FIRM LEVEL EXPECTATIONS AND MACRECONOMIC CONDITIONS: Underpinnings and Disagreement

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Aims of this paper

- Employ an underutilised dataset
  - Complements earlier study we did using household data (Reid, Siklos and Du Plessis, 2021) but the data set is MUCH richer and, arguably, more relevant for policy makers
- Analyse different types and levels of disagreement
  - at different horizons and
  - for different groups
  - How are these related to forecast disagreement in the 8 other variables being forecast?
- Offer some 1st estimates of the impact of covid-19 on inflation disagreement

Firm level data

The literature has focused on professional & household forecasts

- We know very little about forecast disagreement among firms' expectations

The BER firm level dataset is

- Underutilised
- Exceedingly rich (see Reid and Siklos, 2021a, and 2021b)

Disaggregated data allows us to study:

- Different levels of aggregation
  - Tailor central bank communication
- Different types of aggregation
  - Central banks cannot tailor the stance of monetary policy to different groups

Forecast Disagreement and its Sources

See Siklos (2019) for a recent overview of the literature on forecast disagreement

- Multiple theories
- Relationship between forecast disagreement and uncertainty?
- Accuracy and efficiency of forecasts continue to attract attention
- Is forecast data consistent with economic theory and does it reflect an understanding of monetary policy?
  - Households vs professional forecasters
  - Transparency narrows the gap

(Dräger et. al., 2015)

Forecast Disagreement and its Sources

- How sensitive are inflation expectations to various forms of information?
  - macroeconomic news
  - Evidence of herding amongst prof. forecasters
- Mixed views on the connection between central bank transparency and disagreement:
  - Disagreement falls with the adoption of IT, but only in developing economies (Brito et. al., 2018)
  - Is it the regime, or how it is presented to the public, that drives changes in forecast disagreement?

Forecast Disagreement and its Sources

- The literature generally presumes that inflation expectations matter for policy
  - We do not take a stand in this paper on how decisive they are for setting the current stance of policy
- Note that Rudd (2021) has questioned the usefulness and relevance of (long-run) inflation expectations in macro-modelling and policy making
  - That said, short-run expectations do matter and (1) they appear fragile; (2) cannot be easily divorced from expectations of other macro-financial variables

Measures of inflation forecast disagreement

- No universally agreed upon measure
  - Measures include an IQR and different measures of forecast dispersion
- The dispersion indicator we use retains all the available information

$$d_{th}^{zj} = \frac{1}{N_j - 1} \sum_{i=1}^{N_j} (F_{ith}^{zj} - \bar{F}_{gth}^{zj})^2$$

  - Sharp changes in forecast disagreement emerge at the same time regardless of the disagreement measure employed
  - Very small number of extreme forecasts (unlike household survey)

