					(0.659)	(0.008)	(0.005)	(0.003)
Capital ratio$_{t-1}$	-0.030	-0.008	0.007	0.011	0.031	-0.009	0.009	0.012
	(0.045)	(0.056)	(0.049)	(0.042)	(0.046)	(0.051)	(0.047)	(0.042)
Liquidity ratio$_{t-1}$	0.074***	-0.001	-0.007	-0.005	0.074***	-0.001	-0.007	-0.005
	(0.012)	(0.027)	(0.018)	(0.018)	(0.012)	(0.026)	(0.017)	(0.017)
ROA$_{t-1}$	-0.155	0.122	0.171***	0.138***	-0.155	0.111	0.165***	0.139***
	(0.234)	(0.089)	(0.057)	(0.037)	(0.239)	(0.110)	(0.054)	(0.037)
NPL$_{t-1}$ ratio	0.221**	0.028	0.009	-0.001	0.221*	0.016	0.001	-0.005
	(0.115)	(0.040)	(0.033)	(0.026)	(0.116)	(0.033)	(0.028)	(0.024)
LTA ratio$_{t-1}$	0.052***	0.001	0.014	-0.004	0.052***	-0.183	0.006	-0.007
	(0.009)	(0.020)	(0.019)	(0.015)	(0.009)	(0.321)	(0.016)	(0.014)
Deposit ratio$_{t-1}$	0.002	-0.026	-0.005	-0.004	0.002	-0.024	-0.004	-0.003
	(0.007)	(0.023)	(0.018)	(0.014)	(0.007)	(0.019)	(0.015)	(0.014)
Ln(total assets)$_{t-1}$	-0.101	-0.320	0.299	0.301	-0.101	-0.183	0.115	0.305
	(0.158)	(0.360)	(0.423)	(0.423)	(0.159)	(0.321)	(0.410)	(0.419)
Bank FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Securities FE	No	No	Yes	Yes	No	No	Yes	Yes
Macro controls	No	No	No	Yes	No	No	No	Yes
Obs.	737,150	737,150	737,150	737,150	737,150	737,150	737,150	737,150
Number of securities	60,759	60,759	60,759	60,759	60,759	60,759	60,759	60,759
Number of banks	135	135	135	135	135	135	135	135
adj. R2	0.203	0.262	0.586	0.589	0.203	0.263	0.587	0.589

Notes : This table shows the regression results of a within estimation of equations 1 and 2. The definitions of the variables are summarized in Table 1. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 4: Bank Capitalization, Monetary Policy Surprises and Banks' Securities Holdings

Dependent variable=	Ln(holdings)$_{bst}$	
	(1)	(2)
Well-capitalised$_{t-1}$	0.128	0.142
	(0.165)	(0.159)
PMPS$_{t-1}$ x Well-capitalised$_{t-1}$	-0.004	
	(0.005)	
CBIS$_{t-1}$ x Well-capitalised$_{t-1}$		0.028***
		(0.008)
Banks controls	Yes	Yes
Bank FE	Yes	Yes
Security-time FE	Yes	Yes
Obs.	376,666	376,666
Number of securities	19,976	19,976
Number of banks	135	135
adj. R2	0.471	0.471

Notes : This table shows the regression results of a within estimation of equations 3 and 4. The definitions of the variables are summarized in Table 1. The variable *Well-capitalized* is a dummy that takes the value 1 whether the bank capital ratio belongs to the last quartile of the distribution and 0 otherwise. All regressions include bank controls, bank FE and security-time FE. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at security and bank level and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 5: Bank Capitalization, Monetary Policy Surprises and Banks' risk taking

