Central Bank Communication by ???
The Economics of Public Policy Leaks

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Public policy leaks: what they are and why we should care

Definition of public policy (PP) leaks:
Disclosures of confidential information transmitted by <u>institutional insiders</u> to the <u>media</u> with an expectation of <u>anonymity</u>

PP leaks occur frequently:
- Institutions around the world *"leak like sieves"* (Grønbach Jensen, 1998; Pozen, 2013; Rottman, 2019)
- *"Routine method of communication about government"* (House Committee on the Judiciary, 1982)

PP leaks can have large impacts:
- Leaks reveal misconduct (Kielbowicz, 2006; Kwoka, 2015; Spaniel and Poznansky, 2018)
- Leaks harm credibility and reputation of institutions (Oei and Ring, 2018; Assenmacher et al., 2021)
- Leaks lock in decision-makers (Fehrler and Hahn, 2022; Vissing-Jorgensen, 2019)

Many questions about PP leaks remain unanswered

> *"Our comprehension of leaking has not kept pace with our fascination."* (Pozen, 2013)

1. How do leaks affect public views?
2. Do leaks impact policy effectiveness?
3. Can official communication mitigate the impact of leaks?
4. Are leaks accidents, "plants" or placed by individuals with their own agenda?

$\rightarrow$ **Theoretical ambiguity: anonymity of information could cut both ways**

$\rightarrow$ **Empirical challenge: lack of fast-moving outcome variables**

Central banks are promising cases to study PP leaks

Key advantages:

1. News about monetary policy instantaneously move financial markets
2. Monetary policy decisions have well-defined scope and recurrent nature
3. Decision-making by committee prevalent in many public institutions

Anonymous information flows in monetary policy:

- Finer (2018); Vissing-Jorgensen (2019); Cieslak et al. (2019); Morse and Vissing-Jorgensen (2020)

This paper: first systematic leak database (focus on Eurosystem)

- European Central Bank (ECB) plus national central banks of euro area
- ECB Governing Council (6 Executive Board members $+$ 20 national Governors)
- Meetings every 6 weeks to decide on monetary policy

How Eurosystem leaks look like: a recent example

Reported by **Bloomberg** – 2023/01/17 16:00:26 (excerpt)

ECB Starts to Ponder Slower Hikes After Half Point in February

*European Central Bank policymakers are starting to consider a slower pace of interest-rate hikes than President Christine Lagarde indicated in December, **according to officials with knowledge of their discussions**.*

*While the 50 basis-point step in February she signaled remains likely, the prospect of a smaller 25-point increase at the following meeting in March is gaining support, the officials said, **asking not to be identified** because talks on the matter are confidential.*

How Eurosystem leaks look like: breaking news headlines

Reported by **Reuters** – 2019/04/16 11:13:28

SEVERAL ECB POLICYMAKERS DOUBT PROJECTIONS FOR GROWTH REBOUND IN H2, SOME EVEN QUESTION ACCURACY OF FORECASTING MODELS: SOURCES

Reported by **Market News International** – 2011/03/01 17:40:00

*ALERT: SOURCES: ECB TO RATCHET UP INFLATION WARNINGS THIS THURSDAY*

A novel database of 368 Eurosystem leaks (2002–2021)

- Keyword filtering + manual classification: *Reuters*, *Bloomberg* and *MNI* archives
- Focus on policy-relevant leaks: interest rates, UMP, growth, inflation and FX
- Minute-level time stamp for each leak