Determinants of Forecast Disagreement

TABLE 3 Sources of Forecast Disagreement

Ind. Vars: Fcst Dis.	CPIT0_B	CPIT0_F	CPIT0_L	CPI5a_B	CPI5a_F	CPI5a_L
CPIT2				.49(.34)	**.72(.32)@**	1.57(.98)
CPIT1				.58(.42)	.28(.44)	.49(1.42)
CPIT0				.01(.62)	**-1.31(.86)@**	-.24(1.33)
GDPT0	-.05(.03)	-.10(.15)	.08(.08)	**-.25(.13) ¶**	-.08(.21)	-.03(.13)
RANDT0	**.55(.24)¶**	.05(.17)	.03(.27)	.37(.24)	.16(.11)	**-.21(.54)**
PRIMET0	**.72(.19)***	.34(.25)	**.17(.08)@**	.16(.37)	-.15(.18)	.12(.44)
WAGEST0	**.23(.09)***	.09(.09)	.15(.09)	**.51(.19)***	-.09(.08)	.14(.41)
M3T0	NA	-.03(.02)	NA	NA	-.03(.03)	NA
R153T0	NA	**.23(.14) ¶**	NA	NA	-.11(.08)	NA
CAPT0	NA	-.001(.004)	NA	NA	-.01(.02)	NA
GDPT1	NA	NA	NA	.38(.64)	.47(.33)	.25(.30)
RANDT1	NA	NA	NA	.08(.07)	-.13(.09)	.04(.35)
PRIMET1	NA	NA	NA	.06(.18)	-.09(.15)	-.37(.37)
WAGEST1	NA	NA	NA	-.05(.20)	**.14(.07) ¶**	.04(.38)
M3T1	NA	NA	NA	NA	-.001(.03)	NA
R153T1	NA	NA	NA	NA	.08(.08)	NA
CAPT1	NA	NA	NA	NA	.02(.02)	NA
RGDPG(-1)	-.05(.05)	-.01(.04)	-.01(.08)	**-.22(.11) ¶**	.04(.02)	.13(.12)
NER(-1)	**-.09(.05) ¶**	-.04(.04)	**-.12(.07)¶**	**-.23(.15)***	.01(.03)	.16(.16)
PRIME(-1)	**.12(.06)@**	**.15(.08)@**	**.19(.07)***	.25(.17)	.03(.06)	-.39(.36)
CPIPC(-1)	**.07(.04) ¶**	**-.07(.04) ¶**	**.11(.06) ¶**	-.02(.09)	.003(.03)	-.12(.21)
RLT(-1)	NA	-.03(.08)	NA	NA	NA	NA
M3G(-1)	NA	.02(.02)	NA	NA	NA	NA
CAP(-1)	NA	.01(.02)	NA	NA	NA	NA
Constant	-.49(.82)	-1.68(1.63)	-.94(1.09)	0.71(1.46)	-.37(.36)	2.28(2.96)
R^2-adj.	.68	.17	.48	.75	.55	.00
F-statistic	22.36(.00)	2.17(.02)	11.70(.00)	8.35(.00)	3.11(.01)	.88(.59)
Obs.	83	83	83	38	38	38

(1) “long-run” expectations react to different variables than “short-run expectations;

(2) Different groups react to different Determinants;

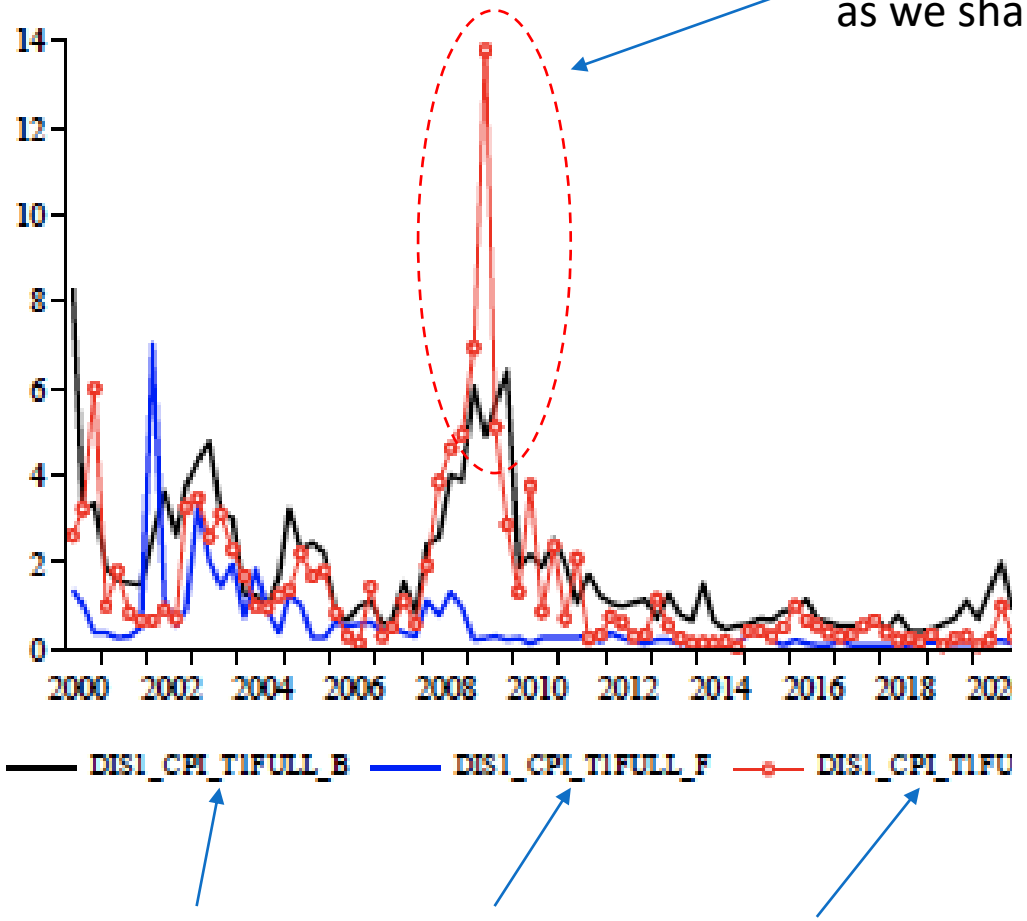
(3) Only businesses displays consistent responses (economic significance) to some forward-looking variables like the RAND, PRIME and WAGES which likely have a more direct impact on their bottom line

