

Internet Appendix for

Does Central Bank Tone Move Asset Prices?

(not for publication)

This Internet Appendix reports and discusses additional results and robustness checks.

IA.A. Excerpts from ECB press conference statements

In the main part of the paper, we present excerpts from the press conference in January 2009, which is the PC that our tone measure identifies as the most negative PC in our sample; see Table III. To provide a broader picture of what our tone measure captures, we now present additional excerpts. Table IA.1 presents excerpts from the press conference in February 2010, which has the highest count of commonly used phrases involving negative words across all statements in our sample. Table IA.2 presents excerpts from the press conference in January 2005, which according to our tone measure is the most negative PC in a pre-crisis subsample from January 1999 to June 2007.

While we find that our tone measure leads to only very few misclassifications, i.e., cases in which our procedure incorrectly treats a word or statement negative, in the ECB press conference transcripts, one example is the first sentence of the first excerpt in Table IA.2: “Downside risks to the economic outlook stemming from oil price developments have diminished somewhat over recent weeks.” The dictionary identifies ‘diminished’ as a negative word whereas the overall sentence is obviously not negative. Nonetheless, these excerpts provide further support for the view that our tone measure generally captures the ECB’s framing of economic and financial conditions.

IA.B. Tone surprises, policy actions, and fundamentals

This appendix describes how we explore the link between tone changes, policy actions, and macro fundamentals in more detail. The results are summarized and discussed in Section 5.3 in the paper.

IA.B.1. Central bank tone and future policy rates

We now complement the results on the relation between ECB tone and interest rates by showing that changes in tone predict future changes in policy rates (ΔMRO). Table IA.15 reports results for regressions of the form

$$\Delta MRO_{t,t+k} = a + \sum_h \beta_h \Delta MRO_{t-h} + \sum_h \gamma_h \Delta \tau_{t-h} + \epsilon_{t,t+k}, \quad (\text{IA.B.1})$$

and

$$\Delta MRO_{t,t+k} = a + \beta \sum_h \Delta MRO_{t-h} + \gamma \sum_h \Delta \tau_{t-h} + \epsilon_{t,t+k}, \quad (\text{IA.B.2})$$

where k is the forecast horizon (in terms of future policy meetings) and h is the lag of the predictive variable. With one policy meeting per month on average, these horizons roughly translate into months. We include lagged MRO changes in this regression as it is well-known that central banks often adjust interest rates only gradually (i.e., engage in “interest rate smoothing”). We run these regressions with individual lags of the predictive variables, as specified in equation (IA.B.1), and present results in Panel A, and with multi-period changes in predictive variables, as specified in equation (IA.B.2), Panels B and C).

IA.B.2. Forecasting macro fundamentals

We obtain data for Eurozone fundamentals from Datastream (DS). The DS mnemonics are EMRETTOTG (Retail Sales), EMUNPTOTO (Unemployment), EKIPTOT.G (Industrial Production), EMCPCOR5F (Harmonised Index of Consumer Prices), EMCNFCONQ (Consumer Confidence), EKCNFBUSQ (Business Confidence), and EMGDP...D (GDP).

Table [IA.16](#) reports results for regressions of future growth rates of key Eurozone macro fundamentals on lagged ECB tone changes. We consider log changes in price levels ($\Delta HICP$), industrial production (ΔIP), real industrial production ($\Delta RealIP$), retail sales ($\Delta RetSales$), and unemployment ($\Delta Unemp$), as well as changes in consumer confidence ($\Delta ConsConf$) and business confidence ($\Delta BusConf$) as dependent variables and report the predictive slope coefficients and adjusted R^2 s. The left part of the table shows results for univariate predictive regressions of fundamentals on tone changes, the right part shows predictive slopes for lagged tone changes when additionally controlling for the most recent change in the policy rate (ΔMRO), a dummy for unconventional monetary policy announcements, and the most recent revisions in the ECB's one-year projection for future inflation and real GDP growth.

Table IA.1: Excerpts from the ECB President’s Statement on February 4, 2010

This table presents excerpts of the the ECB president’s introductory statement, given at the press conference on February 4, 2010. Our textual analysis identifies this statement to contain the highest count of commonly used phrases involving negative words of all statements in our sample. From this statement we present the three paragraphs that have the largest impact on our tone measure, i.e., the three paragraphs with the highest ratio of negative words to total words. Words highlighted in red italic font and marked by asterisks (*) are negative words identified by the dictionary we employ. Other words highlighted in red italic font are common word sequences involving negative words that we have identified in multiple statements.

- The Governing Council continues to view the risks to this outlook as broadly balanced. On the upside, confidence may improve more than expected, and both the global economy and foreign trade may recover more strongly than projected. Furthermore, there may be stronger than anticipated effects stemming from the extensive macroeconomic stimulus being provided and from other policy measures taken. On the downside, **concerns* remain* relating to a *stronger or more *protracted* than expected *negative* feedback loop* between the real economy and the financial sector, renewed increases in oil and other commodity prices, the intensification of protectionist pressures and the *possibility of a *disorderly* *correction* of global *imbalances**.
- As regards fiscal policies, many euro area countries are faced with large, **sharply* rising fiscal *imbalances**, leading to less favourable medium and long-term interest rates and lower levels of private investment. Moreover, high levels of *public *deficit* and debt* place an additional **burden** on monetary policy and **undermine** the Stability and Growth Pact as a key pillar of Economic and Monetary Union. Against this background, it is of paramount importance that the stability programme of each euro area country clearly defines the fiscal exit and consolidation strategies for the period ahead. Countries will be required to meet their commitments under the *excessive *deficit* procedures*. Consolidation of public finances should start in 2011 at the latest and will have to exceed substantially the annual adjustment of 0.5% of GDP set as a minimum requirement by the Stability and Growth Pact. A strong focus on expenditure reforms is needed.
- The *key *challenge** in order to reinforce sustainable growth and job creation is to accelerate structural reforms, as the *financial *crisis* has *negatively* affected* the productive capacity of our economies. In the case of product markets, policies that enhance competition and innovation are urgently needed to *speed up *restructuring** and investment and to create new business opportunities. In labour markets, moderate wage-setting, effective incentives to work and sufficient labour market flexibility are required in order to avoid significantly *higher structural *unemployment** over the coming years. Finally, an *appropriate *restructuring** of the banking sector should play an important role. Sound balance sheets, effective risk management and transparent, robust business models are key to strengthening banks’ resilience to shocks, thereby laying the foundations for sustainable growth and financial stability.

Table IA.2: Excerpts from the ECB President’s Statement on January 13, 2005

This table presents excerpts of the the ECB president’s introductory statement, given at the press conference on January 13, 2005. Our measure of central bank tone identifies this statement to exhibit the most negative tone of all statements in a subsample from 1999/01 – 2007/06 (i.e., the pre-crisis period). From this statement we present the three paragraphs that have the largest impact on our tone measure, i.e., the three paragraphs with the highest ratio of negative words to total words. Words highlighted in red italic font and marked by asterisks (*) are negative words identified by the dictionary we employ. Other words highlighted in red italic font are common word sequences involving negative words that we have identified in multiple statements.

