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► **To cite this version:**

Sophie Brana, Quentin Bro de Comères, Anne-Gaël Vaubourg. How Do Analyst Recommendations on Banks Respond to Monetary Policy News? An Application to the Eurozone. *Applied Economics*, 2025, 57 (56), pp.9573-9590. <10.1080/00036846.2024.2422110>. <hal-04986898>

HAL Id: hal-04986898

<https://hal.science/hal-04986898v1>

Submitted on 11 Mar 2025

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How Do Analyst Recommendations on Banks Respond to Monetary Policy News? An Application to the Eurozone

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FUNDING: This work has received the financial support of Région Nouvelle-Aquitaine, France (AAPR2020-2019-8316410).

DECLARATIONS OF INTEREST: none.

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How Do Analyst Recommendations on Banks Respond to Monetary Policy News? An Application to the Eurozone

Abstract

We assess the extent to which stock analysts consider European Central Bank monetary policy decisions when formulating their investment recommendations on European banks from 2002 to 2020. To identify monetary policy shocks, we extract monetary policy factors from high-frequency rate movements surrounding monetary policy announcements. Our findings indicate that stock analysts are more concerned with nonstandard (or unconventional) monetary policy measures than standard policy measures. We also demonstrate that analysts interpret restrictive (accommodative) monetary surprises as positive (negative) news for bank financial health, particularly during periods characterised by high levels of financial uncertainty. Lastly, we emphasize that the reaction of stock recommendations to rate- and forward guidance-related decisions is primarily influenced by the implicit disclosure of information on the economic outlook by the ECB along its monetary policy decision.

Keywords: European Central Bank, Monetary Policy, Stock Analysts, Signaling Channel, Local Projections

JEL: E44, E52, G22, G24

1. Introduction

Stock analysts play a crucial role in financial markets by providing buying or selling recommendations for equities. Extensive research focused on industrial firms has highlighted that analysts mitigate information asymmetries between issuers and investors, consequently reducing the cost of external finance and improving investment (Derrien and Kecskés, 2013; Doukas et al., 2008). However, while generating financial information on banks can be advantageous for market discipline and stability within the banking sector, there is limited research dedicated to analysts' forecasts or recommendations specifically on banks.

The generation of information regarding banks becomes even more crucial owing to the inherent opacity of these institutions (Morgan, 2002; Iannotta, 2006; Jones et al., 2012; Morgan et al., 2014). The complexity of transactions in financial markets and the confidential nature of information held by banks regarding credit granting processes make it challenging to assess the value of their assets. In such a context, the coverage of banks, which refers to the number of analysts actively monitoring a particular bank, proves to be highly advantageous in terms of enhancing informational transparency (Fosu et al., 2017).

Our paper bridges a gap between two previously separate strands of literature by examining stock analysts' recommendations on banks. First, prior research has demonstrated that stock analysts consider macroeconomic news (e.g., economic growth, inflation, or unemployment) in addition to the firm- and industry-level information in their analytical process (Bradshaw, 2012; Hugon et al., 2016; Kadan et al., 2012). Second, despite the significant impact of monetary policy decisions on banks in terms of profitability and risk-taking behavior (Brissimis and Delis, 2010; Lambert and Ueda, 2014; Alessandri and Nelson, 2015; Borio et al., 2017; Claessens

et al., 2018; Altavilla et al., 2018), no previous work has explored how stock analysts incorporate monetary policy decisions into their disclosures.

Conversely, the existing literature exploring the reception of information released by central banks, largely overlooks the involvement of stock analysts. Some studies measure monetary uncertainty, as perceived by financial markets, using implied and realized volatility of short-term interest rates (Swanson, 2006; Bauer et al., 2006). Other studies utilize textual analysis to assess the stance and tone of monetary policy (Picault and Renault, 2017; Bennani and Neuenkirch, 2017), as well as the clarity of the information disseminated (Ferrara and Angino, 2022). However, these studies primarily focus on the perceptions of investors, the general public, and the media without considering the role of stock analysts.

This article aims to address these gaps by examining whether stock analysts include European Central Bank (ECB) monetary policy decisions in their investment recommendations for European banks. We first investigate to what extent analysts are sensitive to the standard or nonstandard dimension of ECB monetary measures. We also assess whether analysts interpret accommodative decisions as favorable or unfavorable to bank valuation. Finally, we analyze whether the reaction of analysts is driven by the direct impact of monetary policy announcements on banks or by the information conveyed through ECB decisions concerning expected future economic conditions.

Understanding whether stock analysts consider the impact of monetary policy on financial institutions is not only relevant for investors but also important from the perspective of central bankers. Identifying how monetary decisions are interpreted by stock analysts is crucial, as the information they generate plays a vital role in driving market discipline and shaping financial conditions within the banking sector.

To assess the impact of monetary policy announcements on stock recommendations,

we employ local projections (Jordà, 2005), considering a horizon of 120 business days. Our analysis covers a sample of 148 banks across 17 Euro Area countries from 2002 to 2020. To capture the anticipatory nature of these announcements, we utilize high-frequency interest rate surprises surrounding monetary policy meetings obtained from the EA MPD developed by Altavilla et al. (2019). These surprises are summarized into monetary policy factors. However, these factors do not represent “pure” monetary policy shocks (e.g., Miranda-Agrippino and Ricco, 2021) as central banks and economic agents do not benefit from the same information sets. As such, a monetary policy decision may also reveal part of a central bank’s information set, leading to what is known as an information shock (Melosi, 2016; Nakamura and Steinsson, 2018; Andrade and Ferroni, 2021), in line with the information channel of monetary policy. To distinguish between “pure” monetary policy and information shocks, we follow the approach of Campbell et al. (2012), Jarociński and Karadi (2020), or Andrade and Ferroni (2021), by decomposing our factors into two components. Additionally, we consider nonlinearities in the response of stock analysts to both the transmission of monetary policy and the consideration of macroeconomic news by accounting for the level of financial uncertainty.

Our findings reveal that stock analysts show a stronger consideration for non-standard decisions compared to standard decisions when formulating their stock recommendations on banks. This is evidenced by the fact that stock recommendations respond only to innovations in the *forward guidance* and *quantitative easing* factors, with a muted response to *policy rate* innovations. Additionally, we observe a differentiated response of stock recommendations based on the level of financial uncertainty surrounding banks. During periods of heightened financial uncertainty, stock analysts incorporate ECB monetary policy surprises more significantly in their recommendations. Importantly, when extracting the information component from

all factors, we find that this response is driven by the perceived view of the ECB regarding the near-to-medium-term economic outlook rather than the direct impact of the monetary policy measure on bank valuation and profitability. Thus, stock analysts place greater value on the insights provided by ECB monetary policy decisions about the expected trajectory of the economic environment for banks rather than focusing solely on the immediate consequences of the policy decisions themselves.

Section 2 reviews the relevant literature and presents our shock identification framework. Section 3 introduces the variables of interest in our analysis. Section 4 outlines our empirical local projections framework, and Section 5 presents the main results of our study. In Section 6, we present robustness tests and conclude in Section 7.

2. Literature Review

2.1. Monetary Policy, Bank Profitability and Risk-Taking Behavior

The literature examining the relationship between the impact of monetary policy on bank profitability and risk-taking behavior typically assesses conventional monetary policy measures through interest rate levels, while unconventional measures are evaluated based on the yield curve slope (Brissimis and Delis, 2010; Jiménez et al., 2014; Lambert and Ueda, 2014; Altavilla et al., 2018).¹

The first component of bank profitability is the net interest margin (NIM). This margin decreases when policy rates drop because the interest rates banks receive on loans fall more quickly than those they pay on deposits. However, the demand for

¹ Beyond the abundant literature that deals with the effect of unconventional monetary decisions on bond yield (Hanisch, 2017; Fausch and Sigonius, 2018), many papers also address the impact of such policies on stock markets (d’Amico et al., 2012; Gilchrist et al., 2015), commodity markets (Hammoudeh et al., 2015) and exchange rates (Glick and Leduc, 2012; Neely, 2015). For an exhaustive review of these works, see Papadamou et al. (2020).

loans may increase more rapidly than the demand for deposits, potentially leading to a rise in the volume of loans and partially offsetting the decrease in NIM. The second component of bank profitability is non-interest income (NII). First, a reduction in interest rates increases the value of assets held in bank portfolios, thereby improving profitability. Second, lower interest rates or a flattened yield curve may encourage market participants to seek higher yields and request additional financial management services from banks, resulting in increased income from fees and commissions.