(4) In the “long-run” the economic significance of past economic performance matters more to businesses

FIGURE 2 – Overall Disagreement By Major Groups Surveyed

SHORT-RUN

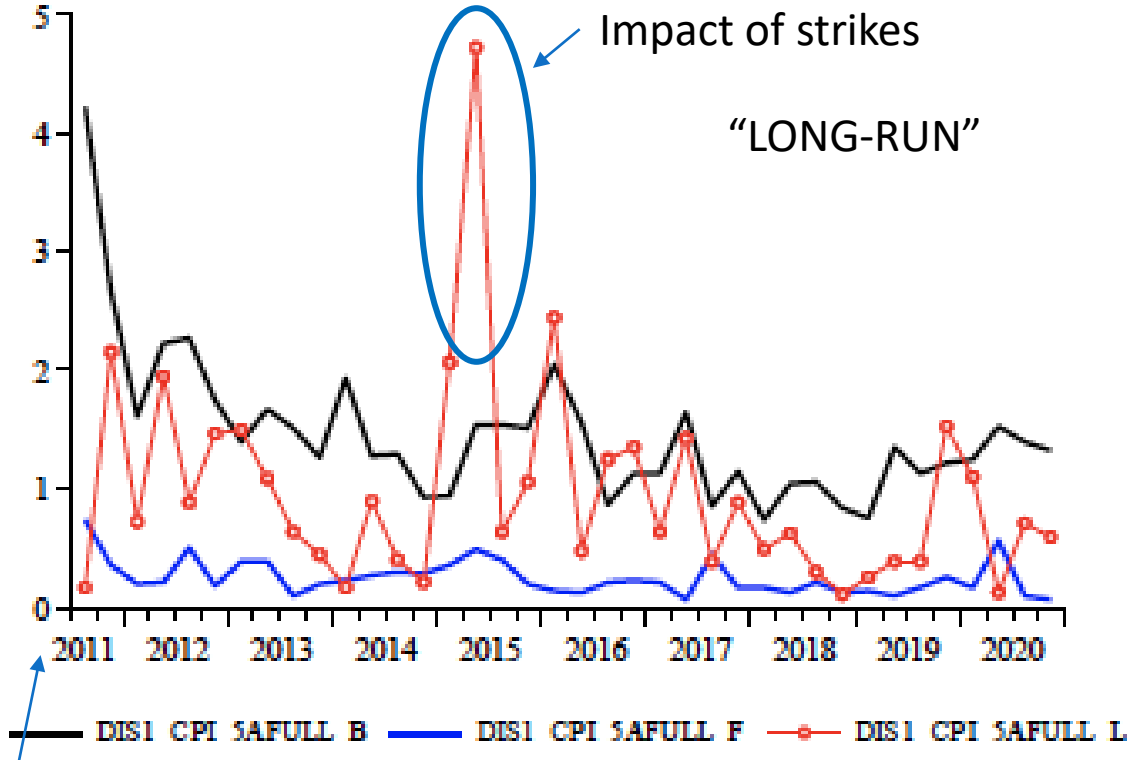
The GFC appears to play a dominating role….but this may be misleading as we shall see