- Downside risks to the economic outlook stemming from oil price developments have **diminished** somewhat over recent weeks. As regards exchange rates, we confirm our position, expressed when the euro rose **sharply**, that such moves are **unwelcome** and **undesirable** for economic growth.
- With regard to both fiscal policies and structural reforms, the governments and institutions of the European Union will have to **confront** many important **challenges** in the course of 2005.
- Foremost among these **challenges** is the need to strengthen public finances by **correcting** **excessive** **deficits** swiftly and returning to a path of vigorous fiscal consolidation. Moreover, throughout the European Union there is a need to address the considerable **challenges** that population ageing **poses** to existing pension and social security systems.

Table IA.3: Descriptive Statistics for Equity Index Returns

This table reports descriptive statistics for the returns (measured in basis points) of various equity indices. We report results for two aggregate market indices in the EMU (Eurostoxx 50 and MSCI EMU) and ten country indices (MSCI country indices). For all indices, we report the number of daily observations (Obs), the average return (Avg), the median return (Med), and the standard deviation of returns (Std). We report these statistics for all days in our sample, for all days that are not ECB press conference days (Non-PC days), and for ECB press conference days (PC days). The sample is daily from January 1999 to December 2021.

	All days				Non-PC days				PC days			
	Obs	Avg	Med	Std	Obs	Avg	Med	Std	Obs	Avg	Med	Std
EMU market indices												
Eurostoxx 50	5825	1.29	3.60	143.85	5585	1.44	3.42	142.42	240	-2.19	10.12	174.20
MSCI EMU	5825	1.47	5.49	132.23	5585	1.67	5.47	130.72	240	-2.98	6.80	163.74
Country indices												
Austria	5825	2.09	3.39	154.47	5585	2.09	2.61	153.81	240	1.93	13.84	169.28
Belgium	5825	0.43	4.10	135.21	5585	0.45	3.78	133.46	240	-0.13	13.31	171.15
Finland	5825	2.53	2.39	195.70	5585	2.25	2.90	192.87	240	9.15	-1.18	253.18
France	5825	2.04	4.68	138.73	5585	2.32	4.65	137.31	240	-4.56	5.90	168.66
Germany	5825	1.82	7.42	144.02	5585	2.18	7.37	142.54	240	-6.57	8.05	175.18
Ireland	5825	0.28	1.21	159.07	5585	0.10	0.80	157.87	240	4.51	7.77	185.01
Italy	5825	0.33	4.56	147.69	5585	0.64	3.82	145.41	240	-6.98	10.19	193.45
Netherlands	5825	2.42	4.30	133.68	5585	2.47	4.16	133.03	240	1.05	13.60	148.34
Portugal	5825	-0.59	0.99	123.74	5585	-0.48	0.92	123.02	240	-3.17	2.40	139.69
Spain	5825	1.00	4.35	149.54	5585	0.96	3.96	147.92	240	1.81	17.83	183.56

Table IA.4: Descriptive Statistics for Control Variables

This table reports descriptive statistics for tone (τ_t), tone changes ($\Delta\tau_t$), and the control variables used in our regressions of returns on tone changes. *ECB actions*: ΔMRO_t is change in the policy rate announced at the PC at time t and UMP_t is a dummy that takes the value one for PCs at which unconventional monetary policy actions are announced and zero otherwise. *Monetary policy shocks*: PC1 denote the first principal component of the short-term yield changes in a high-frequency window around the press release or press conference, respectively. The target, timing, forward guidance (FG), and quantitative easing (QE) factors are yield curve factors based on [Altavilla et al. \(2019\)](#). Policy and information shocks are based on [Jarociński and Karadi \(2020\)](#). *Text controls*: DIS_t denotes the distance in wording, ΔFOG_t denotes the change in complexity measured by the FOG-index, and ΔTTR_t denotes the change in lexical diversity measured by the type-token-ratio. *Pre-PC market controls*: Market return is the return on the stock market (ESX50), market volatility refers to realized volatility, changes in the VSTOXX measures implied stock return volatility as well as changes in interest rate level refers to the German 2-year yield and the term spread is computed from the spread in German 10-year and 1-year yields. All five Pre-PC market controls are computed from the previous PC to one day before the current PC. Our sample covers all 241 ECB press conferences in the period from January 7, 1999 to December 16, 2021, i.e., we have 240 PC days with tone changes.

	Obs	Avg	Std	Min	Q5	Med	Q95	Max
ECB tone								
τ_t	241	0.9746	0.0099	0.9435	0.9586	0.9750	0.9879	0.9964
$\Delta\tau_t$	240	-0.0001	0.0074	-0.0241	-0.0130	0.0003	0.0121	0.0201
ECB actions								
ΔMRO_t	240	-0.0001	0.0013	-0.0075	-0.0025	0.0000	0.0025	0.0050
UMP_t	240	0.0583	0.2349	0.0000	0.0000	0.0000	1.0000	1.0000
Monetary policy shocks								
PC1 - Press release	240	0.0013	0.0179	-0.1255	-0.0101	-0.0006	0.0261	0.1008
PC1 - Press conference	240	0.0001	0.0363	-0.1962	-0.0481	-0.0002	0.0507	0.2120
Target factor	206	0.0000	0.0227	-0.1328	-0.0130	-0.0021	0.0291	0.1216
Timing factor	206	0.0000	0.0219	-0.1207	-0.0296	0.0014	0.0248	0.1068
FG factor	206	-0.0000	0.0340	-0.2531	-0.0388	0.0009	0.0471	0.1043
QE factor	206	-0.0000	0.0196	-0.0758	-0.0292	0.0000	0.0336	0.0618
Policy shock	240	0.0044	0.0332	-0.1370	-0.0401	0.0013	0.0531	0.1794
Information shock	240	-0.0015	0.0275	-0.1154	-0.0483	-0.0019	0.0420	0.1079
Text controls								
Dis_t	240	0.3376	0.0756	0.2000	0.2279	0.3331	0.4753	0.6514
ΔFOG_t	240	-0.0001	0.0088	-0.0374	-0.0127	-0.0003	0.0135	0.0259
ΔTTR_t	240	-0.0002	0.0375	-0.1151	-0.0586	-0.0016	0.0618	0.0919
Pre-PC market controls								
Market return	240	0.0026	0.0562	-0.2225	-0.0990	0.0105	0.0794	0.1922
Market volatility	240	0.0488	0.0258	0.0177	0.0247	0.0414	0.0961	0.2014
VSTOXX	240	0.0098	0.2050	-0.8450	-0.2384	-0.0233	0.3624	1.4071
Interest rate level	240	-0.0002	0.0021	-0.0090	-0.0039	-0.0001	0.0030	0.0061
Term spread	240	-0.0001	0.0018	-0.0042	-0.0024	-0.0004	0.0027	0.0091

Table IA.5: Equity Market Returns and Changes in ECB Tone: Intraday Results

This table reports results for regressing Eurostoxx 50 intraday returns on changes in ECB tone and control variables. On days with ECB press conferences (PCs), we use index data sampled at the one-minute frequency to compute the returns over three, non-overlapping time windows: the return from 9:00-13:44 (i.e., from the trading start to just before the policy rate announcement), the return from 13:45 to 14:29 (i.e., from the rate announcement to just before the start of the press conference), and from 14:30 to 17:30 (i.e., from the start of the press conference to the end of the trading day). Otherwise, the setup is identical to Table V in the main paper. The sample period is from January 1999 to December 2021; for more details about the regression specifications and variable descriptions, see Table V. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