▸ Details on keyword filtering   ▸ Leaks by topic   ▸ Normalized leaks counts
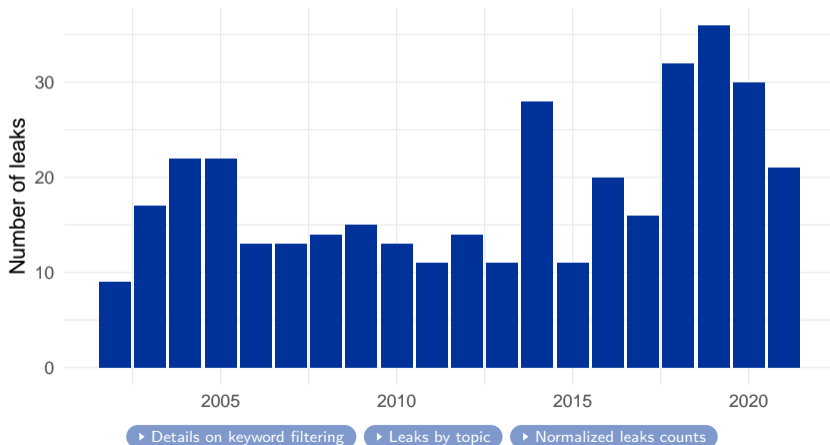
Leaks shape public expectations

- Outcome: $|\Delta|$ in risk-free interest rates (OIS 1M to 10Y)
- Event study windows: -5 min to $+30$ min around minute-level time stamp
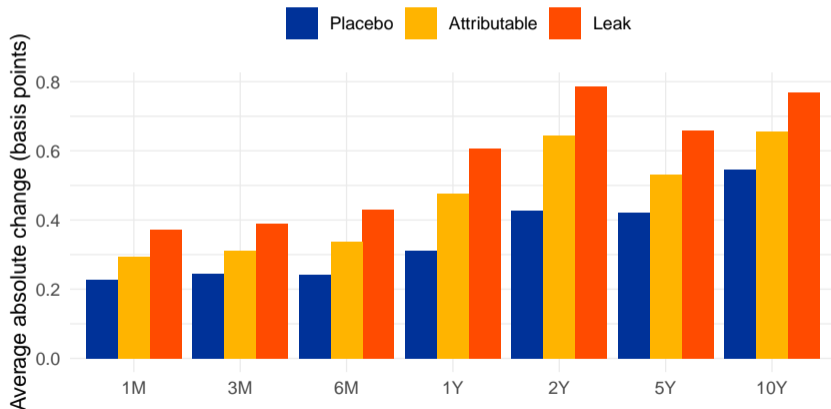
Estimation results   Details on placebo events   Details on attributable statements

Leaks are *not* informative about post-meeting rate levels

$$\delta_i = \alpha + \beta D_i^{QP} + \epsilon_i \tag{1}$$

where δ_i is $|OIS_{post\_leak,i} - OIS_{post\_meeting,i}| - |OIS_{pre\_leak,i} - OIS_{post\_meeting,i}|$

Dependent Variables:	3M	6M	1Y	2Y	5Y	10Y
Intercept α (average δ_i)	**-0.0187**	**0.0018**	**0.0722**	**-0.1235**	**-0.1271**	**-0.0522**
	(0.0549)	(0.0560)	(0.0786)	(0.0980)	(0.0945)	(0.0959)
QP control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	251	276	288	291	162	165
Adjusted R^2	-0.00400	-0.00340	-0.00298	0.00365	-0.00112	-0.00140

Clustered (policy meeting) standard-errors in parentheses
Significance codes: ***: 0.01, **: 0.05, *: 0.1

Attributable events *are* informative about post-meeting rate levels

$$\delta_i = \alpha + \beta D_i^{QP} + \epsilon_i \tag{2}$$

where δ_i is $|OIS_{post\_attributable,i} - OIS_{post\_meeting,i}| - |OIS_{pre\_attributable,i} - OIS_{post\_meeting,i}|$

Dependent Variables:	3M	6M	1Y	2Y	5Y	10Y
Intercept α (average δ_i)	**-0.0389*****	**-0.0442*****	**-0.0544*****	**-0.0362****	**0.0172**	**-0.0087**
	(0.0098)	(0.0104)	(0.0150)	(0.0167)	(0.0229)	(0.0262)
QP control	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,404	4,930	5,145	5,187	2,061	2,099
Adjusted R^2	0.00036	-0.00019	-0.00011	-0.00011	0.00014	0.00020