B=Businesses, F=Financial analysts, L=labour

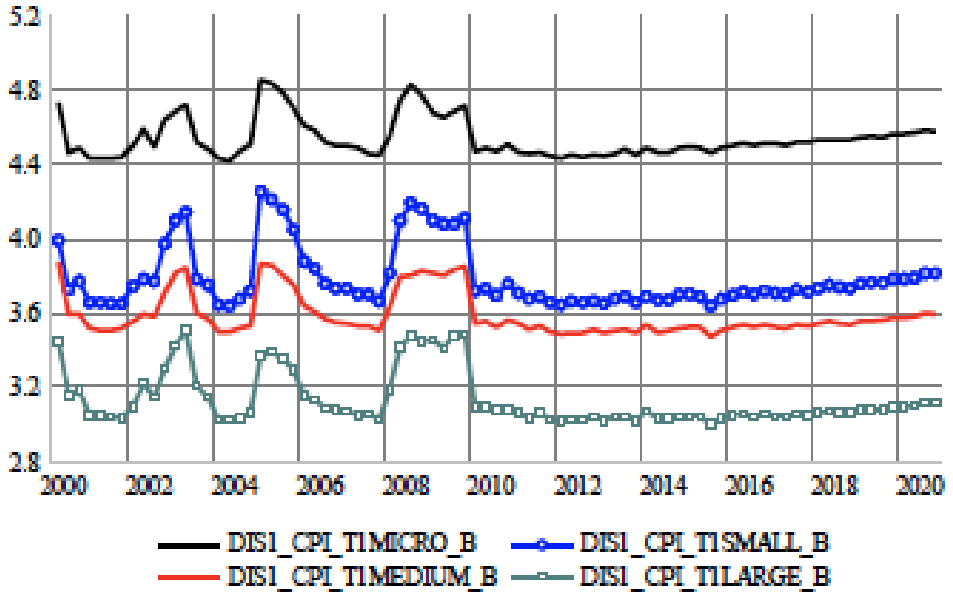
Impact of strikes

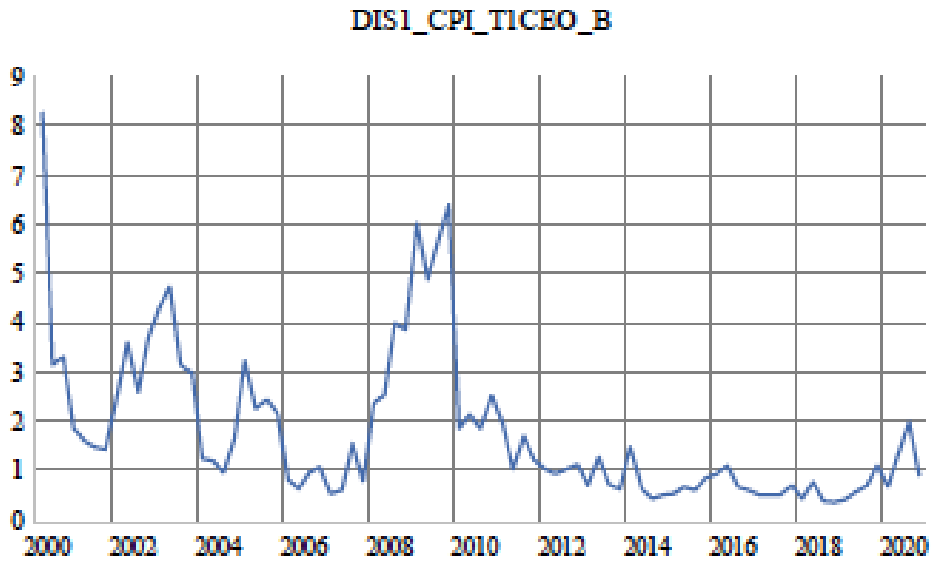
"LONG-RUN"



