MONETARY POLICY, FIRMS' INFLATION EXPECTATIONS AND PRICES: CAUSAL EVIDENCE FROM FIRM-LEVEL DATA

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MOTIVATIONS

Modern macro assigns a central role to expectations and pricing choices of monopolistic price-setters in shaping the economy's response to MP.

Yet, mostly due to lack of suitable data, price setters have been largely neglected by empirical research exploring responses to MP.

Do firms' expected inflation and pricing strategies respond *directly* to MP news or response is slower, mediated by financial markets?

Is the ECB still able to steer price-setters' inflation expectations and choices at the ELB?

CONTRIBUTIONS

Causal evidence on the response of firms' inflation expectations and pricing strategies to ECB's monetary policy news.

Combine standard macroeconometric approach of measuring MP surprises with high frequency financial market movements around central bank communications with firms' survey data

Advancements: 1) focus on firms; 2); exploit *quantitative* data on expectations at several horizons on *consumer price inflation* (HICP) and on own price dynamics; 3) investigate main *channels* 4) use well-identified monetary policy shocks.

RESULTS PREVIEW

Sizeable causal response of expected inflation to MP news, stronger at ELB and associated also with movements at long end of term structure.

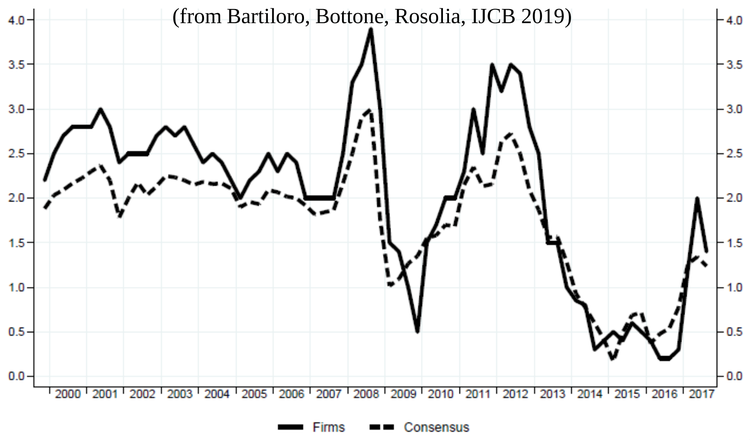
No significant effect on own future price dynamics, possibly also a reflection of offsetting transmission channels.

Little evidence that MP news shape perceived demand pressures or cost (wages and materials) push.

DATA

Bank of Italy' Survey of Inflation and Growth Expectations.
Since 1999:4, quarterly. Covers manufacturing and non financial services firms with 50+ employees.

FIRMS VS CONSENSUS - 1Y R EXPECTED INFLATION
(from Bartiloro, Bottone, Rosolia, IJCB 2019)



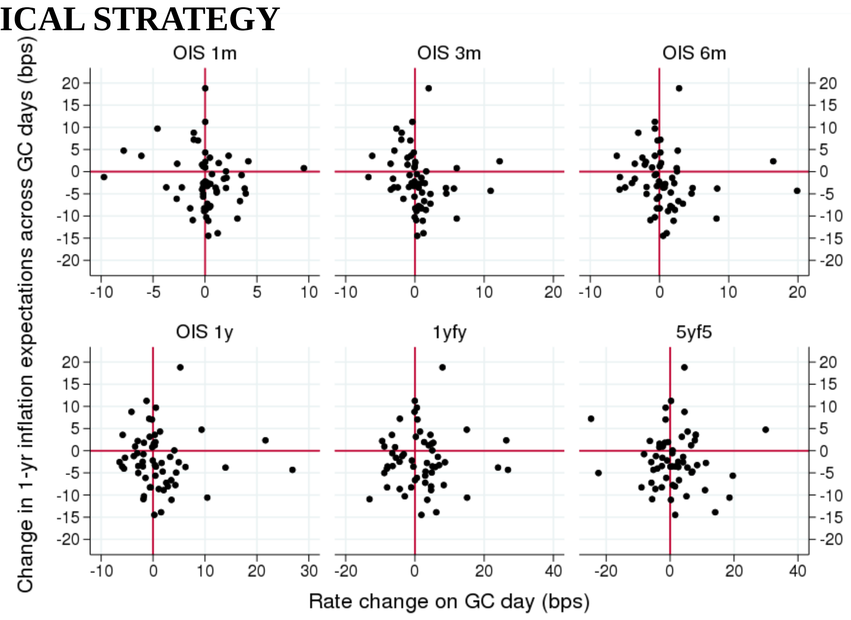
EMPIRICAL STRATEGY

Almost all fieldworks (each ~25 calendar days) of the survey include a scheduled GC monetary policy meeting.

