Monetary policy communication and inflation expectations: new evidence about tone and readability

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Motivation

When communicating monetary policy to the general public (e.g. firms) instead of professional forecasters:

- How important is the tone of monetary policy communication to anchor inflation expectations to a target?
- Are there differences between the effective tone of monetary policy communication and the perceived tone by economic agents?
- Does readability and perspicuity of monetary policy communication reinforce the effect of the tone?

Our contribution

- Contribute evidence on the impact of monetary policy communication on inflation expectations of the general public (firms):
  - A negative and statistically significant relationship between the tone of monetary policy communication and inflation expectations
  - On top of the tone, the readability of monetary policy communication has a statistically significant marginal contribution
- To so doing:
  - Propose a new perceived tone indicator by implementing a survey
  - Compute readability and perspicuity indicators of monetary policy statements

$\Longrightarrow$ Efforts to continuing making monetary policy communication more accessible to the general public may be worth

Tone indicators

Effective tone indicator (Mello and Ponce 2020)

- We analyze the Monetary Policy Committee releases.
- Using web scraping and text analysis techniques we identify two target words inside each statement: inflation and monetary policy.
- We selected and analyze strings of 13 words that contain one of our target words.
- To characterize the tone of each string we assign a value between -2 and 2 to each one:
  - -2 means very expansive,
  - -1 is expansive,
  - 0 is neutral,
  - 1 is contractive,
  - 2 is very contractive.
- The effective tone index of each monetary policy statement is computed as the simple average of the values assigned to the corresponding strings.

Perceived tone indicator

- We propose an indicator of the tone of monetary policy communication that accounts for the perception of readers.
- The indicator of perceived tone does not focus on the contain of the communications but on the perception or sentiment of the readers.
- If agents were totally rational, there should be no discrepancies between the indicators. But they aren't.
- Individuals may slowly modify their perceptions by discarding any new information that is not aligned with their previous beliefs (Rabin 1993),
- They may suffer a confirmation bias by giving more weight to new information that reaffirms their previous thought (Tversky and Kahneman 1973).
- The set of prior information available to an agent can affect the interpretation of the communications (Babcock and Loewenstein 1997).

The survey

- Distributed in two batches in a three-month period, between September and November 2020.
- BCU members and advanced Economics students.
- Participation was voluntary.
- The text of the monetary policy releases was divided into sentences, and each question contains a single sentence.
- The respondents were asked to classify according to the tone perceived as : 'contractive', 'expansive' or 'neutral' or 'does not apply'.
- Questions (a sentence of the 586 for all the statements) are assigned randomly.
- Background information: Inflation, GDP growth, policy rate, unemployment.
- 49 respondents
- 1.310 responses

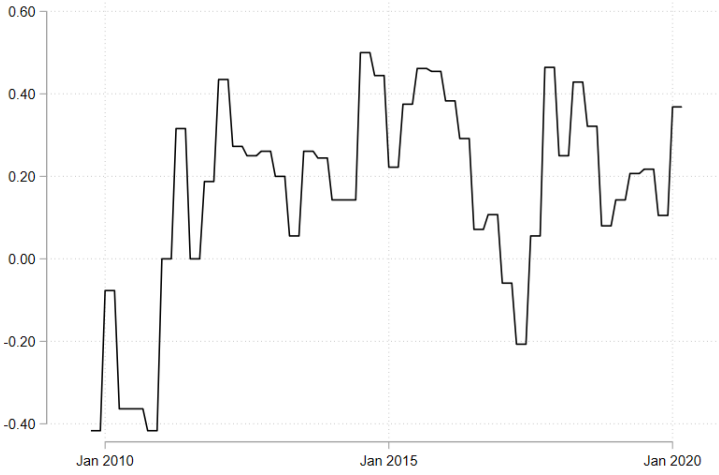
Perceived tone indicator

- The tone indicator of each communication includes all the answers, except those classified as *Not apply*.
- $Contractive_c$ are the total number of sentences considered as contractive for the statement c.
- $Expansive_c$ are the total number of sentences considered as expansive for the statement c
- $Neutral_c$ the total number of sentences considered neutral.
- The tone of the statement is calculated as follows:

$$Tone_c = \frac{Contractive_c - Expansive_c}{Contractive_c + Expansive_c + Neutral_c}.$$