There is no data for "long-run" expectations during the GFC

FIGURE 3 Inflation Forecast Disagreement – Business Survey





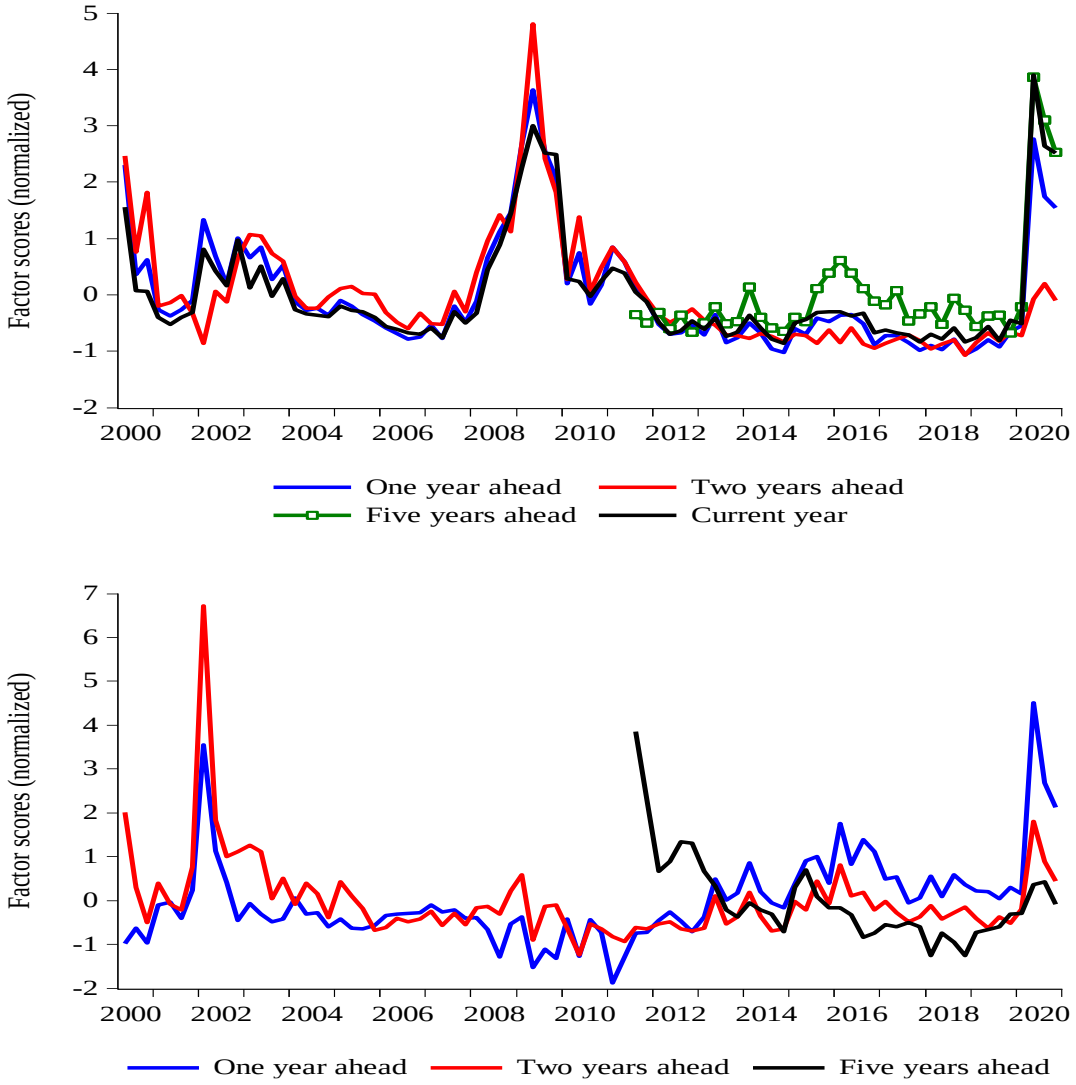
(1) Levels of disagreement by smaller firms are HIGHER than for other groups;

(2) Changes in disagreement parallel each other across Firm size and individual who fills out the form (here CEO);

(3) There is a rising trend of disagreement since 2011: Is it uncertainty? What kind?

(4) The GFC naturally increased disagreement but so did the early years of IT

FIGURE 4 Disagreement Based on Factor Models



Only the factor model approach is Capable of detecting a sharp rise in disagreement at the onset of the Pandemic

The impact of the GFC is brought into Sharper relief when the factor model approach is used.

Findings

- Our findings reveal that when forecasters disagree about future inflation:
  - Because they also disagree about the future course of other key macro-financial variables
  - And last forecasts
- Sources of disagreement can be highly sensitive to the level of aggregation in the data.
- When we combines all the variables being forecast that we are able to see that forecasters responded sharply in early 2020 as the pandemic emerged.
  - Is it inattention to differences in what the past portends for the future; certain socio-economic characteristics, some type of bias ? We don’t know yet.
- Most importantly, the results do point to the value added in individual level forecasts because they provide insights into how a central bank might consider communicating differently with different audiences.

End

TABLE 1 – The BER Survey: Overview of the Number of Observations, 2000Q2-2020Q4

•Size

Full-Time Employees	Alternate Classification	Labor	*Labor*	Business	*Business*	Financial Analysts	*Financial Analysts*
< 21	Micro	620	620	8005	8005	184	184
21-50	Small	109	109	5655	5655	112	112
51-100	Medium	199	250	4010	7810	97	310
101-200		51		4179		213	
201-300	Large	25	254	1589	6897	140	794
301-400		0		1153		227	
401-500		86		939		57	
501-1000		53		1407		22	
> 1000		90		1433		348	
Undefined/No response		43		7		38	
Total		1276		28379		1438	

Note: Sample is 2000Q2-2020Q4. The columns in *italics* represent the number of observations for the aggregations based on the column identified as 'Alternate Classification'.