	Return from 9:00 to 13:44			Return from 13:45 to 14:29			Return from 14:30 to 17:30		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
Const	0.00	0.00	0.00	-0.00	0.00	0.00	-0.00	-0.00	-0.00
	[2.82]	[0.57]	[0.31]	[-1.20]	[1.97]	[1.48]	[-2.33]	[-1.44]	[-1.09]
ECB tone									
$\Delta\tau_t$	0.07	0.07	0.09	0.03	0.02	0.02	0.24	0.28	0.31
	[0.70]	[0.91]	[1.02]	[0.55]	[0.61]	[0.41]	[2.31]	[2.82]	[2.97]
$\Delta\tau_{t-1}$		0.01	0.05		0.04	0.05		0.05	0.01
		[0.10]	[0.56]		[1.28]	[1.55]		[0.49]	[0.10]
ECB actions									
ΔMRO_t		0.07	-0.15		0.64	0.71		0.92	0.82
		[0.09]	[-0.17]		[1.48]	[1.40]		[1.10]	[0.80]
UMP_t		0.01	0.01		0.00	0.00		0.00	0.00
		[2.30]	[2.48]		[1.87]	[2.16]		[0.10]	[0.09]
Monetary policy shocks									
PC1 - Press release		-0.09			-0.08			-0.08	
		[-1.63]			[-3.59]			[-1.69]	
PC1 - Press conference		0.04			0.01			0.02	
		[2.80]			[1.81]			[0.81]	
Target			-0.09			-0.05			-0.02
			[-1.65]			[-2.43]			[-0.62]
Timing			0.06			0.01			0.04
			[2.70]			[0.78]			[1.06]
FG			0.02			0.00			-0.01
			[0.98]			[0.15]			[-0.53]
QE			-0.02			0.03			-0.06
			[-0.57]			[1.96]			[-1.16]
Text controls									
Dis_t		-0.01	-0.00		-0.00	-0.00		0.01	0.01
		[-0.74]	[-0.63]		[-0.76]	[-0.46]		[1.16]	[0.75]
ΔFOG_t		-0.11	-0.06		0.03	0.00		0.13	0.15
		[-1.71]	[-0.90]		[1.09]	[0.11]		[2.05]	[2.02]
ΔTTR_t		-0.00	0.01		-0.00	-0.01		0.05	0.06
		[-0.20]	[0.68]		[-0.42]	[-0.77]		[2.91]	[2.97]
Pre-PC market controls									
Market return		0.00	0.01		0.01	0.01		-0.03	-0.05
		[0.05]	[0.34]		[1.37]	[1.40]		[-1.31]	[-1.53]
Market volatility		0.03	0.04		-0.03	-0.03		-0.00	-0.01
		[0.92]	[0.80]		[-2.07]	[-1.75]		[-0.00]	[-0.13]
VSTOXX		-0.00	-0.00		-0.00	-0.00		-0.00	-0.01
		[-0.24]	[-0.05]		[-0.17]	[-0.19]		[-0.81]	[-1.06]
Interest rate level		-0.20	-0.24		0.10	0.12		0.45	0.30
		[-0.59]	[-0.62]		[0.65]	[0.77]		[1.18]	[0.65]
Term spread		0.10	0.03		0.04	-0.11		-0.58	-0.16
		[0.27]	[0.07]		[0.20]	[-0.66]		[-1.38]	[-0.35]
Adj- R^2 (%)	-0.07	6.38	7.36	-0.22	29.51	26.93	2.30	7.63	6.93
Obs	240	239	206	240	239	206	240	239	206

Table IA.6: Equity Market Returns and Changes in ECB Tone: MSCI EMU

This table reports results for regressions of MSCI EMU index returns on changes in ECB tone and control variables. The setup is identical to Table V in the main paper, which conducts the same analysis for the Eurostoxx 50. The sample period is from January 1999 to December 2021; for more details about the regression specifications and variable descriptions, see Table V. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Const	-0.00 [-0.27]	0.00 [0.92]	0.00 [0.67]	0.00 [0.72]	0.00 [0.25]	-0.00 [-0.14]
ECB tone						
$\Delta\tau_t$	0.42 [2.32]	0.42 [2.73]	0.44 [2.69]	0.46 [2.77]	0.46 [2.97]	0.53 [2.85]
$\Delta\tau_{t-1}$		0.06 [0.38]	0.05 [0.34]	0.11 [0.69]	0.15 [1.11]	0.17 [1.06]
ECB actions						
ΔMRO_t				0.67 [0.73]	1.89 [1.67]	1.35 [1.01]
UMP_t				0.01 [1.63]	0.01 [1.58]	0.01 [1.60]
Monetary policy shocks						
PC1 - Press release					-0.25 [-2.48]	
PC1 - Press conference					0.07 [2.55]	
Target						-0.16 [-1.51]
Timing						0.12 [2.57]
FG						0.00 [0.14]
QE						-0.03 [-0.47]
Text controls						
Dis_t			-0.00 [-0.24]	-0.00 [-0.37]	-0.00 [-0.27]	0.00 [0.01]
ΔFOG_t			0.05 [0.49]	0.03 [0.35]	0.02 [0.22]	0.06 [0.53]
ΔTTR_t			0.03 [1.09]	0.03 [1.16]	0.04 [1.71]	0.07 [2.44]
Pre-PC market controls						
Market return		0.01 [0.12]	0.01 [0.23]	0.00 [0.05]	0.01 [0.22]	0.01 [0.16]
Market volatility		-0.07 [-0.88]	-0.06 [-0.83]	-0.06 [-0.84]	-0.01 [-0.10]	-0.01 [-0.09]
VSTOXX		-0.01 [-0.41]	-0.01 [-0.38]	-0.01 [-0.50]	-0.01 [-0.35]	-0.01 [-0.38]
Interest rate level		0.94 [1.78]	0.85 [1.61]	0.77 [1.46]	0.30 [0.52]	0.13 [0.21]
Term spread		-0.42 [-0.60]	-0.54 [-0.78]	-0.46 [-0.65]	-0.46 [-0.67]	-0.22 [-0.32]
Adj- R^2 (%)	3.30	8.00	7.26	8.32	15.23	12.22
Obs	240	239	239	239	239	206

Table IA.7: ECB Tone and EMU Country Indices

This table reports results for regressions of MSCI country index returns on changes in ECB tone and control variables. The setup is identical to Table V in the main paper, which conducts the same analysis for the Eurostoxx 50. The sample period is from January 1999 to December 2021; for more details about the regression specifications and variable descriptions, see Table V. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, and the regressions' adjusted- R^2 .