We explore whether the difference between expectations collected just after and just before any GC meeting is systematically related to standard gauges of monetary policy surprises defined by movements in market rates around the relevant GC meetings.

$$\pi^e_{idt} = \beta I_{idt}(d > m_t) S_{m_t} + \Phi_t + \epsilon_{idt}$$

All currently available information and initial policy stance absorbed by wave dummies.
Sorting before/after GC meeting not an issue: *S*=Surprise!



FIRMS' EXPECTED INFLATION AND MONETARY POLICY SURPRISES

$$\pi^e_{it} = \alpha + \beta \Delta R^{3m}_{GC} + \gamma \Delta R^{1f1y}_{GC} + \theta \Delta R^{5f5y}_{GC} + \delta X_{it} + d(i) + \Phi_t + \epsilon_{it}$$

ΔR={0 if interviewed before GC, change in relevant rate on GC day if interviewed after GC}

	All	News vs shocks		Pre/Post GFC		FwdG	APP	Post GFC	FwdG	APP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Dep. var.	π_{t+12}	π_{t+12}		π_{t+12}				π_{t+24}			π_{long}
ΔR^{3m}_{GC}	-0.5*	-1.2**	-0.3	-0.2	-1.0*	-1.2**	-1.3**	-1.1*	-1.4*	-1.6**	-2.1**
	(0.084)	(0.018)	(0.427)	(0.574)	(0.065)	(0.046)	(0.022)	(0.085)	(0.060)	(0.033)	(0.021)
ΔR^{1f1y}_{GC}	-0.0	0.4*	-0.0	0.0	0.4	0.4	0.8**	0.2	0.5	0.8**	1.0**
	(0.946)	(0.077)	(0.572)	(0.646)	(0.201)	(0.156)	(0.015)	(0.608)	(0.190)	(0.025)	(0.035)
ΔR^{5f5y}_{GC}	-0.1	-0.2	-0.2	0.2	-0.3	-0.5**	-0.5**	-0.4*	-0.7***	-0.6**	-0.9***
	(0.598)	(0.298)	(0.434)	(0.518)	(0.145)	(0.014)	(0.026)	(0.099)	(0.005)	(0.033)	(0.003)
From	2002:1	2002:1	2002:1	2002:1	2009:1	2012:1	2014:1	2009:2	2012:1	2014:1	2014:1
Obs.	29973	15298	14675	11377	18596	12668	8006	18147	12668	8006	8006

P-values of $H_0 : \beta = 0$ in parentheses (*** p<0.01, ** p<0.05, * p<0.1); Huber-White robust standard errors.
Dependent variable: 1-year ahead expected consumer price inflation (cols. 1-7), available since 2002:1; 2-year ahead expected consumer price inflation (cols. 8-10), available since 2009:2; average expected inflation between 3 and 5 years ahead (col. 11), available since 2014:1. All samples end in 2017:3 except column (4) in 2008:4. ΔR^H_{GC} is change of 3-months ($H = 3m$), 1-year forward 1 year ($H = 1f1y$) and 5-year forward 5 year ($H = 5f5y$) rate swaps on Governing Council (GC) days for firms interviewed after relevant GC day and zero for those before. Waves that do not contain a GC meeting are excluded. All regressions include a cubic of the estimated probability of interview after GC, log of employees, dummies for the full interaction of industry, area and size class, dummies for time (in quarters) and day-of-week. Col. (2) only waves in which 3-month rates and EuroStox50 moved in opposite direction on GC days; col. (3) only waves in which 3-month rates and EuroStox50 moved in same direction on GC days.

OTHER EFFECTS OF MONETARY POLICY SHOCKS?