Finally, monetary policy decisions influence banks' risk-taking behavior, which in turn affects the level of loan provisions. Although a decrease in interest rates or a flattened yield curve lowers interest payments and the probability of default on existing loans, it can also prompt banks to engage in riskier practices when extending new credit ([Delis et al., 2017](#)).² However, if the volume of existing loans exceeds the flow of new loans, an expansionary monetary policy stance can reduce loan provisions, thereby enhancing bank profitability. Overall, the net effect of monetary policy decisions on bank profitability is ambiguous.

Regarding empirical studies, a series of papers have found that a lower (higher) level of interest rates or yield curve slope tends to have a negative (positive) effect on bank profitability ([Alessandri and Nelson, 2015](#); [Borio et al., 2017](#); [López-Penabad et al., 2022](#)). However, other studies have suggested that banks counterbalance the adverse effects of low or negative interest rates on their NIM by increasing other components of profitability ([Scheiber et al., 2016](#); [Claessens et al., 2018](#); [Bikker and Vervliet, 2018](#)).

² Risk-taking consecutively to unconventional monetary policy announcements is also observed on equity and currency markets ([Fassas and Papadamou, 2018](#); [Fassas et al., 2021](#)).

2.2. Nonlinear Effects of Monetary Policy

Another strand of literature focuses on the nonlinear effects of monetary policy. Firstly, as [Borio et al. \(2017\)](#) emphasized, the relationship between monetary policy and bank profitability may exhibit nonlinearities. [Altavilla et al. \(2018\)](#) demonstrated that the positive relationship between interest rates (or the slope of the yield curve) and bank return on assets (ROA) is amplified when interest rates are low, and the yield curve is flatter for banks in developed countries. Similarly, [Claessens et al. \(2018\)](#) found, based on a sample of 3,385 banks from 47 countries between 2005 and 2013, that a one percentage point decrease in interest rates leads to an 8 basis point (bp) decline in NIM, with a greater effect of 20 bps observed for lower rates. Nonlinearity is also evident in the response of bank stocks to monetary policy. [Chen et al. \(2022\)](#) demonstrated that while monetary easing surprises typically elicit a positive reaction in bank stock prices, they generate a negative response during periods of prolonged low interest rates, particularly for banks that rely more on domestic deposits. Nonlinear effects are also observed in unconventional monetary policy measures, which have been shown to harm bank performance beyond a certain threshold value ([Mamatzakis and Bermpei, 2016](#)).

In a broader sense, the effects of monetary policy on macroeconomic variables such as GDP growth, inflation, and credit differ depending on the state of the economy in the business cycle and or the level of uncertainty ([Lewis and Roth, 2019](#); [Avdjiev and Zeng, 2014](#)). Unconventional monetary policy measures have been found to be more effective in high uncertainty periods given that the segmentation of markets is more pronounced ([Dell’Ariccia et al., 2018](#)). In the U.S., [Dahlhaus \(2017\)](#) indicated that a monetary expansion during financial crises exerts stronger and more persistent effects on output, consumption, and investment, compared to stable times. [Janssen et al. \(2019\)](#) also demonstrated that monetary policy has particularly large and rapid

impacts on output, inflation, credit, stock prices, and uncertainty during financial crises in advanced economies.

3. Data

3.1. *Stock Analyst Recommendations*

The dependent variable is the continuous mean consensus of stock analyst recommendations, which is computed as the arithmetic average of a standard set of analyst recommendations on each bank, extracted from Thomson Financial’s Institutional Brokers Estimate (I/B/E/S) on a daily basis.³

Our sample covers 148 banks from 17 Euro Area countries.⁴

3.2. *Monetary Policy Factors*

Our study identifies monetary policy shocks by examining high-frequency factors surrounding ECB monetary policy meetings.

Monetary policy factors summarize the effects of monetary policy measures by capturing the unexpected (“surprise”) component of the high-frequency reaction of various rates and assets around monetary policy announcements among different maturities. These factors are obtained from surprises extracted from an event-study around such announcements. The underlying identifying assumption is that monetary policy does not respond to intraday asset price changes. Consequently, causality goes from monetary policy to asset prices only. The advantage of considering market surprises surrounding monetary policy announcements is that it safeguards against

³ To ensure a consistent evaluation across contributors to the consensus, all stock recommendations are mapped to a standardised scale provided by I/B/E/S. The scale goes from 1 to 5 with 1 = *Strong buy*, 2 = *Buy*, 3 = *Hold*, 4 = *Sell*, 5 = *Strong sell*.

⁴ Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Latvia, the Netherlands, Portugal, Slovak Republic, Slovenia, Spain.

contamination from other events, ensuring that the market's reaction remains isolated and unaffected.

We retrieve such surprises from the EA MPD of [Altavilla et al. \(2019\)](#). Following [Brand et al. \(2010\)](#), they exploited the fact that the ECB communication procedure (the decision and its explanation) proceeds in two steps, that is, in two separate points of time within meetings days. First, at 13:45 (local time), the ECB releases a short note about the evolution of the MRO, the Marginal Lending Facility and the Deposit Facility rates, denoted the press release.⁵ Since June 2016, the ECB has started introducing additional elements related to nonstandard measures in its statement, notably quantitative easing and refinancing operations, as well as forward guidance since July 2016. Second, the press conference begins at 14:30 (local time), in which the measures adopted are commented on by the president of the ECB, who proceeds with the reading of the introductory statement that contains reasons underlying choices of the present of future behavior of the ECB and its views on the economic outlook.⁶ Its structure is the following. First, it includes a summary of the monetary policy decision, as well as forward guidance since July 2013, then a discussion of real and monetary developments in the Euro Area, and a conclusion with considerations on fiscal policies and structural reforms. This part is followed by a 45-minute questions and answers (Q&A) session. Consequently, the EA MPD includes three event-study windows, displayed in [Figure 1](#).

- The press release window, which reports the difference of the median rate levels between the 14:00-14:10 and 13:25-13:35 windows;
- The press conference window, which reports the difference of the median rate

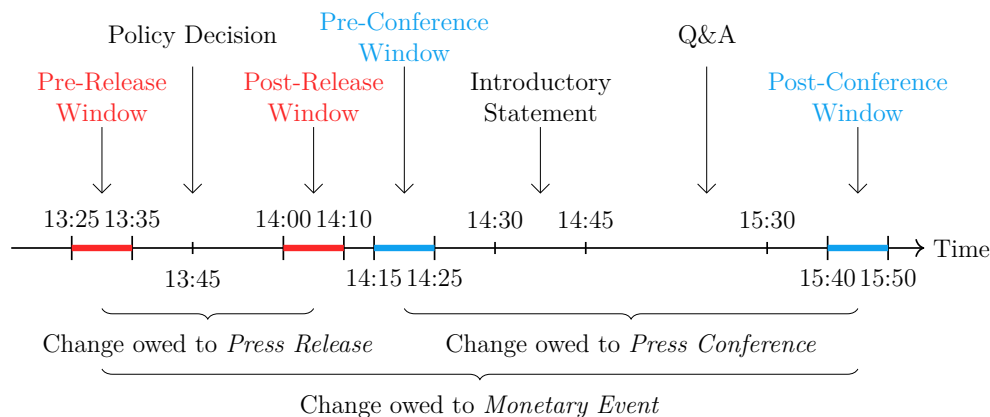
⁵ <https://www.ecb.europa.eu/press/govcdec/mopo/html/index.en.html>.