Dependent variable =	Ln(holdings)$_{sbt}$					
S =	High yield	NBFI	Speculative grade	High yield	NBFI	Speculative grade
	(1)	(2)	(3)	(4)	(5)	(6)
Well-capitalized$_{t-1}$	-0.010	-0.029	-0.069	-0.001	-0.012	-0.044
	(0.152)	(0.155)	(0.158)	(0.152)	(0.156)	(0.156)
PMPS$_{t-1}$ x Well-capitalized$_{t-1}$	0.002	-0.001	0.001			
	(0.004)	(0.004)	(0.003)			
PMPS$_{t-1}$ x Well-capitalized$_{t-1}$ x S$_{t-1}$	-0.058***	-0.019**	-0.028**			
	(0.022)	(0.009)	(0.013)			
Well-capitalized$_{t-1}$ x S$_{t-1}$	0.839***	0.749***	0.627***	0.821***	0.754***	0.632***
	(0.154)	(0.115)	(0.155)	(0.148)	(0.115)	(0.152)
CBIS$_{t-1}$ x Well-capitalized$_{t-1}$				0.013**	0.025***	0.019***
				(0.006)	(0.007)	(0.006)
CBIS$_{t-1}$ x Well-capitalized$_{t-1}$ x S$_{t-1}$				0.022***	0.026**	0.042**
				(0.008)	(0.011)	(0.012)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Security-time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	376,666	376,666	376,666	376,666	376,666	376,666
Number of securities	19,976	19,976	19,976	19,976	19,976	19,976
Number of banks	135	135	135	135	135	135
adj. R2	0.472	0.472	0.472	0.473	0.473	0.473

Notes : This table shows the regression results of a within estimation of equations 5 and 6 for three different variables that capture banks' risk taking. The definitions of the variables are summarized in Table 1. The variable *Well-capitalized* is a dummy that takes the value 1 whether the bank capital ratio belongs to the last quartile of the distribution and 0 otherwise. *High yield* is a dummy that takes the value 1 whether the bond' yield to maturity belongs to the last quartile of the distribution and 0 otherwise. *NBFI* is a dummy that takes the value 1 whether the issuer of the bond is a NBFI and 0 otherwise. *Speculative grade* is a dummy that takes the value 1 whether the rating of the bond is speculative grade and 0 otherwise. All regressions include bank controls, bank FE and security-time FE. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at security and bank level and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 6: Interest Rate Risk Management

Dependent variable =	Ln(holdings)$_{sbt}$			
S_{t-1} =	Long maturity	Long duration	Long maturity	Long duration
	(1)	(2)	(3)	(4)
Well-capitalized$_{t-1}$	0.314**	0.323*	0.324*	0.329**
	(0.159)	(0.165)	(0.165)	(0.163)
PMPS$_{t-1}$ x Well-capitalized$_{t-1}$	-0.006	-0.006		
	(0.005)	(0.005)		
PMPS$_{t-1}$ x Well-capitalized$_{t-1}$ x S$_{t-1}$	0.008	0.011		
	(0.022)	(0.009)		
Well-capitalized$_{t-1}$ x S$_{t-1}$	-0.969***	-0.949***	-0.949***	-0.968***
	(0.262)	(0.268)	(0.268)	(0.260)
CBIS$_{t-1}$ x Well-capitalized$_{t-1}$			0.033***	0.034***
			(0.009)	(0.009)
CBIS$_{t-1}$ x Well-capitalized$_{t-1}$ x S$_{t-1}$			-0.031***	-0.030***
			(0.010)	(0.011)
Bank controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Security-time FE	Yes	Yes	Yes	Yes
Obs.	376,666	376,666	376,666	376,666
Number of securities	19,976	19,976	19,976	19,976
Number of banks	135	135	135	135
adj. R2	0.472	0.472	0.474	0.474

Notes : This table shows the regression results of a within estimation of equations 5 and 6. The definitions of the variables are summarized in Table 1. *Long maturity* is a dummy that takes the value 1 whether the residual maturity of the bond belongs to the last quartile of the distribution and 0 otherwise. *Long duration* is a dummy that takes the value 1 whether the duration of the bond belongs to the last quartile of the distribution and 0 otherwise. All regressions include bank controls, bank FE and security-time FE. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at security and bank level and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 7: Robustness checks (1): Alternative Dependent Variable and Bank Deposit