Clustered (policy meeting) standard-errors in parentheses
*Significance codes: ***: 0.01, **: 0.05, *: 0.1*

Contrary to attributable events, leaks weaken policy announcements

Reported by **Reuters** – 2021/07/22 17:38:10 (excerpt)

Lagarde won over most dissenters but two held out in ECB guidance debate

A significant group of European Central Bank policymakers objected to the new interest rate guidance it gave on Thursday but most were won over and only two – the German and Belgian central bank chiefs – held out, ***four sources told Reuters****.*

Market moves form before press release to end of day
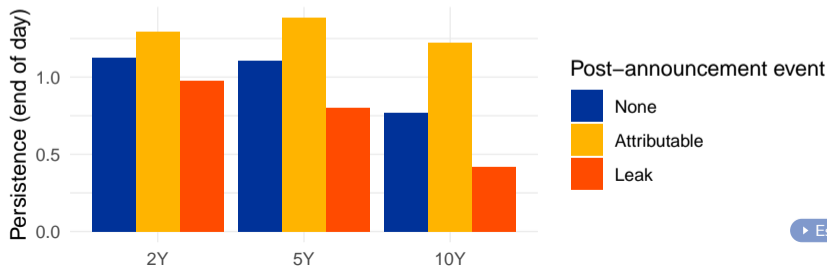
Official communication can mitigate the impact of leaks (I)

Effect of more intense attributable communication in run-up to leaks:

$$|\Delta y_i| = \beta \lambda_i + \tau_i^{year} + \tau_i^{month} + \tau_i^{weekday} + \tau_i^{hour} + \epsilon_i \qquad (3)$$

where $|\Delta y_i|$ is high-frequency market impact of leak and

λ_i measures intensity of attributable communication in 36 hours before leak ▸ Details on λ_i

Dependent Variables:	$|\Delta 1M|$	$|\Delta 3M|$	$|\Delta 6M|$	$|\Delta 1Y|$	$|\Delta 2Y|$	$|\Delta 5Y|$	$|\Delta 10Y|$
Attributable comm. intensity	-0.0138	-0.1078**	-0.1263**	-0.1172*	-0.1450***	-0.2735*	-0.1783
	(0.0265)	(0.0472)	(0.0495)	(0.0669)	(0.0501)	(0.1518)	(0.1956)
Year, Month, Weekday and Hour FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	112	134	146	152	154	96	96
R^2	0.56972	0.39502	0.43674	0.47803	0.53373	0.54129	0.39639

Heteroskedasticity-robust standard-errors in parentheses; significance codes: ***: 0.01, **: 0.05, *: 0.1

Official communication can mitigate the impact of leaks (II)

Impact of leaks neg. correlated with impact of Executive Board statements in 36 hours after leak:

$$\Delta y_i^{attr} = \alpha + \beta \Delta y_i^{leak} + \gamma D_i^{Pres/ExB} + \delta \Delta y_i^{leak} \times D_i^{Pres/ExB} + \epsilon_i \qquad (4)$$

Dependent Variables:	$|\Delta 1M|$	$|\Delta 3M|$	$|\Delta 6M|$	$|\Delta 1Y|$	$|\Delta 2Y|$	$|\Delta 5Y|$	$|\Delta 10Y|$
Market reaction to leak	0.1137	0.1818	0.1487	0.0393	0.0340	-0.0146	0.0311
	(0.1108)	(0.1176)	(0.0960)	(0.0554)	(0.0639)	(0.0921)	(0.1098)
Market reaction to leak $\times$ Pres/ExB	**-0.1312**	**-0.0458**	**-0.2592***	**-0.2102****	**-0.2332****	**-0.2054***	**-0.1798**
	(0.1535)	(0.2135)	(0.1313)	(0.0912)	(0.0934)	(0.1095)	(0.1613)
Constant and Pres/ExB dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	134	165	212	227	233	125	126
Adjusted R^2	0.01495	0.02944	0.02019	0.01408	0.02011	0.04182	0.02638