	Specification (iv)		Specification (v)		Specification (vi)	
	$\Delta\tau_t$	Adj- R^2 (%)	$\Delta\tau_t$	Adj- R^2 (%)	$\Delta\tau_t$	Adj- R^2 (%)
Austria	0.54 [3.21]	8.68	0.54 [3.26]	12.03	0.64 [3.29]	15.13
Belgium	0.49 [2.55]	5.45	0.50 [2.63]	9.68	0.56 [2.43]	8.93
Finland	0.72 [3.02]	1.04	0.72 [3.15]	3.73	0.65 [3.14]	7.94
France	0.46 [2.75]	8.48	0.46 [2.93]	15.64	0.51 [2.76]	11.08
Germany	0.40 [2.28]	6.79	0.40 [2.42]	13.76	0.49 [2.53]	11.83
Ireland	0.29 [1.38]	7.54	0.30 [1.50]	16.08	0.40 [1.70]	5.08
Italy	0.53 [2.76]	11.65	0.54 [2.88]	17.37	0.66 [2.92]	16.74
Netherlands	0.39 [2.51]	5.43	0.39 [2.80]	12.76	0.45 [2.70]	10.29
Portugal	0.42 [3.16]	12.70	0.42 [3.19]	16.93	0.52 [3.33]	17.21
Spain	0.49 [2.54]	9.35	0.50 [2.65]	12.89	0.59 [2.67]	10.56

Table IA.8: Descriptive Statistics for Realized Volatility, Implied Volatility, and Volatility Risk Premia

This table reports descriptive statistics for the volatility quantities used in the paper. We present summary statistics for the realized volatility of the Eurostoxx 50, measured from intraday data over the full day (RV) and over the time window from 14:30 to 17:30 (RV_{PC}), in basis points; for changes in implied volatility, measured as daily log changes in the VSTOXX, $\Delta \log(VSTOXX)$ in basis points; and for proxies of changes in volatility risk premia, computed the ratios of changes in implied volatility to realized volatility. We report the number of daily observations (Obs), the average return (Avg), the median return (Med), and the standard deviation of returns (Std). We report these statistics for all days in our sample, for all days that are not ECB press conference days (Non-PC days), and for ECB press conference days (PC days). The sample is daily from January 1999 to December 2021.

	All days				Non-PC days				PC days			
	Obs	Avg	Med	Std	Obs	Avg	Med	Std	Obs	Avg	Med	Std
Realized volatility												
Trading day RV	5814	98.30	83.31	59.99	5574	97.67	82.85	59.80	240	112.95	97.72	62.66
From 14:30 to 17:30 RV_{PC}	5809	61.88	51.84	39.92	5569	61.15	51.28	39.49	240	78.63	65.38	45.87
Changes in implied volatility												
$\Delta \log(VSTOXX)$	5825	-0.78	-49.52	629.42	5585	4.23	-45.19	627.66	240	-117.49	-176.05	659.90
Proxies for volatility risk premia												
$\Delta \log(VSTOXX)/RV$	5813	-0.40	-0.55	7.43	5573	-0.34	-0.47	7.46	240	-1.86	-1.86	6.55
$\Delta \log(VSTOXX)/RV_{PC}$	5808	-0.76	-0.86	12.94	5568	-0.68	-0.73	13.05	240	-2.73	-2.51	10.06

Table IA.9: Realized volatility

This table extends the analysis of the relationship between tone changes and realized volatility of the Eurostoxx 50 presented in Panel A of Table VI in the main paper. On each day in our sample, we measure the realized volatility of the Eurostoxx 50 from intraday data over the time window from 14:30 to 17:30 (RV_{PC}); the full trading day (RV); a period of five days, including the current day plus the next four trading days, (RV_{5d}); 22 trading days (RV_{22d}); and 66 trading days (RV_{66d}). On each ECB press conference (PC) day, we compute the change in tone ($\Delta\tau_t$) compared to the previous PC. The data covers the period from the first to the last PC in our sample, i.e., January 7, 1999 to December 16, 2021. On the left, we report results from regressing the realized volatility on a constant and a dummy, $\mathbb{1}(\text{PC})$, that is one on days with PCs and zero otherwise. In the right part of Panel A, we report results for regressions on a constant and separate dummies for PC days with positive tone changes ($\Delta\tau > 0$) and negative tone changes ($\Delta\tau < 0$). Additionally, we report the p -value of an F -test that the coefficient estimates for both dummies are equal. Numbers in squared brackets refer to t -values based on White (1980) standard errors.

	PC days		PC days with positive vs negative tone changes			
	const	$\mathbb{1}(\text{PC})$	const	$\mathbb{1}(\Delta\tau > 0)$	$\mathbb{1}(\Delta\tau < 0)$	p[F]
Realized volatility 14:30-17:30 (RV_{PC})	61.15	17.48	61.15	15.84	19.35	0.56
	[43.76]	[6.48]	[43.76]	[4.34]	[4.40]	
Realized volatility (RV)	97.67	15.27	97.67	11.33	19.78	0.30
	[44.98]	[4.26]	[44.98]	[2.44]	[3.19]	
Realized volatility 5 days (RV_{5d})	223.75	9.73	223.75	4.96	15.18	0.56
	[45.21]	[1.36]	[45.21]	[0.51]	[1.17]	
Realized volatility 22 days (RV_{22d})	477.40	12.51	477.40	7.24	18.52	0.73
	[47.11]	[0.96]	[47.11]	[0.38]	[0.80]	
Realized volatility 66 days (RV_{66d})	843.45	18.97	843.45	32.08	3.99	0.58
	[51.68]	[0.93]	[51.68]	[1.02]	[0.12]	

Table IA.10: Realized versus Implied Volatility and Changes in ECB Tone: Extended Table

This table extends Table VI by additionally reporting estimates for all control variables. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