⁶ <https://www.ecb.europa.eu/press/pressconf/html/index.en.html>.

levels between the 15:40-15:50 and 14:15-14:25 windows;

- The monetary event window, which reports the difference of the median rate levels between the 15:40-15:50 and 13:25-13:35 windows.

Figure 1: Monetary Event Windows Set-Up (from [Altavilla et al., 2019](#))
ECB Communication Timeline



The surprise component is extracted from the intraday variation of OIS rates at different maturities, sovereign yields for France, Germany, Italy and Spain, the Euro Stoxx 50 (Stoxx50) and SX7E, and EUR:USD, EUR:GDP, and EUR:JPY exchange rates around both events (press release and press conference windows) as well as around the full event window (monetary event). In this article, for each window, we depart from a base matrix of OIS rate surprises with 1-, 3-, 6-month, 1-, 2-, 5- and 10-year maturities. As such, our base matrix is of dimensions 202×7 , 202 monetary policy meetings and seven rate maturities for all three windows.⁷

The rationale leading to extract multiple factors is that more than one dimension is required to adequately reflect monetary policy meetings ([Gürkaynak et al., 2005](#)).

⁷ Given the noise in OIS data before 2002, we initially restrict our analysis to January 2002 onwards.

To identify how many factors are necessary to adequately describe our base matrix, a Cragg and Donald (Cragg and Donald, 1997) rank test is performed. Results indicate two factors are relevant for the press release window and three for the press conference and monetary event windows, similar to Altavilla et al. (2019) and Baumgärtner (2022).

Then, we extract these factors by performing a singular value decomposition on our base matrix, followed by a factor rotation to make factors economically meaningful. The detailed procedure is explained in the online appendix. We follow the methodology of Altavilla et al. (2019) and Baumgärtner (2022).

Regarding the press release window, first, we extract a *target* factor, linked to the level of the interest rate set by the ECB. As such, that factor loads primarily on short-term rates. Second, we extract a *quantitative easing* factor, linked to the introduction of an assessment related to nonstandard measures by the ECB in its monetary statement since 2016.⁸ The latter therefore has more impact on long-term rates. From the press conference window, we extract a *timing* factor, which captures the shifts in market expectations over short-to-medium term rates while letting long-term rates remain essentially unchanged, and a *path* factor (forward guidance), which accounts for revisions in market expectations about the future path of policy rates. As such, both factors load primarily on medium-term (two-year) rate maturities. Additionally, similar to the press release window, we extract a *quantitative easing* factor. Finally, we extract a *target*, a *path* and a *quantitative easing* factor from the monetary event window.

Our extracted factors are scaled to be positively correlated with the rates surprises

⁸ Alternatively, the *target* factor reflects standard monetary policy measures and the *quantitative easing*, nonstandard ones.

they are extracted from so that a positive contribution can be interpreted as expressing a *restrictive* (or *negative*) monetary surprise.⁹ Additionally, factors are centered to zero mean and unit standard deviation to harmonize the magnitude of shocks.

3.3. Controls

To mitigate the influence of confounding factors, we incorporate several daily controls in our regressions, including stock prices, the 10-year sovereign bond yield for each country, and the VIX and VSTOXX. These variables are sourced from LSEG Eikon.

To address nonlinearities in the transmission of monetary policy and the incorporation of information by stock analysts, we employ a two-state model. This model allows for differential responses of stock recommendations to a monetary policy shock based on the level of financial uncertainty. In addition to its effects on monetary policy transmission, financial uncertainty, reflected in higher implied market volatility, is likely to impact the information-gathering process of stock analysts, given that they are faced with heightened uncertainty about the banks they cover.

First, we proxy financial uncertainty the VIX and VSTOXX. Both measure thirty-day option-implied volatility in the S&P 500 and Stoxx50, respectively. While [Baker et al. \(2016\)](#) highlighted these indices reflect uncertainty about equity returns more than economic uncertainty *per se*, this remains consistent in our case given that we focus on stock recommendations, that are precisely linked to expected returns of selected stocks. Second, we account for financial and macroeconomic uncertainty with the monthly measures computed by [Jurado et al. \(2015\)](#) and [Ludvigson et al. \(2021\)](#) as the one-month ahead common volatility in the unforecastable component

⁹ This may either reflect the response to a restrictive announcement, or the “disappointment” following a loosening one that is less accommodative than expected.

of a large number of economic indicators. The macroeconomic index is based on 134 time series, mostly macroeconomic. The financial index relies on 148 financial markets time series, among which valuation ratios, corporate and U.S. Treasury bond yields, and aggregate dividends and prices.¹⁰

The summary statistics are presented in Table 1. In cases where applicable, data are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers.

Insert Table 1 Here

4. Empirical Framework

We rely on the local projections framework introduced by Jordà (2005). The underlying assumption is that while monetary policy announcements may influence the decision-making process of stock analysts regarding European banks, the reverse scenario is unlikely. We estimate cumulative local projections displayed in Equation (1).

$$\Delta y_{i,t+h} = \alpha_i^h + \beta^h s_t + \sum_{j=1}^J \psi_j^h L^{j-1} y_{i,t-1} + \varepsilon_{i,t}^h, \quad (1)$$

Where $\Delta y_{i,t+h} = y_{i,t+h} - y_{i,t-1}$, which denotes the deviation of the consensus of stock recommendations $y_{i,t}$ for bank $i \in \llbracket 1, 148 \rrbracket$ at time t from its pre-shock path on monetary policy meetings days to an increasingly distant time horizon h . s_t is a monetary policy factor, as defined in Section 3. Coefficient β^h is the cumulative response of variable y_i to the shock s at time t at an increasingly distant horizon $h \in \llbracket 1, h_{max} \rrbracket$ with h_{max} set to 120 business days. The dependent variable has been found stationary by a panel Dickey-Fuller unit-root test augmented with four

¹⁰ Replacing the VIX by the VSTOXX, and the financial uncertainty measure by the macroeconomic one did not change the results. When considering two-state models augmented with controls, the VIX (VSTOXX) is removed from the controls.

lags (ADF(4)). $\sum_{j=1}^J \psi_j^h L^j y_{i,t-1}$ is a polynomial in the lag operator associated to coefficients ψ_j^h , introduced to account for serial correlation in the error term, with J set to 4. This way, we account for four lags in addition to the contemporaneous value, which reflect the five business days of the week. The number of lags is fixed once and for all time-horizons, as recommended by [Brugnolini \(2018\)](#). α_i^h captures structural differences among banks. Given that the residuals are serially correlated, standard errors are clustered by country rather than by bank as monetary policy applies at the Euro Area-wide level rather than at the bank level.

Impulse responses functions (IRFs) are constructed as the response of the variable of interest $\Delta y_{i,t+h}$ to a reduced-form disturbance s on day t , obtained from coefficient β^h and conditional on the lag history of the dependent variable. Even though monetary policy factors are obtained from high-frequency surprises and, therefore, should be immune to the incidence of confounding events, in further analysis, we include vectors of contemporaneous and lagged control variables $x_{i,t}$ and $z_{i,t-1}$ in the baseline equation to account for stock analyst recommendations responding to an exogenous event affecting the banks they cover. We estimate Equation (2).

$$\Delta y_{i,t+h} = \alpha_i^h + \beta^h s_t + \sum_{j=1}^J \psi_j^h L^{j-1} y_{i,t-1} + \sum_{j=1}^J \varphi_j^h L^{j-1} z_{i,t-1} + \sum_{j=1}^{J+1} \gamma_j^h L^{j-1} x_{i,t} + \varepsilon_{i,t}^h. \quad (2)$$

We select the VIX and the 10-year sovereign bond yield (in $x_{i,t}$) as well as stock prices (in $z_{i,t}$)¹¹ as control variables to get daily controls related to the situation of the bank of its country of headquarters and of the global (Euro Area) environment. Variables have all been found stationary by a panel ADF(4) test.