Clustered (leak) standard-errors in parentheses; *significance codes: ***: 0.01, **: 0.05, *: 0.1*

$\rightarrow$ **suggests many Eurosystem leaks unlikely to be "plants"**

Many Eurosystems leaks are unlikely to be accidents

Leaks cluster around policy days:
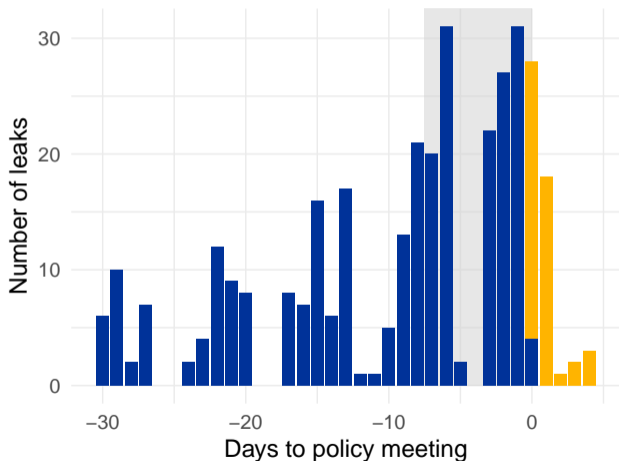
Number of leaks before/per meeting can be "predicted":

Positive, statistically significant correlation with:

→ release of macro projections
→ proxies for disagreement
→ probability of policy change

▸ Estimation results: drivers of leaks

▸ Estimation results: leaks and policy changes

Summary

New insights:

1. PP leaks are powerful tools to shape public views
2. Suggestive evidence that PP leaks can be counteracted by official communication
3. Many Eurosystem leaks likely are neither accidents nor plants

Relevant for:

- Policy makers
- Literature on ad-hoc policy communication & on decision-making by committee
- High-frequency identification of monetary policy shocks

Many topics for future research:

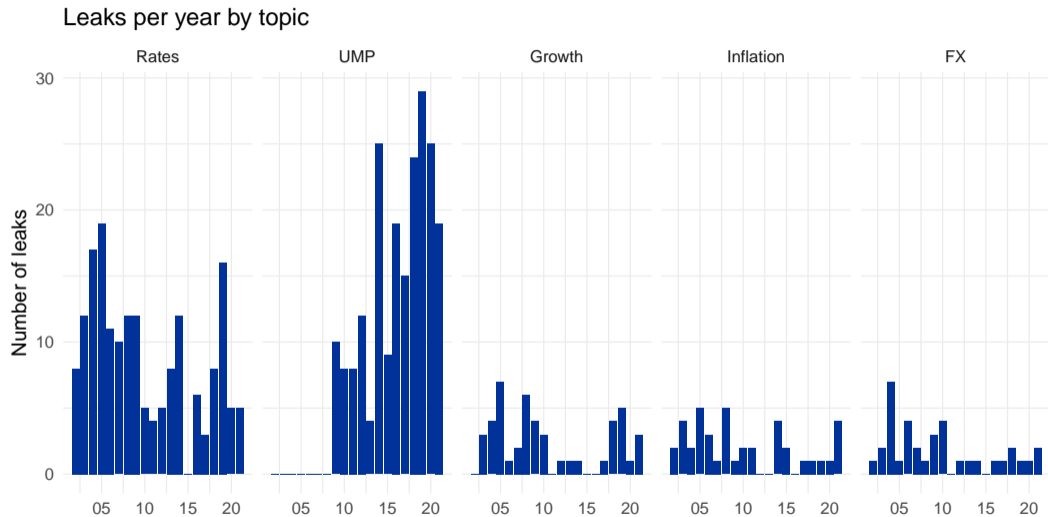- e.g. potential longer-term implications for the reputation of institutions

Appendix

How we filter news archives for Eurosystem leaks

Filtering basics:

- Keyword driven filtering tailored to specifics of each news source:
  - → English language
  - → Combination of topic tags (e.g. "ECB", "Eurosystem")
  - → Headline or body contains keywords (e.g. "anonymous", "confidential")
  - → Exclusion restrictions (e.g. no daily news digests)
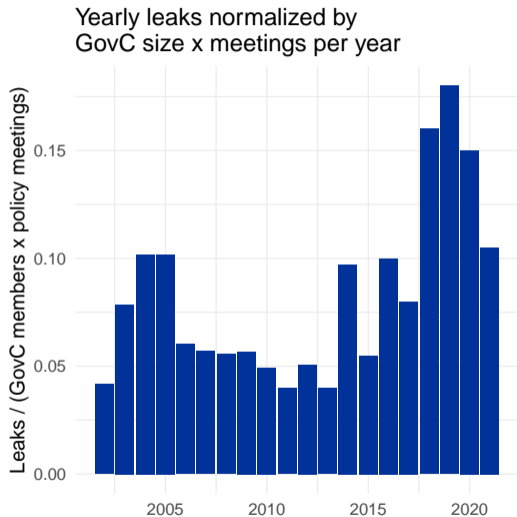
Manual processing:

- Outcome of the filtering process: list of "candidate" leaks with exact time stamp
- Manual processing of "candidates": elimination of duplicates, identification of actual leaks + simultaneous classification into five relevant topics
- Leaks on local economic conditions and without monetary policy stance implication excluded

Leaks per year by topic

Normalized leak counts ▸ Back

Yearly leaks normalized by GovC size

Yearly leaks normalized by
GovC size x meetings per year
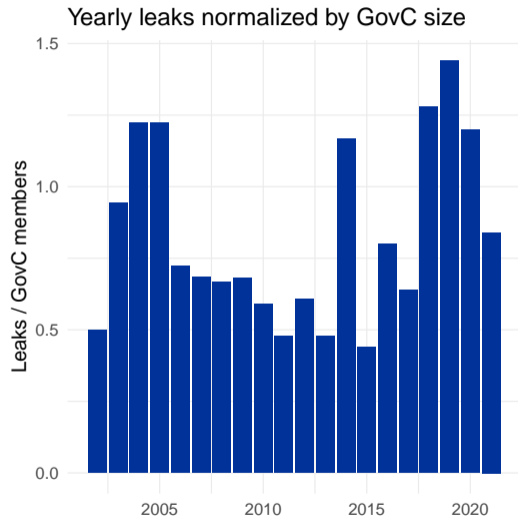
Market reactions to leaks exceed those for placebo events ▸ Back

$$|\Delta y_i| = \alpha + \beta D_i^{Leak} + \epsilon_i \qquad (5)$$

where $\Delta y_i = \text{med}\left(\{y_{t+k}\}_{k=30+1}^{30+10}\right) - \text{med}\left(\{y_{t-k}\}_{k=5+1}^{5+10}\right)$

Dependent Variables:	$|\Delta 1M|$	$|\Delta 3M|$	$|\Delta 6M|$	$|\Delta 1Y|$	$|\Delta 2Y|$	$|\Delta 5Y|$	$|\Delta 10Y|$
Intercept (Placebo)	0.2273***	0.2432***	0.2417***	0.3126***	0.4260***	0.4208***	0.5450***
	(0.0080)	(0.0056)	(0.0051)	(0.0060)	(0.0080)	(0.0077)	(0.0083)
Leak	**0.1457*****	**0.1457*****	**0.1877*****	**0.2939*****	**0.3614*****	**0.2384*****	**0.2234*****
	(0.0443)	(0.0352)	(0.0372)	(0.0519)	(0.0633)	(0.0557)	(0.0558)
Observations	5,212	5,255	5,279	5,289	5,292	5,166	5,166
Adjusted R^2	0.00237	0.00576	0.01180	0.02066	0.01818	0.00568	0.00420

Heteroskedasticity-robust standard-errors in parentheses; *significance codes: ***: 0.01, **: 0.05, *: 0.1*