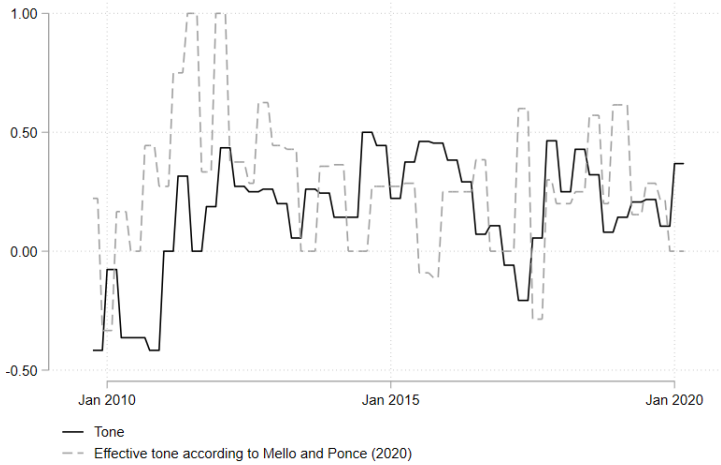
Perceived tone indicator

Figure: Perceived tone of monetary policy communication



Comparison

Figure: Perceived tone vs effective tone of communication



Readability and perspicuity

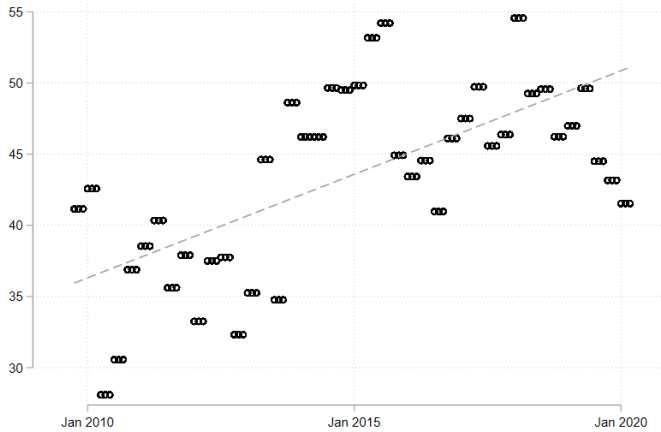
Readability according to Fernandez-Huerta (1959)

$$Readability = 206,84 - 0,60 \times P - 1,02 \times F, \tag{1}$$

where P is the average number of syllables per 100 words and F is the average number of words per phrase.

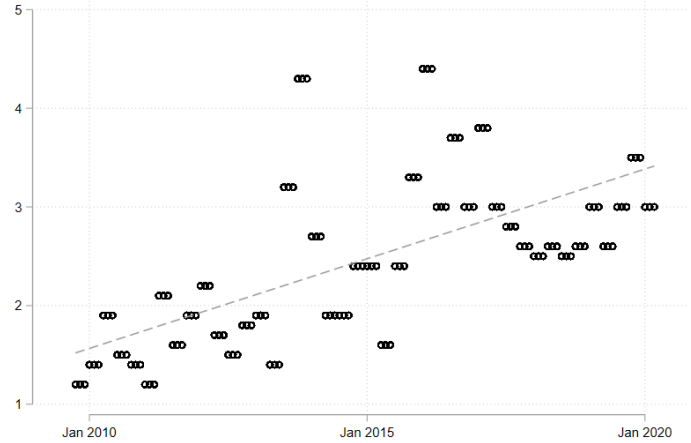
Index	*Grade*	*Style*
0-30	Professional	Very difficult
30-50	University	Difficult
50-60	High school	Somewhat difficult
60-70	7 u 8	Normal
70-80	6	Somewhat easy
80-90	5	Easy
90-100	4	Very easy

Figure: Readibility of monetary policy communication using Fernández-Huerta (1959)



- The reading of the monetary policy communication has been made simpler, although it persists at a high level of difficulty.