	$\Delta \log(VSTOXX)$			$\Delta \log(VSTOXX)/RV$			$\Delta \log(VSTOXX)/RV_{PC}$		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
Const	-0.02 [-0.91]	-0.01 [-0.59]	-0.01 [-0.49]	-0.77 [-0.32]	-0.35 [-0.15]	-0.28 [-0.11]	-1.70 [-0.47]	-0.90 [-0.25]	-0.93 [-0.24]
ECB tone									
$\Delta \tau_t$	-1.48 [-2.74]	-1.49 [-2.84]	-2.08 [-3.17]	-134.49 [-2.69]	-135.30 [-2.72]	-179.38 [-3.01]	-204.94 [-2.77]	-206.59 [-2.86]	-273.39 [-3.10]
$\Delta \tau_{t-1}$	-0.34 [-0.55]	-0.47 [-0.79]	-0.50 [-0.69]	-11.34 [-0.20]	-16.49 [-0.27]	-37.91 [-0.53]	-18.69 [-0.22]	-21.05 [-0.23]	-55.99 [-0.52]
ECB actions									
ΔMRO_t	-0.37 [-0.14]	-3.93 [-1.19]	-3.84 [-0.99]	170.51 [0.81]	-2.32 [-0.01]	-154.60 [-0.47]	295.39 [0.91]	-6.98 [-0.02]	-259.02 [-0.53]
UMP_t	-0.05 [-2.39]	-0.04 [-2.29]	-0.04 [-1.99]	-1.75 [-1.25]	-1.68 [-1.18]	-1.19 [-0.74]	-2.15 [-1.20]	-2.04 [-1.11]	-1.36 [-0.64]
Monetary policy shocks									
PC1 - Press release		0.73 [2.52]			35.98 [2.40]			65.59 [3.08]	
PC1 - Press conference		-0.19 [-1.61]			-7.90 [-0.83]			-7.45 [-0.51]	
Target			0.39 [1.42]			21.18 [1.36]			33.45 [1.52]
Timing			-0.42 [-1.97]			-31.32 [-1.81]			-39.67 [-1.60]
FG			0.02 [0.18]			10.51 [0.89]			18.92 [0.99]
QE			0.46 [2.00]			58.24 [2.72]			91.81 [2.69]
Text controls									
Dis_t	-0.01 [-0.21]	-0.02 [-0.30]	-0.01 [-0.15]	-7.13 [-1.09]	-7.38 [-1.12]	-8.25 [-1.09]	-8.87 [-0.89]	-9.45 [-0.95]	-10.03 [-0.88]
ΔFOG_t	-0.03 [-0.07]	0.00 [0.01]	0.06 [0.11]	-21.63 [-0.54]	-19.29 [-0.48]	-14.82 [-0.29]	-8.57 [-0.13]	-1.83 [-0.03]	8.43 [0.10]
ΔTTR_t	-0.06 [-0.53]	-0.09 [-0.91]	-0.14 [-1.04]	-4.06 [-0.39]	-5.87 [-0.56]	-10.73 [-0.80]	-3.05 [-0.19]	-5.84 [-0.37]	-12.67 [-0.62]
Pre-PC market controls									
Market return	-0.03 [-0.26]	-0.05 [-0.48]	-0.03 [-0.29]	-8.28 [-0.94]	-9.26 [-1.10]	-9.49 [-0.96]	-9.53 [-0.73]	-11.40 [-0.92]	-11.87 [-0.81]
Market volatility	0.32 [1.53]	0.16 [0.91]	0.11 [0.50]	30.69 [2.27]	22.94 [1.73]	25.80 [1.55]	44.92 [2.15]	30.68 [1.50]	34.53 [1.34]
VSTOXX	-0.03 [-0.53]	-0.04 [-0.84]	-0.03 [-0.60]	-7.13 [-2.09]	-7.68 [-2.43]	-7.30 [-2.03]	-10.08 [-2.03]	-11.05 [-2.43]	-10.09 [-1.92]
Interest rate level	-2.68 [-1.25]	-1.34 [-0.61]	0.39 [0.16]	-161.78 [-0.77]	-98.28 [-0.45]	123.06 [0.46]	-307.28 [-0.97]	-204.39 [-0.63]	128.52 [0.33]
Term spread	0.44 [0.18]	0.43 [0.19]	-1.52 [-0.58]	1.14 [0.01]	0.58 [0.00]	-171.52 [-0.73]	-53.61 [-0.18]	-55.01 [-0.18]	-334.26 [-0.94]
Adj- R^2 (%)	3.20	6.33	4.12	2.16	2.21	3.66	1.21	1.48	2.28
Obs	239	239	206	239	239	206	239	239	206

Table IA.11: Descriptive Statistics for Credit Spreads

This table reports descriptive statistics for the credit spreads used in the paper. We present summary statistics for changes in credit spreads, defined as the yield differentials of BBB- and AAA-rated bonds of all corporates and separately for financials and non-financials. We report the number of daily observations (Obs), the average return (Avg), the median return (Med), and the standard deviation of returns (Std). We report these statistics for all days in our sample, for all days that are not ECB press conference days (Non-PC days), and for ECB press conference days (PC days). The sample is daily from April 1999 to December 2021 for the credit spreads of all corporates and financials and August 1999 to December 2021 for the credit spreads of non-financials. All spread changes are reported in basis points.

	All days				Non-PC days				PC days			
	Obs	Avg	Med	Std	Obs	Avg	Med	Std	Obs	Avg	Med	Std
All corporates	5763	-0.00	-0.10	3.93	5524	0.02	-0.10	3.83	239	-0.58	-0.30	5.77
Financials	5765	-0.00	-0.10	11.33	5526	0.06	-0.10	11.40	239	-1.33	-0.50	9.44
Non-financials	5683	-0.01	-0.00	3.51	5448	0.01	-0.00	3.31	235	-0.26	0.00	6.62

Table IA.12: Corporate Credit Spreads and Changes in ECB Tone: Extended Table

This table extends Table VII by additionally reporting estimates for all control variables. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

	All corporates			Financials			Non-financials		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)	(i)	(ii)	(iii)
Const	-0.00 [-1.18]	-0.00 [-1.32]	-0.00 [-1.01]	0.00 [0.50]	0.00 [0.25]	0.00 [0.70]	-0.00 [-1.17]	-0.00 [-1.08]	-0.00 [-1.09]
ECB tone									
$\Delta\tau_t$	-0.01 [-2.48]	-0.01 [-2.51]	-0.01 [-1.87]	-0.02 [-2.75]	-0.02 [-2.78]	-0.02 [-2.47]	-0.01 [-1.81]	-0.01 [-1.91]	-0.00 [-0.86]
$\Delta\tau_{t-1}$	-0.01 [-1.89]	-0.01 [-1.95]	-0.01 [-1.46]	-0.02 [-1.81]	-0.02 [-2.11]	-0.00 [-0.34]	-0.01 [-2.22]	-0.01 [-2.05]	-0.01 [-1.85]
ECB actions									
ΔMRO_t	0.09 [1.50]	0.10 [1.39]	0.13 [1.40]	0.16 [1.89]	0.18 [1.72]	0.29 [2.21]	0.01 [0.68]	0.00 [0.10]	0.01 [0.26]
UMP_t	-0.00 [-1.83]	-0.00 [-1.92]	-0.00 [-2.11]	-0.00 [-1.22]	-0.00 [-1.34]	-0.00 [-1.27]	-0.00 [-2.28]	-0.00 [-2.06]	-0.00 [-2.82]
Monetary policy shocks									
PC1 - Press release		-0.00 [-0.78]			-0.00 [-0.84]			0.00 [1.51]	
PC1 - Press conference		-0.00 [-0.15]			-0.00 [-0.80]			-0.00 [-0.38]	
Target			-0.00 [-1.14]			-0.01 [-2.34]			-0.00 [-0.05]
Timing			0.00 [0.28]			-0.00 [-0.98]			-0.00 [-0.39]
FG			-0.00 [-0.79]			-0.00 [-0.68]			-0.00 [-0.88]
QE			-0.01 [-1.80]			-0.01 [-1.33]			-0.01 [-1.49]
Text controls									
Dis_t	0.00 [0.89]	0.00 [0.93]	0.00 [0.56]	0.00 [0.13]	0.00 [0.28]	-0.00 [-0.06]	0.00 [1.32]	0.00 [1.28]	0.00 [1.24]
ΔFOG_t	0.00 [0.71]	0.00 [0.60]	0.00 [0.48]	0.00 [0.22]	-0.00 [-0.01]	-0.00 [-0.55]	-0.00 [-1.23]	-0.00 [-1.16]	-0.00 [-0.56]
ΔTTR_t	0.00 [1.30]	0.00 [1.32]	0.00 [0.81]	0.00 [0.73]	0.00 [0.78]	0.00 [0.10]	0.00 [1.21]	0.00 [1.13]	0.00 [0.72]
Pre-PC market controls									
Market return	0.00 [0.22]	0.00 [0.25]	0.00 [0.55]	-0.01 [-1.56]	-0.00 [-1.53]	-0.00 [-1.36]	-0.00 [-2.92]	-0.00 [-3.07]	-0.00 [-2.97]
Market volatility	0.00 [0.55]	0.00 [0.78]	0.00 [0.57]	-0.00 [-1.17]	-0.00 [-1.06]	-0.01 [-1.66]	0.00 [0.14]	-0.00 [-0.28]	-0.00 [-0.52]
VSTOXX	0.00 [1.27]	0.00 [1.24]	0.00 [1.39]	-0.00 [-0.88]	-0.00 [-0.79]	-0.00 [-0.72]	-0.00 [-0.77]	-0.00 [-1.02]	-0.00 [-0.77]
Interest rate level	-0.02 [-0.96]	-0.02 [-0.97]	-0.02 [-0.99]	-0.04 [-1.40]	-0.05 [-1.37]	-0.06 [-1.25]	-0.01 [-0.49]	-0.00 [-0.28]	0.02 [0.89]
Term spread	0.01 [0.54]	0.01 [0.54]	0.02 [0.81]	0.11 [2.90]	0.11 [2.95]	0.11 [2.84]	0.00 [0.16]	0.00 [0.16]	0.00 [0.16]
Adj- R^2 (%)	4.14	3.70	5.05	12.63	12.94	19.69	2.49	1.88	1.28
Obs	239	239	206	239	239	206	235	235	206