Market reactions to leaks across topics ▸ Back

Dependent Variables:	|Δ1M|	|Δ3M|	|Δ6M|	|Δ1Y|	|Δ2Y|	|Δ5Y|	|Δ10Y|	|ΔSTOXX|
Intercept (Placebo)	0.2293***	0.2448***	0.2439***	0.3165***	0.4306***	0.4216***	0.5458***	19.49***
	(0.0080)	(0.0056)	(0.0052)	(0.0060)	(0.0080)	(0.0076)	(0.0083)	(0.3318)
Rates	0.1955***	0.2917***	0.3250***	0.5428***	0.5937***	0.2146*	0.1261	3.989
	(0.0754)	(0.0632)	(0.0699)	(0.0973)	(0.1086)	(0.1178)	(0.0970)	(2.715)
UMP	0.0005	-0.0556	-0.0104	-0.0755	-0.1049	0.2010***	0.2256***	7.005***
	(0.0510)	(0.0401)	(0.0437)	(0.0588)	(0.0754)	(0.0680)	(0.0735)	(2.394)
Growth, inflation, FX	0.0052	-0.0267	-0.0624	-0.0814	0.0724	-0.1708*	-0.1925*	-3.992*
	(0.1087)	(0.0664)	(0.0600)	(0.0788)	(0.1259)	(0.0943)	(0.1026)	(2.406)
Observations	5,212	5,255	5,279	5,289	5,292	5,166	5,166	5,290
Adjusted R^2	0.00177	0.01054	0.01663	0.03304	0.02625	0.00612	0.00451	0.00315

Heteroskedasticity-robust standard-errors in parentheses; significance codes: ***: 0.01, **: 0.05, *: 0.1

$$|\Delta y_i| = \beta D_i^{Attributable} + \tau_i^{year} + \tau_i^{month} + \tau_i^{weekday} + \tau_i^{hour} + \epsilon_i \qquad (6)$$

$$\text{where } \Delta y_i = \text{med}\left(\{y_{t+k}\}_{k=30+1}^{30+10}\right) - \text{med}\left(\{y_{t-k}\}_{k=5+1}^{5+10}\right)$$

Dependent Variables:	$|\Delta 1M|$	$|\Delta 3M|$	$|\Delta 6M|$	$|\Delta 1Y|$	$|\Delta 2Y|$	$|\Delta 5Y|$	$|\Delta 10Y|$
Attributable	**-0.1181*****	**-0.1111*****	**-0.1353*****	**-0.2122*****	**-0.2508*****	**-0.1940*****	**-0.1925*****
	(0.0423)	(0.0345)	(0.0354)	(0.0483)	(0.0602)	(0.0516)	(0.0554)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weekday FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hour of day FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,724	4,695	5,228	5,442	5,487	2,253	2,273
R^2	0.14421	0.08734	0.12404	0.15660	0.18143	0.16972	0.13694

Heteroskedasticity-robust standard-errors in parentheses; significance codes: ***: 0.01, **: 0.05, *: 0.1

How we sample placebo events

Rationale:

- Placebo events needed to compare impact of monetary policy leaks to "usual" market movements

Specifics (steps 1–4 are repeated 5,000 times):

1. Use "yyyy-mm" empirical distribution from all actual leaks to draw a candidate placebo "yyyy-mm" combination
2. Randomly draw a calendar day ("dd") and append it to the "yyyy-mm" combination to obtain a date of format "yyyy-mm-dd"
3. Extract "hh:mm" component of all actual leaks, keep only those in European trading hours, draw a "hh:mm" combination and append it to the previously drawn date
4. Compute "market impact" of placebo event using high-frequency OIS data (window defined as for leaks)

How we collect data on attributable statements ▸ Back

Filtering basics:

- Database: Reuters News Archive
- Keyword driven pre-filtering to obtain near universe of reports on "fresh" public statements by all ECB Governing Council members (2002–2021):
  - $\rightarrow$ English language
  - $\rightarrow$ Breaking news headlines with Council members' name
  - $\rightarrow$ Exclusion restrictions (e.g. exclude Council members outside term of office)