¹¹ The contemporaneous value of stock prices is not included to account for a potential reverse causality bias.

Lastly, to incorporate the state-dependent nature of monetary policy transmission and the information-gathering process of stock analysts, we adopt the approach of [Born et al. \(2020\)](#) and estimate smooth transition local projections in Equation (3), wherein the slope of the cumulative response is empirically derived from Equation (4).

$$\Delta y_{i,t+h} = F(\iota_t)(\alpha_{i,high}^h + \beta_{high}^h s_t + \sum_{j=1}^J \psi_{high,j}^h L^{j-1} y_{i,t-1}) \quad (3)$$

$$+ [1 - F(\iota_t)](\alpha_{i,low}^h + \beta_{low}^h s_t + \sum_{j=1}^J \psi_{low,j}^h L^{j-1} y_{i,t-1}) + \varepsilon_{i,t}^h,$$

$$\left. \frac{\partial \Delta y_{i,t+h}}{\partial s_t} \right|_{\iota_t} = F(\iota_t) \times \beta_{high}^h + [1 - F(\iota_t)] \times \beta_{low}^h. \quad (4)$$

All coefficients are allowed to be state-dependent as bank-fixed effects are likely to also be affected. F denotes the transition function relative to a variable ι relevant to describe the state of the economy at time t , in our case, the VIX and the financial uncertainty measure of [Ludvigson et al. \(2021\)](#) (ι_t). β_{high} and β_{low} are coefficients linked to high and low financial uncertainty periods, respectively. We specify our transition function on the basis of the empirical cumulative density function in our sample to avoid postulating a parametric distribution function. The function is computed as $F(\iota_t) = \frac{1}{N} \sum_{j=1}^N I_{\iota_j \leq \iota_t}$, where N is the number of observations in the sample and I an indicator variable. Estimations are performed over the 2002–2020 time span. Both transitions variables are plotted in [Figure 2](#) and [Figure 3](#), with shaded areas corresponding to the state of high financial uncertainty—when the empirical cumulative distribution function of the variable is above 0.5.

Insert Figures 2 and 3 Here

5. Results

5.1. Baseline Results

IRFs are derived from the estimated coefficient $\hat{\beta}^h$ in Equation (1) with 95% confidence bands. The solid lines depict the response of stock recommendations for 148 European banks to a one-standard-deviation change in the unanticipated component of monetary policy announcements on meeting days ($\hat{\beta}^h$) at increasing time horizons $h \in \llbracket 1, 120 \rrbracket$ business days. Given the construction of the stock recommendations variable, a positive response reflects a revision of recommendations towards *Sell* categories, that is, a negative reaction, and *vice versa*.

The responses of stock recommendations to factors extracted from the press release window, namely *target* and *quantitative easing*, are found to be statistically insignificant in both cases. This indicates that, overall, the unexpected components of the press release window do not significantly influence the decision-making process of stock analysts.

Regarding factors derived from the press conference window (Figure 4), it is observed that stock recommendations do not exhibit any response to *timing* (rate expectations) and *path* (forward guidance) innovations. When considering the *quantitative easing* factor (right-hand side panel), following a one-standard-deviation negative surprise in *quantitative easing*, there is a persistent trend of stock analysts revising their recommendations downward (towards *Buy* categories) after a period of ten business days. Consequently, they interpret negative monetary easing decisions, such as the announcement of the end of a monetary easing program or a reduction in the amount of purchased assets, as positive news for banks and their valuation. This response can be attributed to the documented adverse effects of monetary easing measures on banks' profitability and risk-taking behavior, as highlighted in

the literature (Genay and Podjasek, 2014; Alessandri and Nelson, 2015; Borio et al., 2017; López-Penabad et al., 2022).

Insert Figure 4 Here

Turning to the monetary event window (Figure 5), the response of stock recommendations to the *target* factor is not significant. However, the results for the *quantitative easing* factors align with those of the press conference window. In addition, stock recommendations undergo an upward revision (towards *Sell* categories) in response to a one-standard-deviation innovation in the *path* factor after 5 business days. After 60 business days, there is a persistent downward revision, which is consistent with the findings observed for *quantitative easing* factors.

Insert Figure 5 Here

Finally, Figure 6 displays results for the two-state regressions of Equation (3) for the *path* factor of the press conference window, considering the VIX (left-hand side panel) and financial uncertainty (right-hand side panel) as a transition variable. Stock recommendations react upward (downward) to a negative *path* surprise in low (high) financial uncertainty periods after a substantial lag. Therefore, we highlight differentiated effects with regard to the level of financial uncertainty. Stock analysts appear to consider monetary policy in both states, with an opposite reaction to forward guidance announcements.

Insert Figure 6 Here

Similarly, results for the *quantitative easing* factor of the press conference window are presented in Figure 7, with the VIX (left-hand side panel) and financial uncertainty

(right-hand side panel) as a transition variable. Again, we find that the downward reaction to monetary policy surprises is stronger in high financial uncertainty periods, while the effect is mostly muted in low uncertainty ones. These results echo the findings of [Jannsen et al. \(2019\)](#) on stock prices.

Insert Figure 7 Here

Overall, our findings indicate that stock analysts primarily respond to *path* (forward guidance) and *quantitative easing* factors, suggesting a greater concern for nonstandard monetary policy measures rather than standard ones. This observation may be attributed, in part, to the prevalence of a low-for-long rate environment during our study period. These results align with the findings of [Fiordelisi et al. \(2014\)](#) regarding stock prices, which they found react more to nonstandard measures than to standard ones.

Furthermore, stock analysts interpret negative (positive) surprises in monetary policy measures as positive (negative) news for banks. This reflects findings of [Genay and Podjasek \(2014\)](#), [Alessandri and Nelson \(2015\)](#), [Borio et al. \(2017\)](#) or [López-Penabad et al. \(2022\)](#), highlighting the adverse effects of accommodative measures on the financial health of banks, especially when prolonged over an extended period. Moreover, the favorable (unfavorable) reaction of analysts to restrictive (accommodative) monetary policy surprises is stronger when the level of uncertainty is high, e.g., when the economic and financial environment is particularly difficult to interpret and predict. This suggests a possible interpretation related to the signaling effect of the central bank's view on the economic environment (e.g., [Campbell et al., 2012](#); [Nakamura and Steinsson, 2018](#)). In this regard, in the case of negative (positive) surprises, stock analysts might interpret the measure as reflecting the ECB's positive (negative) outlook on the near-term economic conditions. Consequently, analysts

would respond to this information rather than solely focusing on the monetary policy measure itself and its potential impact on the valuation of banks. In the remainder, we differentiate between these two interpretations.

5.2. *Information Shocks*

In this section, we address the assumption that factors derived from monetary policy surprises are equivalent to pure monetary policy shocks. We acknowledge that such surprises are contaminated by confounding factors, as discussed by [Jarociński and Karadi \(2020\)](#) or [Miranda-Agrippino and Ricco \(2021\)](#). Specifically, we depart from the postulate that central banks possess greater information-processing capabilities compared to private forecasters and market agents, as argued by [Romer and Romer \(2000\)](#) or [Melosi \(2016\)](#). Consequently, monetary policy actions can convey information about economic fundamentals from central banks to market agents, leading to revisions in their expectations. This phenomenon is known as the signaling channel of monetary policy, or the central bank information effect ([Campbell et al., 2012](#); [Melosi, 2016](#)).

In a preliminary analysis, available from the authors upon request, we found that the factors extracted in Section 3.2 are correlated to the information set of the ECB.¹² However, they exhibit much lower predictability when considering information already made available to the markets, such as the information sets of the private sector represented by the Survey of Professional Forecasters and various macroeconomic indicators.¹³ These findings align with the conclusions drawn by [Altavilla et al. \(2019\)](#), [Andrade and Ferroni \(2021\)](#), and [Miranda-Agrippino and Nenova \(2022\)](#), thereby confirming the presence of information shocks in ECB monetary policy

¹² Proxied by macroeconomic projections and their revision following [Miranda-Agrippino and Ricco \(2021\)](#) and real-time data.