Table IA.13: Regression results using surprises from AR-models of ECB tone

This table presents results on the link between asset price responses and surprises in ECB tone. We measure tone surprises as the residuals from autoregressive (AR) models of ECB tone using one lag (Panel A), three lags (Panel B), or five lags (Panel C). Each column refers to a different asset class: ESX50 to returns in the Eurostoxx50 equity index, 2Y to changes in the German two-year government bond yield, VSTOXX to log changes in the VSTOXX volatility index, VRP and VRP-PC to changes in the proxies for variance risk premia (i.e., log changes in the VSTOXX scaled by realized volatility measured over the full day or from 14:30 – 17:00), and Credit-Fin to changes in the credit spread of financial institutions. We regress the asset price responses on the tone surprises and a large set of control variables; for detailed variable descriptions we refer to Table V. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

Panel A. Tone surprises from AR(1)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR1[τ_t]-resid	0.50 [3.11]	0.01 [2.50]	-1.78 [-3.20]	-183.00 [-3.43]	-276.43 [-3.55]	-0.01 [-1.66]
Adj- R^2 (%)	14.80	5.33	7.53	3.93	3.11	11.38
Obs	240	240	240	240	240	239
Panel B. Tone surprises from AR(3)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR3[τ_t]-resid	0.50 [2.94]	0.01 [2.69]	-1.70 [-2.97]	-166.08 [-3.07]	-248.63 [-3.17]	-0.02 [-2.58]
Adj- R^2 (%)	14.79	5.80	7.11	3.12	2.27	11.80
Obs	238	238	238	238	238	238
Panel C. Tone surprises from AR(5)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR5[τ_t]-resid	0.48 [2.83]	0.01 [2.88]	-1.64 [-2.83]	-161.30 [-2.94]	-237.54 [-2.99]	-0.02 [-2.58]
Adj- R^2 (%)	14.42	5.82	6.90	3.03	2.09	12.09
Obs	236	236	236	236	236	236

Table IA.14: Regression results using surprises from extended AR-models of ECB tone

This table presents results on the link between asset price responses and surprises in ECB tone. We measure tone surprises as the residuals from autoregressive (AR) models of ECB tone using one lag (Panel A), three lags (Panel B), or five lags (Panel C). Additionally, the AR-models include other information available to market participants prior to the press conference, i.e. the stock market and interest rate quantities that we have used as control variables for market conditions in our main analysis. Each column refers to a different asset class: ESX50 to returns in the Eurostoxx50 equity index, 2Y to changes in the German two-year government bond yield, VSTOXX to log changes in the VSTOXX volatility index, VRP and VRP-PC to changes in the proxies for variance risk premia (i.e., log changes in the VSTOXX scaled by realized volatility measured over the full day or from 14:30 – 17:00), and Credit-Fin to changes in the credit spread of financial institutions. We regress the asset price responses on the tone surprises and a large set of control variables, except for those included in the AR-model specification; for detailed variable descriptions we refer to Table V. We report coefficient estimates, t -statistics based on White (1980) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

Panel A. Tone surprises from extended AR(1)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR1ext $[\tau_t]$ -resid	0.48 [2.76]	0.01 [2.36]	-1.69 [-2.87]	-172.44 [-3.17]	-261.29 [-3.29]	-0.01 [-0.95]
Adj- R^2 (%)	14.82	5.36	7.89	1.94	1.65	1.83
Obs	240	240	240	240	240	239
Panel B. Tone surprises from extended AR(3)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR3ext $[\tau_t]$ -resid	0.49 [2.68]	0.01 [2.59]	-1.64 [-2.79]	-158.97 [-2.91]	-238.48 [-3.00]	-0.02 [-1.87]
Adj- R^2 (%)	14.87	5.96	7.55	1.25	0.93	2.24
Obs	238	238	238	238	238	238
Panel C. Tone surprises from extended AR(5)-model of central bank tone						
	ESX50	2Y	VSTOXX	VRP	VRP-PC	Credit-Fin
AR5ext $[\tau_t]$ -resid	0.47 [2.58]	0.01 [2.79]	-1.58 [-2.66]	-155.13 [-2.81]	-228.64 [-2.85]	-0.02 [-1.94]
Adj- R^2 (%)	14.57	6.35	7.36	1.10	0.72	2.34
Obs	236	236	236	236	236	236

Table IA.15: Forecasting Future Policy Rates

This table reports results for regressions of changes in policy rates (marginal refinancing operation, ΔMRO), on lagged MRO changes and lagged changes in ECB tone ($\Delta\tau$). We consider forecast horizons of 1, 3, and 12 policy meetings using lagged MRO changes and tone changes from the past three or twelve policy meetings. Panel A presents regression results using the latest three MRO changes and tone changes as predictors. The results in Panel B are also based on the last three policy meeting but uses cumulative MRO and tone changes (rather than using each individual lag as predictor). Panel C repeats the analysis using the MRO and tone changes accumulated over the previous twelve policy meetings. Our sample covers all 241 ECB press conferences in the period from January 7, 1999 to December 16, 2021, i.e., we have 240 days with MRO and tone changes. We report coefficient estimates, t -statistics based on [Newey and West \(1987\)](#) standard errors in brackets, the regressions' adjusted- R^2 , and the number of observations.

Panel A. Predicting MRO changes with the latest three MRO and tone changes

	$\Delta MRO_{t,t+1}$		$\Delta MRO_{t,t+3}$		$\Delta MRO_{t,t+12}$	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Const	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	[-0.48]	[-0.53]	[-0.54]	[-0.60]	[-0.71]	[-0.77]
ΔMRO_{t-1}	0.15	0.18	0.59	0.62	0.98	1.13
	[1.19]	[1.42]	[3.41]	[3.93]	[3.33]	[3.56]
ΔMRO_{t-2}	0.12	0.12	0.45	0.41	0.64	0.54
	[2.16]	[2.08]	[4.52]	[3.99]	[1.92]	[1.47]
ΔMRO_{t-3}	0.25	0.20	0.27	0.27	0.29	0.25
	[2.88]	[2.62]	[1.72]	[1.80]	[0.89]	[0.80]
$\Delta\tau_{t-1}$		-0.01		0.04		0.09
		[-1.07]		[1.38]		[1.61]
$\Delta\tau_{t-2}$		0.03		0.06		0.16
		[1.60]		[1.88]		[2.09]
$\Delta\tau_{t-3}$		0.04		0.04		0.11
		[3.30]		[1.70]		[2.03]
Adj- R^2 (%)	13.33	18.01	19.76	21.66	4.94	6.74
Obs	239	238	239	238	233	232