	(1) Macro outlook	(2) Own inv. outlook	(3) Own op. cond.	(4) Macro outlook	(5) Own price change (%)	(6) Upward price pressures from: demand	(7) wages	(8) mater.
	improved past 3 months		will improve next 3 months		next 12 months			
A. All sample								
ΔR^{3m}_{GC}	0.0	0.2	0.1	0.4	1.0	0.2	-0.1	-0.3
	(0.850)	(0.268)	(0.670)	(0.198)	(0.587)	(0.166)	(0.763)	(0.156)
ΔR^{1f1y}_{GC}	-0.0	-0.0	0.0	-0.1	0.9	0.0	-0.0	0.0*
	(0.669)	(0.866)	(0.979)	(0.415)	(0.221)	(0.545)	(0.161)	(0.051)
ΔR^{5f5y}_{GC}	0.0	0.0	0.0	0.2*	-0.1	0.1	0.0	-0.1
	(0.523)	(0.411)	(0.365)	(0.077)	(0.893)	(0.239)	(0.673)	(0.267)
B. Only negative comovements of rates and stocks								
ΔR^{3m}_{GC}	0.1	0.5	-0.1	-0.2	2.0	0.4	-0.5	-0.8**
	(0.674)	(0.157)	(0.724)	(0.753)	(0.416)	(0.236)	(0.193)	(0.048)
ΔR^{1f1y}_{GC}	-0.0	-0.1	0.1	0.0	-0.6	-0.2	0.1	0.2
	(0.929)	(0.297)	(0.603)	(0.986)	(0.581)	(0.111)	(0.409)	(0.165)
ΔR^{5f5y}_{GC}	0.0	0.1	0.1	0.2	0.6	0.2**	-0.1	-0.2
	(0.706)	(0.170)	(0.459)	(0.171)	(0.463)	(0.032)	(0.390)	(0.101)
C. Since 2009:1								
ΔR^{3m}_{GC}	-0.1	0.1	0.0	0.2	-0.2	0.2	0.0	-0.1
	(0.786)	(0.817)	(0.925)	(0.568)	(0.941)	(0.530)	(0.897)	(0.696)
ΔR^{1f1y}_{GC}	-0.0	0.1	-0.1	0.0	2.8**	-0.0	-0.1	0.1
	(0.946)	(0.201)	(0.514)	(0.856)	(0.015)	(0.811)	(0.464)	(0.496)
ΔR^{5f5y}_{GC}	0.0	-0.0	0.1	0.1	-0.2	0.1	0.0	-0.2
	(0.664)	(0.800)	(0.108)	(0.166)	(0.758)	(0.223)	(0.653)	(0.122)

P-values of $H_0 : \beta = 0$ in parentheses (*** p<0.01, ** p<0.05, * p<0.1); Huber-White robust standard errors.
ΔR^H_{GC} is change of 3-months ($H = 3m$), 1-year forward 1 year ($H = 1f1y$) and 5-year forward 5 year ($H = 5f5y$) rate swaps on Governing Council (GC) days for firms interviewed after relevant GC day and zero for those before. Waves that do not contain a GC meeting are excluded. All regressions include a cubic of the estimated probability of interview after GC, log of employees, dummies for the full interaction of industry, area and size class, dummies for time (in quarters) and day-of-week. Col. (5) also include percentage change in own prices during past 12 months.

Bartiloro, Bottone, Rosolia. The Heterogeneity of the Inflation Expectations of Italian Firms along the Business Cycle, *International Journal of Central Banking* (December 2019).

Coibion, Gorodnichenko, Ropele. Inflation Expectations and Firm Decisions: New Causal Evidence. *Quarterly Journal of Economics* (forth.).

Enders, Huennekes, Mueller. Monetary Policy Announcements and Expectations: Evidence from German Firms. *Journal of Monetary Economics* (forth.).

SUMMING UP…

Theoretically consistent, statistically and economically significant response of firms' Eπ at all horizons considered to MP news that affect the short and the long ends of term structure of interest rates.

Evidence of (rational?) inattention: no response when π stable and objective-consistent; more sizeable one at *unusual* times…

…but, do MP shocks affect firms pricing decisions? Not quite. Overall, lack of statistically significant response of own prices with point estimates tilted towards positive values.

Coexisting offsetting channels (e.g. demand vs cost channel)? A theoretical possibility but at first inconstistent with lack of effects on firms' assessments of role of demand pressures and of cost push factors. Yet, very *coarse qualitative measures* contrasted with shocks of limited size.

Other explanations? Empirically, time- and state-dependent pricing models imply sizeable heterogeneity of firm-level price dynamics around *average dynamics*, thus leading to weaker statistical significance of same shock; also, inflation expectations refer to consumer prices whereas own price developments refer to producer prices; menu costs…

Next, complement with measures of media coverage of each GC communication, consider narrower windows around GC communication events (EA-MPD)