Figure: Reading time, number of words



- The reading time increased significantly.

Perspicuity according to Pazos (1993)

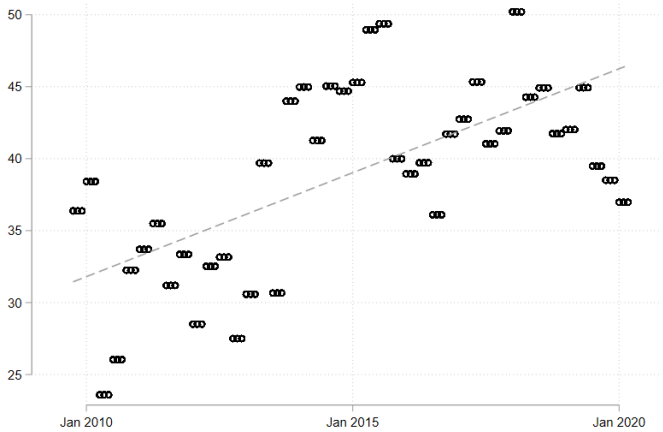
- Pazos (1993) focus on the clarity and transparency of the text.

$$Perspicuity = 207 - \frac{62,3 \times S}{P} - \frac{P}{F}, \tag{2}$$

where S is the number of syllables, P is the number of words, and F is the number of phrases.

Index	*Grade*	*Style*	*Type*
0-15	Professional	Very difficult	Scientific
16-35	Graduate student	Difficult	Technical
36-50	University	Somewhat difficult	Literature
51-65	Popular	Normal	Media
66-75	12	Somewhat easy	Novels
76-85	11	Easy	News
86-100	6 a 10	Very easy	Comics

Figure: Perspicuity of monetary policy communication using Pazos (1993)



- The reading clarity in communication has improved, but still remains at "difficult" or "somewhat difficult" levels.

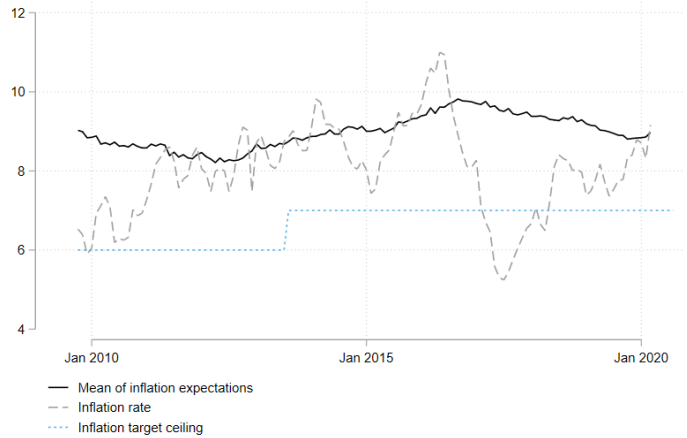
Empirical analysis

The Data: Inflation Expectations Survey

- Was monthly sent to 500 firms, with an average response ratio of 77% since October 2009, and a minimum response ratio of 44%.
- 591 companies throughout the entire period were covered by the sample, between October 2009 and March 2020.
- It's representative of all the private non-financial nor agricultural firms with 50 employees or more.
- 3 different horizons: the current year, the next 12 months and the next 24 months.

Sector	Sample	Population
Manufacturing	41.48	46.60
Trade & commerce	29.99	23.06
Services	18.40	14.96
Health	4.47	11.61
Primary activities	2.36	1.06
Education	1.99	1.73
Utilities	0.58	0.74

Inflation rate and inflation expectations



- Inflation and expectations are anchored in a higher level, above the target almost all the period of analysis.