Panel B. Predicting MRO changes with cumulative MRO and tone changes from the latest three policy meetings

	$\Delta MRO_{t,t+1}$		$\Delta MRO_{t,t+3}$		$\Delta MRO_{t,t+12}$	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Const	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	[-0.48]	[-0.52]	[-0.53]	[-0.57]	[-1.06]	[-1.13]
$\Delta MRO_{t-3;t-1}$	0.17	0.17	0.44	0.43	0.64	0.63
	[4.49]	[4.53]	[5.29]	[5.56]	[2.72]	[2.79]
$\Delta\tau_{t-3;t-1}$		0.01		0.04		0.12
		[1.63]		[1.71]		[2.14]
Adj- R^2 (%)	13.39	14.28	19.48	21.57	5.18	7.23
Obs	239	238	239	238	233	232

Panel C. Predicting MRO changes with cumulative MRO and tone changes from the latest twelve policy meetings

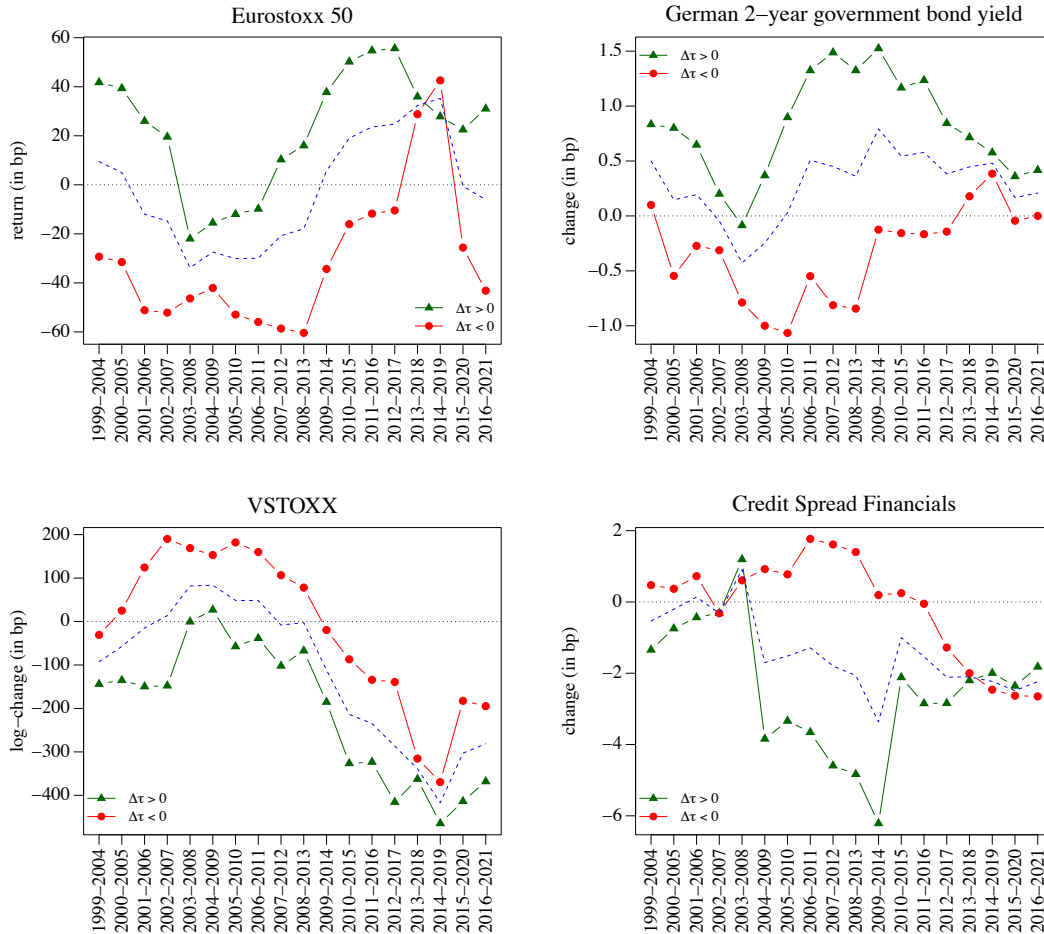
	$\Delta MRO_{t,t+1}$		$\Delta MRO_{t,t+3}$		$\Delta MRO_{t,t+12}$	
	(i)	(ii)	(i)	(ii)	(i)	(ii)
Const	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	[-0.91]	[-0.89]	[-0.90]	[-0.92]	[-1.58]	[-1.73]
$\Delta MRO_{t-12;t-1}$	0.04	0.04	0.09	0.09	0.10	0.07
	[3.13]	[3.12]	[2.37]	[2.30]	[1.03]	[0.77]
$\Delta\tau_{t-12;t-1}$		0.02		0.07		0.21
		[2.46]		[2.57]		[3.12]
Adj- R^2 (%)	5.25	8.27	6.52	16.36	0.66	12.70
Obs	230	229	230	229	224	223

Table IA.16: Forecasting future macro fundamentals

This table reports results for regressions of changes in macro fundamentals on lagged changes in ECB tone. We consider log changes in price levels ($\Delta HICP$), industrial production (ΔIP), real IP ($\Delta RealIP$), retail sales ($\Delta RetSales$), and unemployment ($\Delta Unemp$), as well as changes in consumer confidence ($\Delta ConsConf$) and business confidence ($\Delta BusConf$) as dependent variables. Using forecast horizons in the range from three months to three years, we report the predictive slope coefficients and adjusted R^2 s for two sets of regression specifications. The left part of the table shows results for univariate predictive regressions of fundamentals on tone changes, the right part shows predictive slopes for lagged tone changes when additionally controlling for the most recent change in the policy rate (ΔMRO), a dummy for unconventional monetary policy announcements, and the most recent revisions in the ECB's one-year projection for future inflation and real GDP growth. Our sample covers 241 ECB press conferences in the period from January 1999 to December 2021, i.e., we have 240 days with tone changes. Numbers in squared brackets refer to t -statistics based on [Newey and West \(1987\)](#) standard errors.