Manual processing and machine learning techniques:

- Pre-filtering yields 56,000 "candidate" statements with exact time stamp
- Draw random sample of 20% and manually classify statements into topics (discard false positives)
- Train Support Vector Machine with hand-classified data and predict classification (monetary policy-relevant or not) for remaining 80% of our data

$$\Delta y_t = \alpha + \beta e_t^{MP} + \gamma D_t^{leak} + \delta \left(e_t^{MP} \times D_t^{leak} \right) + \epsilon_t \tag{7}$$

where $\Delta y_t = (OIS_{end\_of\_trading\_day,i} - OIS_{pre\_press\_release,i})$

Dependent Variables:	Δ 2Y until day end	Δ 5Y until day end	Δ 10Y until day end
Intercept	-0.0035	-0.4618*	-0.4311
	(0.1638)	(0.2406)	(0.3274)
Δ 2Y decision	1.124***	1.104***	0.7703***
	(0.0431)	(0.1005)	(0.1102)
Post-meeting leak	-0.2584	0.3250	0.7316
	(0.2135)	(0.2572)	(0.4918)
Δ 2Y decision × Post-meeting leak	**-0.1487*****	**-0.3032*****	**-0.3515*****
	(0.0442)	(0.1007)	(0.1146)
Post-meeting attributable	0.0852	-0.1744	0.0542
	(0.3290)	(0.3912)	(0.6080)
Δ 2Y decision × Post-meeting attributable	**0.1701****	**0.2808****	**0.4493****
	(0.0686)	(0.1302)	(0.1824)
Observations	213	95	98
Adjusted R^2	0.87874	0.80927	0.53859

Heteroskedasticity-robust standard-errors in parentheses; significance codes: ***: 0.01, **: 0.05, *: 0.1

Details on λ_i ▸ Back

- Δhr_{ij}: distance in hours between every leak i and every attributable statement j
- Consider all J_i attributable statements from 36 hours to 0.5 hours before leak i
- λ_i measures the intensity of attributable communication before every leak:

$$\lambda_i = \sum_{j=1}^{J_i} \frac{1}{\Delta hr_{ij}} \tag{8}$$

- λ_i increases if i) more attributable statements are issued or ii) attributable statements occur closer to leak

Drivers of Eurosystem leaks (Poisson regression) ▸ Back

Dependent Variables:	Leak count		Leak count (no dissent)	
IT-DE 10Y spread	0.4673**	0.4438**		
	(0.1257)	(0.1182)		
Inflation IQR	-0.0676	-0.0718		
	(0.2333)	(0.2239)		
Count of attributable	0.0208***	0.0206***		
	(0.0038)	(0.0037)		
Dissent			0.6340***	0.5958**
			(0.1284)	(0.1326)
Macroeconomic projections		0.4446**		0.2943
		(0.1085)		(0.1225)
Year FE	Yes	Yes	Yes	Yes
Observations	213	213	171	171
Pseudo R^2	0.15434	0.16191	0.14779	0.15095

*Average marginal effects displayed; significance codes: ***: 0.01, **: 0.05, *: 0.1*
Heteroskedasticity-robust standard-errors for coefficients in parentheses

Leaks correlate with monetary policy changes (logistic regression) ▸ Back

Dependent Variable:	Policy change (yes/no)		
	(1)	(2)	(3)
Pre-meeting leaks count	**0.0596****	**0.0486****	**0.0408***
	(0.1395)	(0.1402)	(0.1425)
Macroeconomic projections		0.2274***	0.2391***
		(0.3806)	(0.4023)
Pre-meeting attributable count			0.0035
			(0.0148)
Year FE	Yes	Yes	Yes
Observations	201	201	201
Pseudo R^2	0.13107	0.18544	0.19707
BIC	319.00	310.98	313.44

Average marginal effects displayed
*Significance codes: ***: 0.01, **: 0.05, *: 0.1*
Heteroskedasticity-robust standard-errors (for coefficients) in parentheses

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