¹³ In that, we follow [Bauer and Swanson \(2022\)](#) and [Andrade and Ferroni \(2021\)](#).

announcements.

Consequently, we disaggregate our factors to estimate “pure” monetary policy and information shocks *ex post*. We begin with reproducing the methodology of [Jarociński and Karadi \(2020\)](#) and exploit comovements between short-term interest rates and stock prices in the EA MPD to extract two factors. The first reflects monetary policy shocks *per se* (*monetary policy* factor) and is associated with opposite movements between interest rates and stock prices, as expected by standard monetary policy theory. The second one implies comovements in rates and stock prices, which is interpreted as the central bank revealing private information about current and future demand conditions and tightening its policy to counter their impact on the economy (*central bank information*, CBI). The construction of factors is presented in full detail in the online appendix.

Figure 8 displays the response of stock analyst recommendations to such shocks. The reaction is found to be significant only in the case of the CBI factor, indicating that revisions in recommendations are influenced by the information simultaneously disclosed by the central bank regarding its perspective on the economic outlook. This suggests the presence of an information effect. When there is an unexpected monetary tightening, it can be interpreted as a signal that the central bank holds a more optimistic view of the economic outlook than previously anticipated. Consequently, this prompts a positive reaction to the recommendations provided by stock analysts. This implies that stock analysts are particularly concerned about the second-round effects of monetary policy, which are associated with improving the economic outlook. They believe such improvements will enhance bank valuation, making it beneficial for investors to purchase stocks. Furthermore, the lack of reaction to the monetary policy factor indicates that stock analysts had already incorporated the monetary policy decision into their process of revising recommendations before the announcement.

This suggests their ability to anticipate the decision, similar to the expectations formed by stock prices within a rational expectations framework.

Insert Figure 8 Here

However, that specification does not allow distinguishing between different types of monetary policy measures. It notably reflects short-term interest rates surprises as the rotation is performed on a base matrix of 1-month to 1-year OIS rates. Consequently, in further analysis, we separate all factors estimated in Section 3.2 *ex post* by classifying them into monetary policy and information surprises, considering the high-frequency comovements of the 2-year OIS rate and the Stoxx50 price index. We thus extract two types of shocks we label *monetary policy* and *information* from each factor that we orthogonalize. Selected results are displayed in Figure 9. We find that *information* surprises matter principally for the *target* factor of the press release window and the *path* factor of the monetary event one. Similar to the results of Figure 8, the reaction of stock recommendations appears to be mostly driven by information shocks, including for standard measures on the press release window. Consistent with the view that a negative monetary surprise reflects the expectations of the ECB that the economic outlook will improve, stock analysts tend to revise their recommendations persistently downward (toward *Buy* recommendations). On the contrary, the reaction of recommendations to a negative *quantitative easing* surprise is mostly driven by the *monetary policy* factor, which means stock analysts still view monetary easing policies as detrimental to the valuation and profitability of banks, given the influence of such measures on bank profitability and risk-taking behavior (Lambert and Ueda, 2014).

Insert Figure 9 Here

In summary, stock analysts place greater importance on the portion of private information implicitly revealed by the ECB in its monetary policy announcements rather than the monetary policy measure itself.¹⁴ They are more likely to have anticipated the latter, except in the case of quantitative easing decisions. Consequently, in most instances, the reaction of stock recommendations is not solely attributed to the potential direct adverse impact of monetary policy decisions on bank valuation, profitability, and risk-taking behavior. It is also influenced by the expected developments in the near-to-medium-term economic outlook that the ECB implicitly discloses through its monetary policy announcements. These expectations, in turn, have second-round effects on banks. Unsurprisingly, this information effect is particularly prominent for the ECB, as indicated by previous studies ([Jarociński and Karadi, 2020](#); [Miranda-Agrippino and Nenova, 2022](#)). Lastly, we observe that in all scenarios, the reaction of stock recommendations becomes significant after approximately 50 to 60 business days for information shocks and around 40 days for monetary policy shocks related to the *quantitative easing* factor. This notable delay in the response of stock recommendations aligns with their tendency to exhibit stickiness over time, despite the observation that stock analysts appear more responsive when they react to the monetary policy measure itself.

In further analysis, we introduce our monetary and information shocks into the two-state model of Equation (3). Results are displayed for the *quantitative easing* factor of the monetary event window in Figure 10, with the VIX as the transition variable. Again, we find that the response of stock recommendations is state-dependent and driven by the high-financial-uncertainty state in most cases, meaning stock analysts

¹⁴ The same effect is documented by [Kenourgios et al. \(2020\)](#) for professionals' forecasts of U.S. macroeconomic and financial variables in the case of the Fed's quantitative easing and tapering decision announcements over the November 2008 to October 2014 period.

are likely to consider an increased amount of information in such cases, including from monetary authorities. Therefore, they adapt their information gathering process to the level of uncertainty surrounding banks. Regarding monetary policy *per se* (i.e. the *quantitative easing* factor), similar to monetary policy factors, we again find that the reaction of stock analysts is stronger when financial uncertainty is high. Hence, during periods of high levels of uncertainty, analysts use the information conveyed by monetary policy decisions to improve their understanding of the future financial environment.

Insert Figure 10 Here

6. Robustness Checks

First, we selected alternative dependent variables and specifications, and considered additional monetary policy factors as shocks. Initially, we substituted the mean consensus of recommendations with its median counterpart and obtained similar results. Furthermore, concerning controls and two-state regimes, we replaced the VIX with the VSTOXX, and the financial uncertainty measure of [Jurado et al. \(2015\)](#) and [Ludvigson et al. \(2021\)](#) with the macroeconomic uncertainty one, resulting in similar findings once again. On the contrary, considering the Eonia or the MRO rate as a transition variable, to account for nonlinearities in the transmission of monetary policy, did not prompt relevant results. This is notably owed to the fact that most nonstandard measures were adopted in the low rate regime, which hinders the comparison between both states.

Lastly, recognizing the presence of serial correlation among factors, we incorporated the first lag of the shock of interest as a control for all factors, in accordance with [Ramey \(2016\)](#). Once more, our results remained robust under this specification. This

is not surprising given that in preliminary analysis, and consistent with [Andrade and Ferroni \(2021\)](#), we did not find that ECB factors are serially correlated.

Secondly, in line with [Swanson \(2021\)](#), we adopted a random walk approach to examine whether stock analyst recommendations exhibit similar characteristics as other market variables, specifically their forward-looking nature. This involved eliminating lags of the dependent variable from Equation (1). Notably, the results remained unchanged for both events and factors. However, considering the tendency for stock recommendations to be sticky, primarily due to analysts' reluctance to downgrade the stocks they cover ([Conrad et al., 2006](#)), we opted for the baseline autoregressive-like specification. This choice enables us to mitigate the potential impact of such biases on our estimations.

Finally, we performed all our regressions over the 1999–2020 time span and found similar results. In this case, however, the first factor extracted from the press conference window is less well identified, and cannot anymore be granted a *timing* interpretation but rather a *target* one.

7. Summary and Conclusion

This article examines whether stock analysts incorporate ECB monetary policy decisions into their investment recommendations for European banks. We perform our analysis on the period spanning 2002 to 2020. To achieve this, we employ the local projection method introduced by [Jordà \(2005\)](#), utilizing a 120-business-day horizon. We model our shocks as monetary policy factors derived from high-frequency surprises surrounding monetary policy announcements.