	Regressions on tone changes					Regressions on tone changes and controls				
	3m	6m	12m	24m	36m	3m	6m	12m	24m	36m
$\Delta HICP$	0.05	-0.03	-0.00	0.01	0.02	0.07	-0.02	-0.00	-0.01	0.01
	[0.88]	[-1.04]	[-0.10]	[0.37]	[0.59]	[1.18]	[-0.57]	[-0.17]	[-0.27]	[0.60]
Adj- R^2 (%)	-0.30	-0.17	-0.54	-0.56	-0.59	5.68	6.28	5.22	7.73	4.73
ΔIP	0.22	0.36	0.55	0.43	0.33	0.13	0.32	0.51	0.89	0.95
	[1.08]	[1.32]	[1.97]	[1.45]	[1.35]	[0.69]	[1.21]	[1.67]	[1.90]	[2.08]
Adj- R^2 (%)	0.23	0.14	0.08	-0.33	-0.46	9.65	3.19	2.97	3.72	10.82
$\Delta RealIP$	0.18	0.39	0.56	0.41	0.31	0.06	0.33	0.52	0.90	0.94
	[0.90]	[1.46]	[1.98]	[1.43]	[1.34]	[0.33]	[1.31]	[1.67]	[1.85]	[2.02]
Adj- R^2 (%)	-0.12	0.24	0.06	-0.36	-0.48	12.11	4.93	3.52	4.47	11.23
$\Delta RetSales$	0.09	0.14	0.11	0.17	-0.05	0.09	0.14	0.17	0.42	0.25
	[1.38]	[1.83]	[1.10]	[1.21]	[-0.32]	[1.44]	[1.74]	[1.33]	[1.53]	[0.86]
Adj- R^2 (%)	0.05	0.17	-0.38	-0.44	-0.60	1.65	0.28	1.07	4.61	4.79
$\Delta Unemp$	-0.34	-0.53	-0.74	-0.87	-0.54	-0.21	-0.19	-0.27	-0.88	-0.86
	[-1.57]	[-1.68]	[-1.64]	[-1.38]	[-0.85]	[-1.03]	[-0.67]	[-0.65]	[-1.31]	[-0.90]
Adj- R^2 (%)	0.53	0.21	-0.08	-0.29	-0.53	20.60	13.76	8.89	3.04	-1.03
$\Delta ConsConf$	0.23	0.15	0.11	-0.14	-0.27	0.21	0.30	0.44	0.67	0.25
	[1.21]	[0.65]	[0.37]	[-0.33]	[-0.77]	[0.95]	[0.94]	[1.03]	[1.01]	[0.62]
Adj- R^2 (%)	-0.23	-0.48	-0.53	-0.55	-0.56	0.45	6.23	5.03	12.70	12.31
$\Delta BusConf$	0.76	0.90	1.01	0.16	-0.04	0.81	1.02	1.53	1.78	1.29
	[2.53]	[2.15]	[1.97]	[0.32]	[-0.11]	[2.47]	[2.23]	[2.38]	[1.74]	[2.01]
Adj- R^2 (%)	1.26	0.26	-0.15	-0.56	-0.61	4.01	5.41	7.21	19.35	25.73

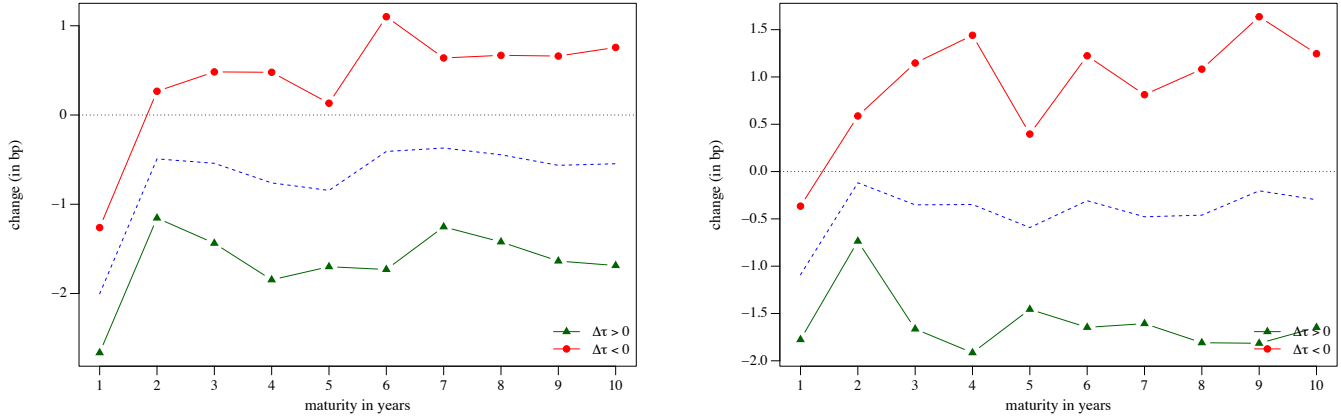
Figure IA.1: Robustness over Subsamples



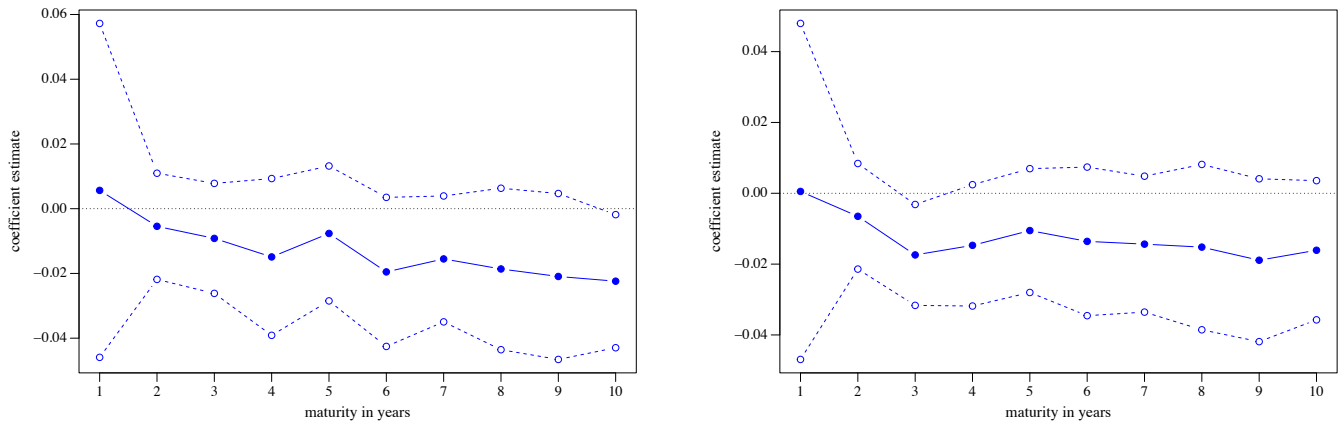
This figure presents results on changes in asset prices in response to changes in ECB tone revealed at press conferences over 18 six-year subsamples (x-axis). The green lines (with triangles) represent averages across subsample's press conferences with positive tone changes, the red lines (with bullets) for negative tone changes; the dashed blue line indicates the average response on ECB press conference days. We report results for the press conference day (i) returns of the Eurostoxx 50, (ii) changes in the 2-year German government bond yield, (iii) log changes in the VSTOXX volatility index, and (iv) changes in credit spreads (BBB-AAA) of financial firms.

Figure IA.2: Sovereign Yield Spread Changes on ECB Press Conference Days

(a) Positive versus negative tone changes on PC days: Italy and Spain vs Germany



(b) Regressions of PC day yield changes on tone changes: Italy and Spain vs Germany



This figure presents results on changes in the Italian and Spanish sovereign yield spreads versus Germany (for maturities ranging from one to ten years, x-axis) in response to changes in ECB tone. Panel (a) presents average PC-day yield changes in basis points, for all PC days (dashed lined in blue) as well as conditional on the tone changes at the most recent PC having been positive (green triangles) or negative (red bullets). Panel (b) presents results from regressing PC-day yield changes on changes in ECB tone ($\Delta\tau$) as well as our standard control variables for other textual characteristics, policy actions, market conditions, and monetary policy shocks. We plot the slope coefficients for tone changes, along with 95% confidence bands (based on [White \(1980\)](#) standard errors). The sample spans a total of 240 tone changes from 241 ECB press conferences between January 1999 and December 2021.