TABLE 1 B

•Industry (Business sector only)

Industry	Observations	% of total	% GDP 2002Q4	% GDP 2013Q4	%GDP 2019Q4
Agriculture	2311	8.1	2.6	2.2	2.2
Mining	513	1.8	7.2	4.9	7.2
Manufacturing	10589	37.3	17	15	12.2
Electricity & Water	13	.46	2.1	1.7	2.1
Construction	1315	4.6	2.1	3	3.3
Transportation & Communication	9299	32.8	12.2	12.5	13.7
Wholesale & Retail	476	1.7	8.6	9	8.6
Finance & Real Estate	2667	9.4	18	21.4	20.8
Community & Social Services	1184	4.2	19.5	19.2	20.9

Note: 12 observations could not be classified. SIC codes are (in the same order as the first column of the table): 11, 13, 30-39, 42, 5, 61-64, 71-75, 82-88, 91-99. Data are from P0441, Gross Domestic Product, Stats SA, various years.

TABLE 1 C

- C. Respondents

Title	Labor	Business	Financial Analysts
CEO - CEO	0	17767	29
Financial Manager/Accountant - Anal	0	8118	18
Senior Sales/ Production Manager - Sales	0	872	0
Economist - Econ	22	24	1220
Investment Analyst/Researcher – Ianal	5	0	60
Fund Manager – Mgr	0	0	71
Trade Union rep. - Union	999	5	0
Employer organisation rep. - Other	246	1	0
Other	3	368	40
No response	1	1224	0
Total	1276	28379	1438

- Note: see note to part (a) of this table. Under the “other” category respondents are asked to specify but we were not provided with the details. The “other” and “No response” categories are combined in the empirical work. Other and No response combined and labelled “Other”. In italics the short-hand variable name used in the rest of the paper.
- Source: Bureau for Economic Research.

TABLE 2 – Summary of Expectations from the BER Survey: Full Sample 2000Q2-2020Q4

Forecast		Labor	Businesses	Financial Analysts
Definition	Mnemonic	Mean (SD) - %	Mean (SD) - %	Mean (SD) - %
Current year inflation	CPI_T0	6.07 (1.52)	6.29 (1.56)	5.70 (1.81)
Year ahead inflation	CPI_T1	6.16 (1.32)	6.39 (1.27)	5.46 (0.82)
Two years ahead inflation	CPI_T2	6.22 (1.23)	6.41 (1.09)	5.28 (0.44)
Five years ahead inflation	CPI5a	5.75 (0.64)	6.15 (0.48)	5.34 (0.35)
Current year Economic growth	GDP_T0	2.40 (1.42)	2.14 (1.43)	2.17 (1.87)
Year ahead economic growth	GDP_T1	2.89 (1.22)	2.49 (1.16)	2.86 (1.01)
Current year prime interest rate	PRIME_T0	11.28 (2.30)	11.31 (2.26)	11.10 (2.25)
Year ahead prime interest rate	PRIME_T1	11.31 (2.04)	11.41 (1.99)	11.13 (1.79)
Current year rand/USD exchange rate	RAND_T0	9.89 (3.06)	9.90 (3.00)	9.79 (2.87)
Year ahead rand/USD exchange rate	RAND_T1	10.08 (3.02)	10.27 (3.00)	10.12 (2.74)
Current year wage growth	WAGES_T0	7.62 (1.32)	7.54 (1.22)	7.52 (1.26)
Year ahead wage growth	WAGES_T1	7.74 (1.18)	7.58 (1.06)	7.24 (0.88)
Current year capacity utilization	CAP_T0	NA	NA	81.31 (2.66)
Year ahead capacity utilization	CAP_T1	NA	NA	82.13 (2.20)
Current year M3 growth	M3_T0	NA	NA	10.19 (4.60)
Year ahead M3 growth	M3_T1	NA	NA	9.85 (2.81)
Current year long-term government bond yield	R_T0	NA	NA	8.88 (1.40)
Year ahead long-term government bond yield	R_T1	NA	NA	8.98 (1.26)