Initially, we observe that stock analysts exhibit greater concern regarding nonstandard monetary policy measures than standard ones. Indeed, stock recommendations tend to respond primarily to *path* (forward guidance) and *quantitative easing* factors

rather than *target* (policy rate) factors. This finding aligns with the results of previous studies conducted by [Fiordelisi et al. \(2014\)](#) and [Ricci \(2015\)](#) on stock prices. Our analysis also reveals that stock analysts believe that accommodative measures harm bank valuation and profitability, resulting in revisions of recommendations toward the *Sell* category. Further investigation into this matter, by isolating the information component of all factors, demonstrates that this reaction is primarily driven by the perceived view of the ECB on the near-to-medium-term economic outlook rather than the potential direct impact of monetary policy measures on bank valuation and profitability. Therefore, in most cases, stock analysts place greater value on the insights provided by ECB monetary policy decisions regarding the expected future economic conditions for banks rather than the monetary policy measures themselves. This interpretation is consistent with the notion that stock analysts are more concerned about the second-round effects of monetary policy, which are associated with anticipated improvements or worsenings in the economic outlook. However, an exception to this pattern is observed with regard to quantitative easing measures. Stock analysts tend to consider these measures detrimental to banks and more challenging to predict, likely due to their negative impact on profitability and risk-taking behavior resulting from the flattening of the yield curve ([Lambert and Ueda, 2014](#)).

Furthermore, we observe a distinct response to stock recommendations based on the level of financial uncertainty, particularly during periods characterized by heightened financial uncertainty. This response is particularly pronounced in relation to announcements related to quantitative easing. This finding aligns with the research conducted by [Jannsen et al. \(2019\)](#), which indicates that stock markets exhibit stronger reactions to monetary policy measures during times of crisis. Thus, during periods of increased uncertainty, stock analysts demonstrate a heightened sensitivity

to any new information, including signals from monetary authorities. Consequently, they adjust their information-gathering process to account for the elevated uncertainty surrounding banks. In this manner, similar to the broader stock market, stock analysts play a role in the transmission of monetary policy.

Given the role played by stock analysts in the transmission of information shocks that may hinder the efficiency of monetary policy measures, these findings have significant implications for the way central banks communicate on monetary policy. First, our findings provide additional evidence that the ECB should be particularly careful about the content and the wording of monetary decision announcements during periods characterised by a high level of financial uncertainty. Second, by showing that positive monetary surprises may be interpreted by analysts as unfavorable to the banking sector, our results also advocate for a better accounting of the indirect effects of accommodative decisions for financial stability.

Table 1: Summary Statistics

| | Mean | StDev | Median | 25 th Pct | 75 th Pct | Minimum | Maximum | N | Source |
|---------------------------|--------|--------------------|--------|----------------------|----------------------|---------|--------------------|---------|------------|
| Average Recommendations | 2.62 | 0.86 | 2.61 | 2.00 | 3.00 | 1.00 | 5.00 | 638,999 | I/B/E/S |
| Median Recommendations | 2.63 | 0.90 | 3.00 | 2.00 | 3.00 | 1.00 | 5.00 | 638,999 | I/B/E/S |
| Number Recommendations | 10.65 | 11.06 | 7.00 | 1.00 | 18.00 | 1.00 | 48.00 | 638,999 | I/B/E/S |
| VIX | 19.28 | 8.52 | 16.68 | 13.29 | 22.52 | 9.97 | 54.28 | 6940 | LSEG Eikon |
| VSTOXX | 23.33 | 9.68 | 20.96 | 16.35 | 26.83 | 11.93 | 57.45 | 6940 | LSEG Eikon |
| Financial Uncertainty | 0.90 | 0.19 | 0.84 | 0.76 | 1.04 | 0.63 | 1.55 | 6940 | JLN |
| Macroeconomic Uncertainty | 0.66 | 0.13 | 0.62 | 0.59 | 0.67 | 0.53 | 1.22 | 6940 | JLN |
| 3-month OIS | 1.08 | 1.53 | 0.39 | -0.35 | 2.09 | -0.49 | 4.35 | 6940 | LSEG Eikon |
| Stock Prices | 473.61 | 2.49×10^3 | 9.00 | 3.15 | 32.77 | 0.12 | 2.06×10^4 | 651,174 | LSEG Eikon |

Note: 1% Winsorisation applied when relevant. No log-transformation applied. JLN: [Jurado et al. \(2015\)](#) and [Ludvigson et al. \(2021\)](#). StDev: standard deviation.