Table: Descriptive statistics

Variable	*Obs.*	*Mean*	*Std.Dev.*	*Min*	*Max*
Inflation expectations	46.580	8,95	2,057	5	25
Inflation	46.552	8,01	1,16	5,24	11
Short-term interest rate	46.552	9,76	2,60	6,25	15,66
Tone	46.580	0,15	0,25	-0,42	0,50
Tone without most active	46.580	-0,18	0,27	-0,60	0,40
Effective tone	46.580	0,28	0,29	-0,33	1
Readability	46.580	42,80	6,62	28,09	54,56
Perspicuity	46.580	38,24	6,69	23,59	50,20

Empirical strategy

$$E_{it}(\pi_H) = \alpha_i + \beta_1 E_{it-1}(\pi_H) + \beta_2 \pi_{t-1} + \beta_3 i_t^{st} + \beta_4 Tone_t + \beta_5 Tone_t \times Readability_t + \varepsilon_{it},$$

- $E_{it}(\pi_H)$ is the inflation expectation of firm i at time t for the monetary policy time horizon.
- π_{t-1} is the observed annual inflation rate.
- i_t^{st} is the short-term interest rate in period t.
- $Tone_t$ is the indicator of the tone of the monetary policy communication (effective or perceived) available in period t.
- $Tone_t \times Read_t$ accounts for the combined effect of tone and readability.
- We estimate using Two steps Generalized Method of Moments (GMM), robust and includes time fixed effects.

Main results

Table: Main results

	M1	M2	M3	M4
Expectations $(t-1)$	0,109 **	0,103 **	0,110 ***	0,102 **
	(0,031)	(0,031)	(0,031)	(0,031)
Inflation $(t-1)$	0,321 ***	0,338 ***	0,321 ***	0,335 ***
	(0,012)	(0,013)	(0,012)	(0,013)
Short-term interest rate	-0,379 ***	-0,293 ***	-0,379 ***	-0,297 ***
	(0,028)	(0,026)	(0,029)	(0,027)
Perceived tone	-0,166 ***		-0,166 ***	
	(0,018)		(0,018)	
Effective tone		-0,142 ***		-0,144 ***
		(0,010)		(0,010)
Perceived tone × Readability			-0,001 *	
			(0,012)	
Effective tone × Readability				-0,024 **
				(0,009)

Robustness

Table: Robustness: perspicuity

	M7	M8	M9	M10
Expectations $(t-1)$	0,110 **	0,110 **	0,102 **	0,102 **
	(0,031)	(0,031)	(0,031)	(0,031)
Inflation $(t-1)$	0,321 ***	0,321 ***	0,335 ***	0,335 ***
	(0,012)	(0,012)	(0,013)	(0,013)
Short-term interest rate	-0,379 ***	-0,379 ***	-0,297 ***	-0,296 ***
	(0,029)	(0,029)	(0,029)	(0,028)
Perceived tone	-0,165 ***	-0,165 ***		
	(0,018)	(0,018)		
Perc. tone × Pazos (1993)	-0,003 *			
	(0,012)			
Perc. tone × Cantalejo et al. (2008)		-0,003 *		
		(0,012)		
Effective tone			-0,144 **	-0,144 ***
			(0,010)	(0,010)
Eff. tone × Pazos (1993)			-0,025 **	
			(0,009)	
Eff. tone × Cantalejo et al. (2008)				-0,025 **
				(0,010)

Final Remarks

- We construct a new indicator of the *perceived tone* that complements traditional indicators of the *effective tone* of monetary policy communication.
- We compute indicators on the readability and perspicuity of monetary policy communication.
- We find that readability has improved through time, but there is still difficult.
- We find a negative and statistically significant relationship between the tone of monetary policy communication and inflation expectations.
- Coefficients are similar using either the indicator of the perceived tone or the effective one.
- Monetary policy communication is a powerful to keep expectations anchored, even when they are above the inflation target.
- Additionally, simpler communication reinforces the negative effect of the tone over the inflation expectations of firms.

Thank you!

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