FIGURE 1 – Highest and Lowest Inflation Forecasts: Trade Union, Businesses, and Financial Analysts, 2000Q2-2020Q4

a) Highest

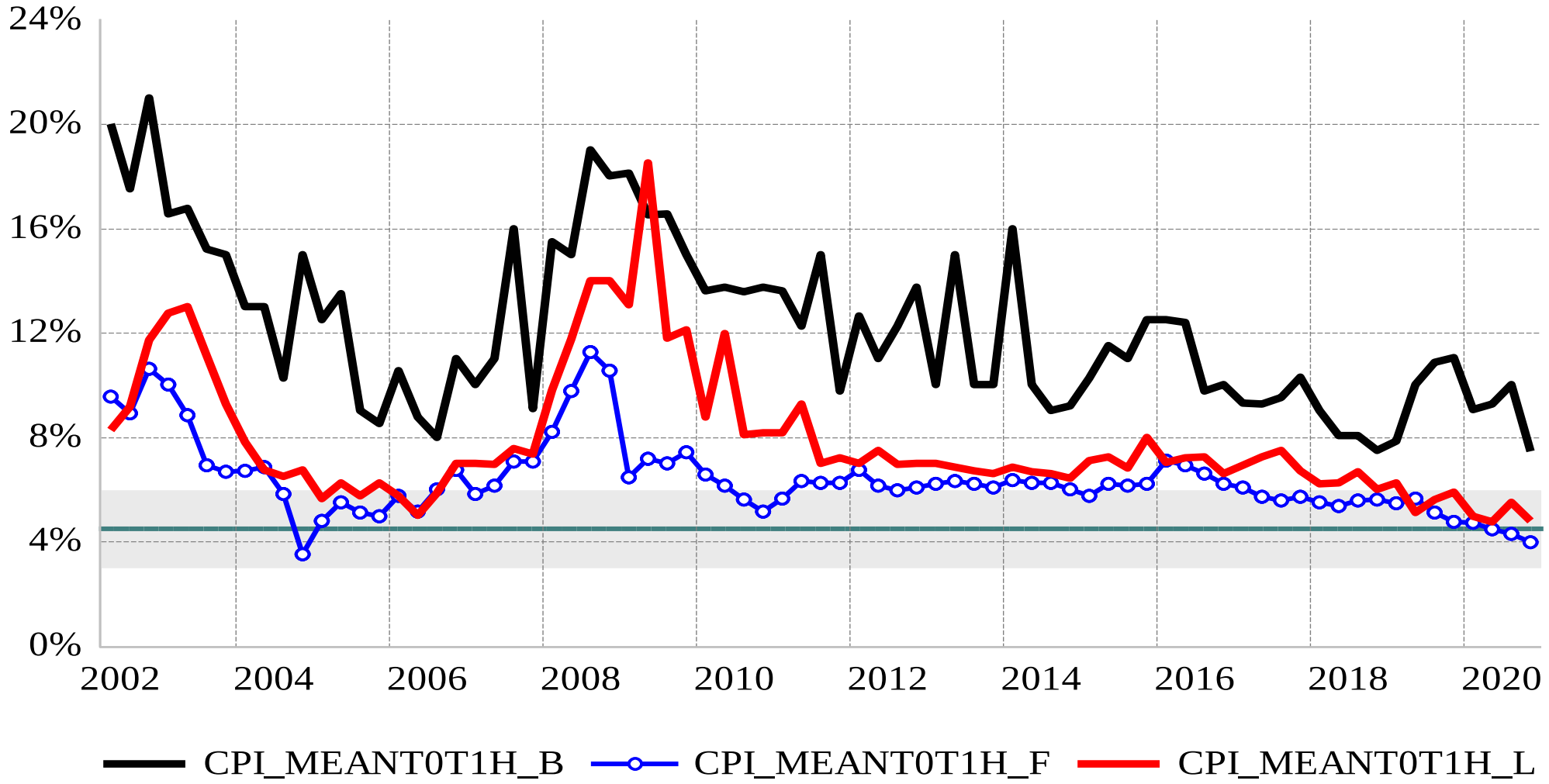


FIGURE 1 – Highest and Lowest Inflation Forecasts: Trade Union, Businesses, and Financial Analysts, 2000Q2-2020Q4

a) Lowest