Figure 2: States of the VIX

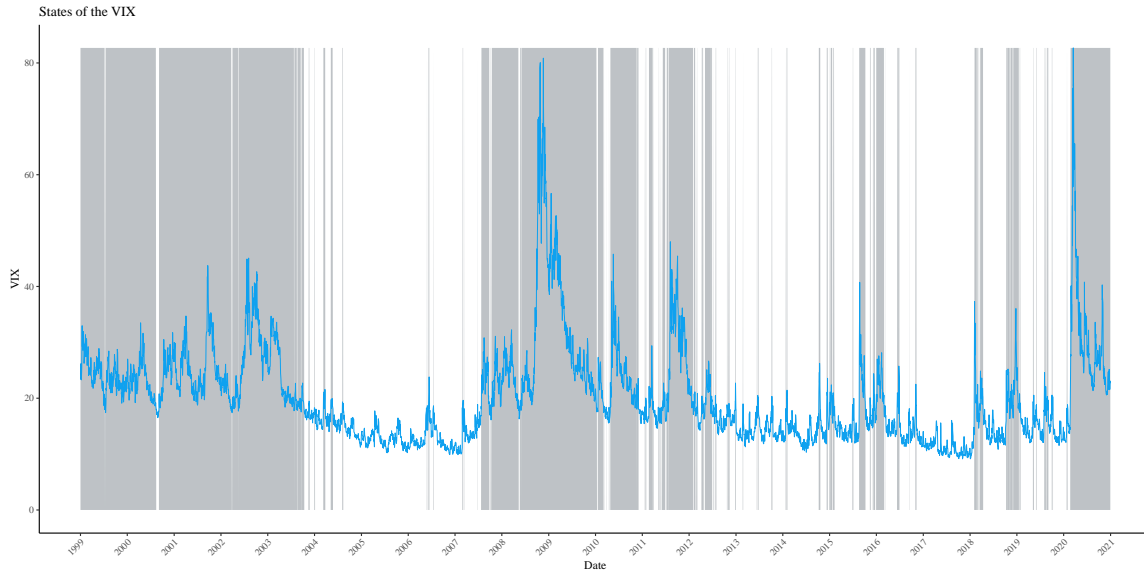


Figure 3: States of Financial Uncertainty

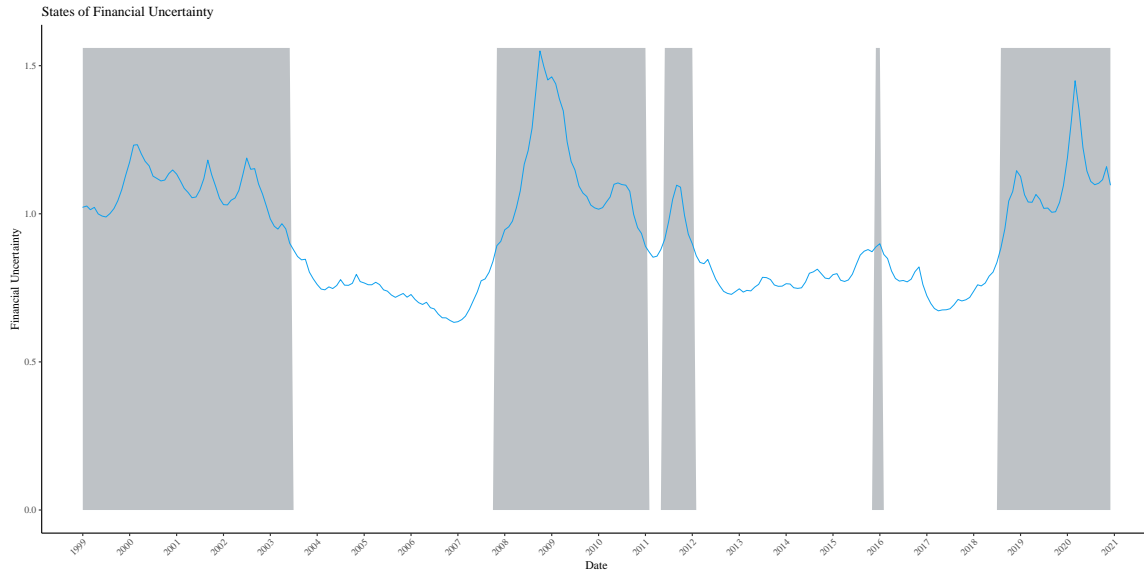


Figure 4: Press Conference Factors

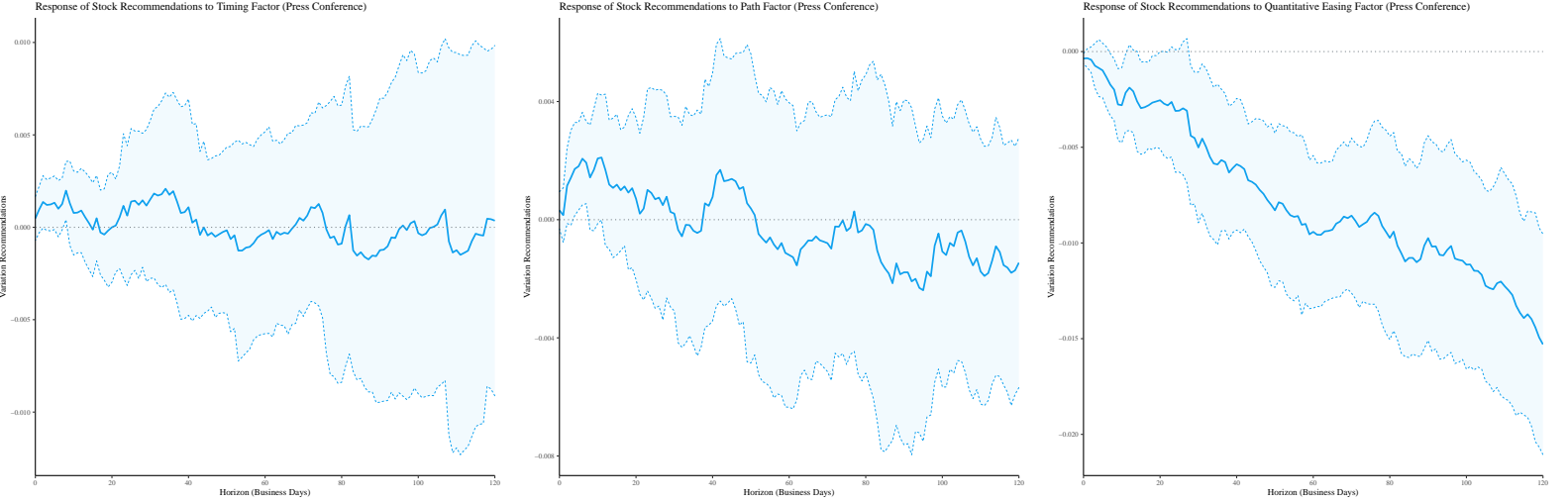


Figure 5: Monetary Event Factors

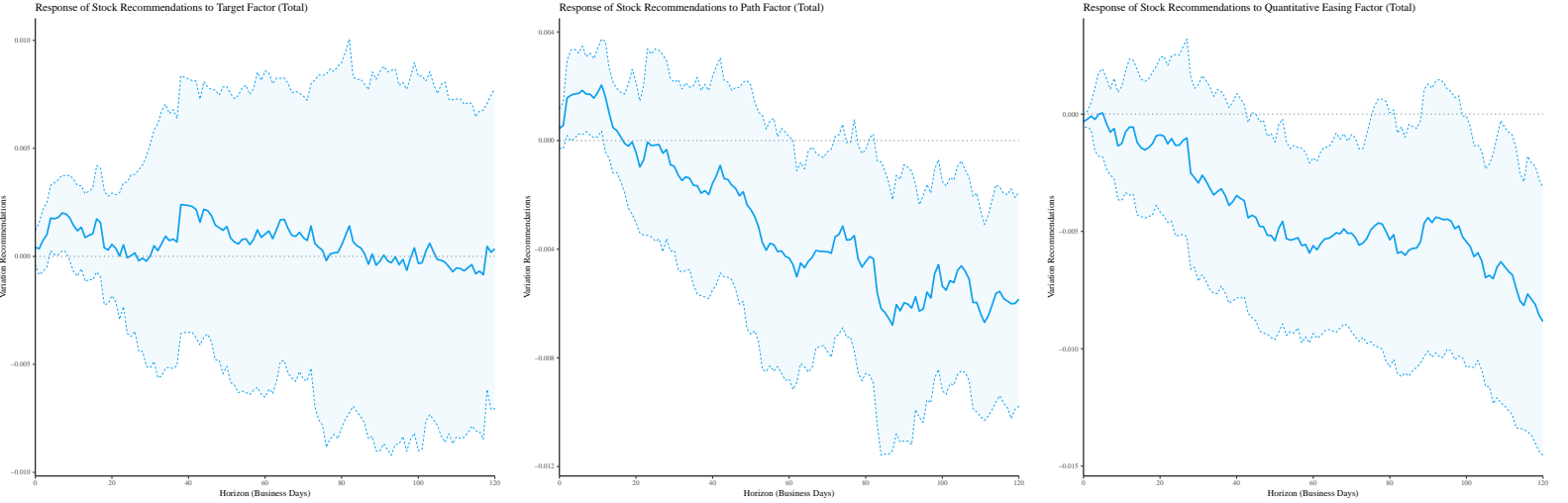


Figure 6: Path Factor – Press Conference (Two-State Models)

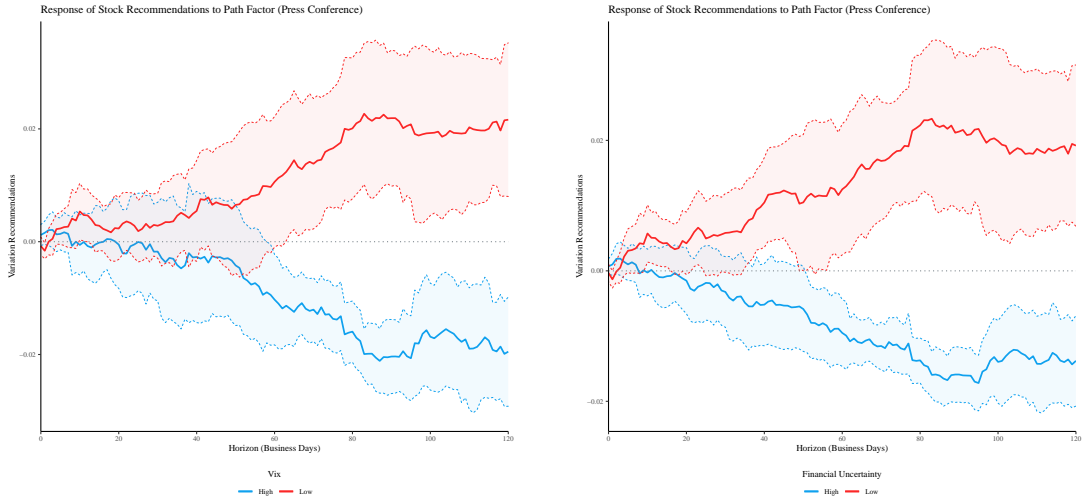


Figure 7: Quantitative Easing Factor – Press Conference (Two-State Models)