Dependent variable=	Ln(securities)		Ln(holdings)$_{sbt}$	
	(1)	(2)	(3)	(4)
Well-capitalized$_{t-1}$	0.128	0.143		
	(0.156)	(0.159)		
PMPS$_{t-1}$ x Well-capitalized$_{t-1}$	-0.004			
	(0.005)			
CBIS$_{t-1}$ x Well-capitalized$_{t-1}$		0.028***		
		(0.008)		
High deposit$_{t-1}$			-0.185	-0.192
			(0.182)	(0.188)
PMPS$_{t-1}$ x High deposit$_{t-1}$			-0.005	
			(0.004)	
CBIS$_{t-1}$ x High deposit$_{t-1}$				0.027***
				(0.008)
Banks controls	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Security-time FE	Yes	Yes	Yes	Yes
Obs.	376,666	376,666	376,666	376,666
Number of securities	19,976	19,976	19,976	19,976
adj. R2	0.471	0.471	0.471	0.471

Notes : This table shows the regression results of a within estimation of equations 3 and 4. The definitions of the variables are summarized in Table 1. In column (1) and (2) the dependent variable is the log of the number of securities at the ISIN level, while in column (3) and (4) it is the log of the oustanding amount of securities at the ISIN level. *High deposit* is a dummy that takes the value 1 whether the bank deposit ratio belongs to the last quartile of the distribution and 0 otherwise. All regressions include bank controls, bank FE and security-time FE. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at security and bank level and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 8: Robustness (2): Bank Deposit, Monetary Policy Surprises and Banks' risk taking

Dependent variable =	Ln(holdings)$_{bst}$					
S =	High yield	NBFI	Speculative grade	High yield	NBFI	Speculative grade
	(1)	(2)	(3)	(4)	(5)	(6)
High deposit$_{t-1}$	-0.310	-0.350	-0.276	-0.310	-0.357	-0.284
	(0.304)	(0.334)	(0.295)	(0.336)	(0.362)	(0.302)
PMPS$_{t-1}$ x Hight deposit$_{t-1}$	0.002	-0.001	0.001			
	(0.004)	(0.004)	(0.003)			
PMPS$_{t-1}$ x High deposit$_{t-1}$ x S$_{t-1}$	-0.047***	-0.017**	-0.022*			
	(0.022)	(0.009)	(0.013)			
High deposit$_{t-1}$ x S$_{t-1}$	0.770***	0.725***	0.563***	0.705***	0.727***	0.558***
	(0.179)	(0.112)	(0.174)	(0.182)	(0.110)	(0.169)
CBIS$_{t-1}$ x High deposit$_{t-1}$				0.012*	0.023***	0.019***
				(0.007)	(0.007)	(0.006)
CBIS$_{t-1}$ x High deposit$_{t-1}$ x S$_{t-1}$				0.030***	0.027***	0.039***
				(0.008)	(0.009)	(0.011)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Security-time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	376,666	376,666	376,666	376,666	376,666	376,666
Number of securities	19,976	19,976	19,976	19,976	19,976	19,976
Number of banks	135	135	135	135	135	135
adj. R2	0.472	0.472	0.472	0.473	0.473	0.473

Notes : This table shows the regression results of a within estimation of equations 5 and 6 for three different variables that capture banks' risk taking. The definitions of the variables are summarized in Table 1. The variable *High deposit* is a dummy that takes the value 1 whether the bank deposit ratio belongs to the last quartile of the distribution and 0 otherwise. *High yield* is a dummy that takes the value 1 whether the bond' yield to maturity belongs to the last quartile of the distribution and 0 otherwise. *NBFI* is a dummy that takes the value 1 whether the issuer of the bond is a NBFI and 0 otherwise. *Speculative grade* is a dummy that takes the value 1 whether the rating of the bond is speculative grade and 0 otherwise. All regressions include bank controls, bank FE and security-time FE. The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at security and bank level and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.