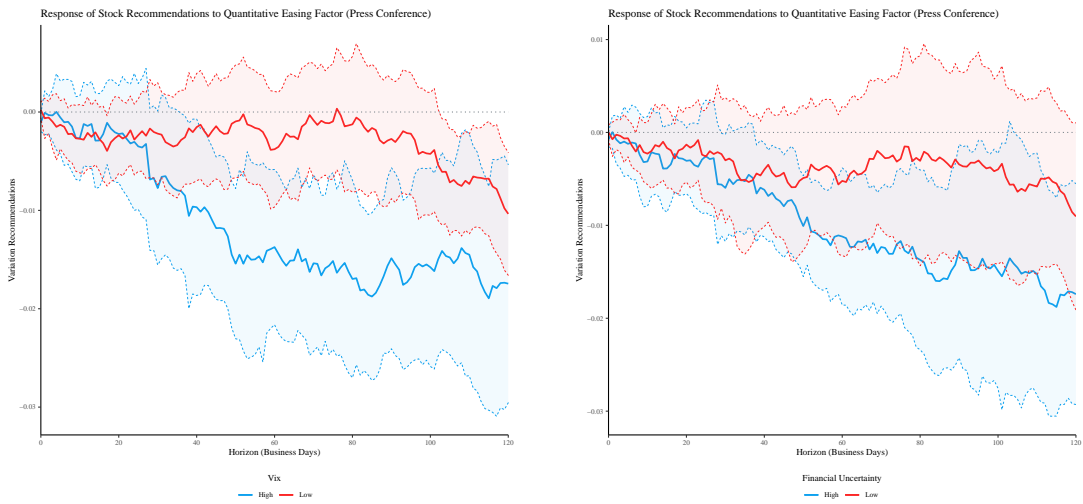


Figure 8: Monetary Event Window

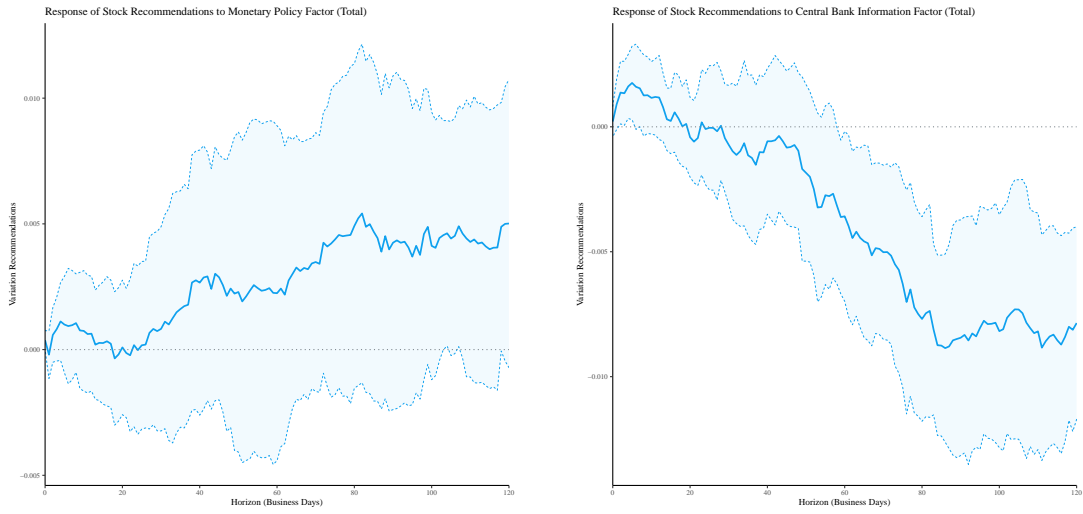


Figure 9: Monetary Policy and Information Surprises

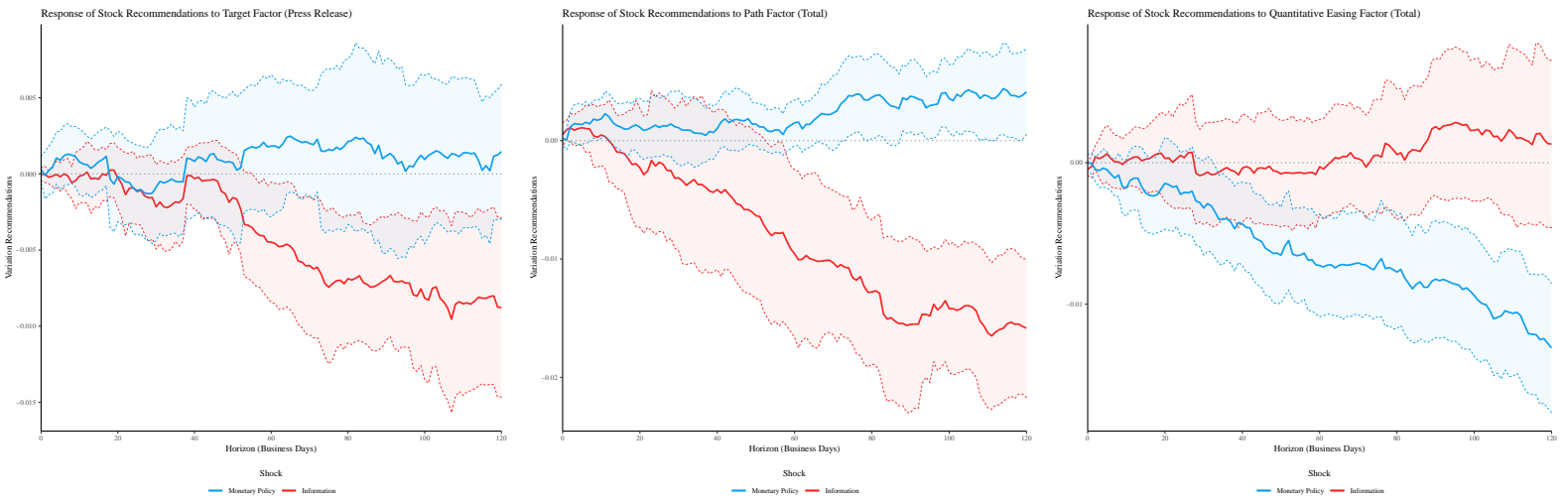
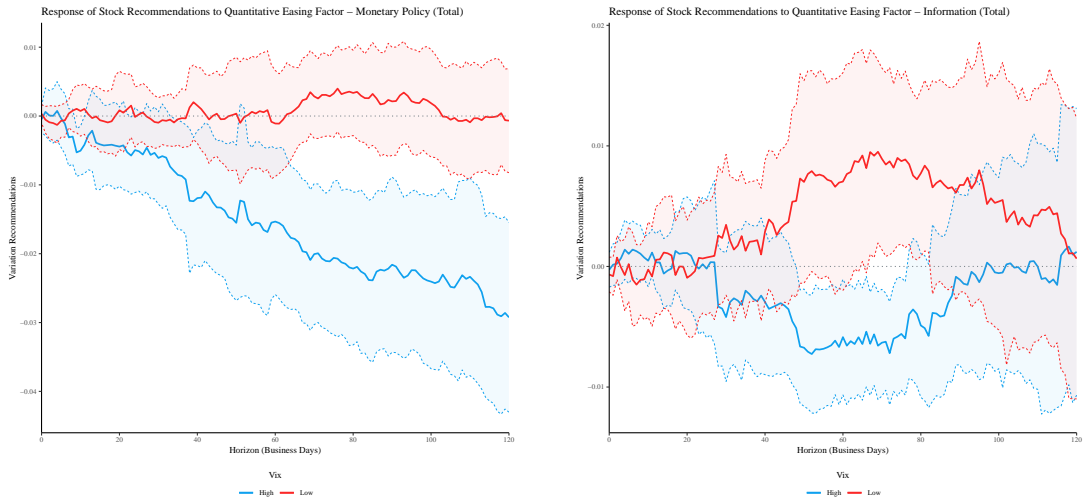


Figure 10: Monetary Policy and Information QE Factors – Monetary Event (Two-States Models)



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