**Discussion of the Paper
"Who Cares about Inflation? Endogenous
Expectation Formation of Heterogeneous
Households"
by Lukas Nord**

Fabio Rumler
Oesterreichische Nationalbank

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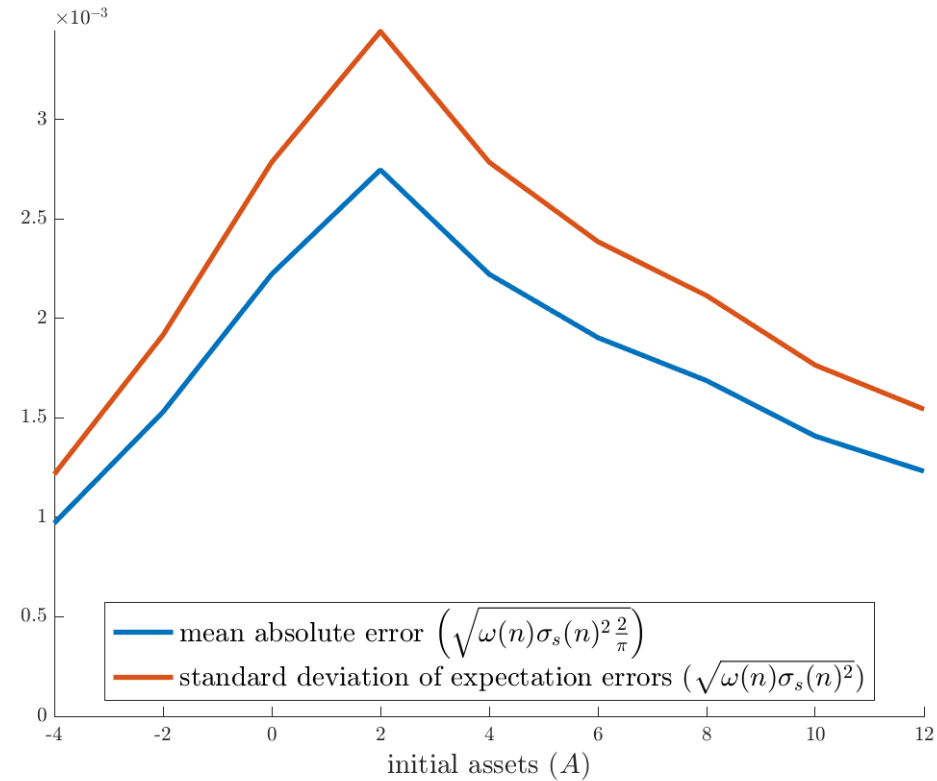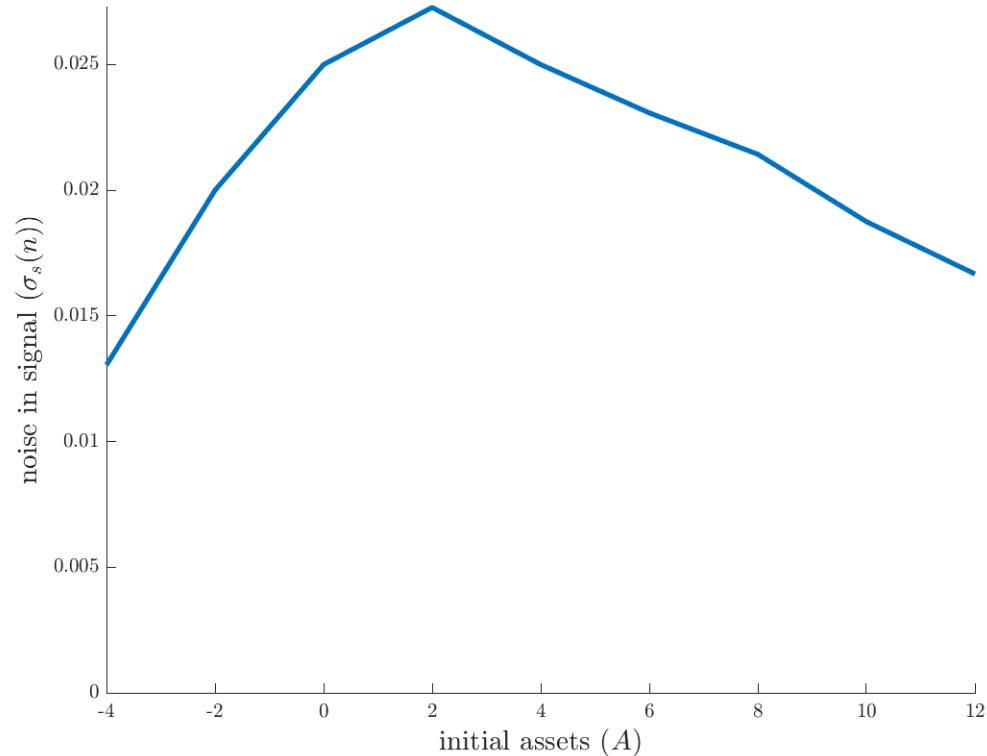www.oenb.at

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My reading of the (preliminary) paper

- Main idea: heterogeneity in inflation expectations of households can be explained by different incentives of agents to form precise expectations

- Theoretical model suggests that incentives to form precise expectations varies with wealth: hh with high debt and hh with high wealth have strongest incentive to care about the accuracy of inflation expectations (incentive u-shaped in wealth)

- Empirical findings:

  - Based on the Dutch National Bank's household survey ex-post absolute expectation errors as well as the standard deviation of short-run inflation expectations decrease with wealth

  - Expectation errors and disagreement (standard deviation) are positively correlated

 - Relationship holds after controlling for age and education

Main comments

- According to HFCS data most households have both, debt and positive wealth, so their net wealth is relatively small
  theoretical model would predict that these hh have little incentive to form precise expectations, but they are exposed most to changes in the real interest rate

- Is a 2-period model appropriate to model wealth accumulation?
  initial asset endowment is fully consumed in the first period; is this realistic?

$$c_1 = A + y - a - \mathcal{F}(n)$$
$$c_2 = (1+r)a + y \quad \forall\, r$$

- Households are allowed to disagree about the long-run mean of inflation – how would the model change if expectations were anchored?

- Empirical relationship between precision/disagreement of expectations and wealth should be investigated at the individual level: panel regression with absolute expectation error/standard deviation as dependent variable and wealth and other controls as explanatory variables

Benefit of reducing noise in the signal is increasing in net wealth

Left chart: y-axis "noise in signal ($\sigma_s(n)$)" with values 0, 0.005, 0.01, 0.015, 0.02, 0.025; x-axis "initial assets (A)" from -4 to 12.

Right chart: ($\times 10^{-3}$) y-axis values 0, 0.5, 1, 1.5, 2, 2.5, 3; x-axis "initial assets (A)" from -4 to 12.

Legend:
- mean absolute error $\left(\sqrt{\omega(n)\sigma_s(n)^2 \frac{2}{\pi}}\right)$
- standard deviation of expectation errors $\left(\sqrt{\omega(n)\sigma_s(n)^2}\right)$

- Model predicts hh with low net wealth have smallest incentive to reduce the noise in the signal:
  - mean absolute error is highest for low net wealth
  - disagreement (standard deviation of expectation error) is highest for low net wealth
- However, low net wealth could mean low debt/wealth or high debt/wealth → story doesn't fit

Expectation errors and disagreement are decreasing with net wealth   ƎNB
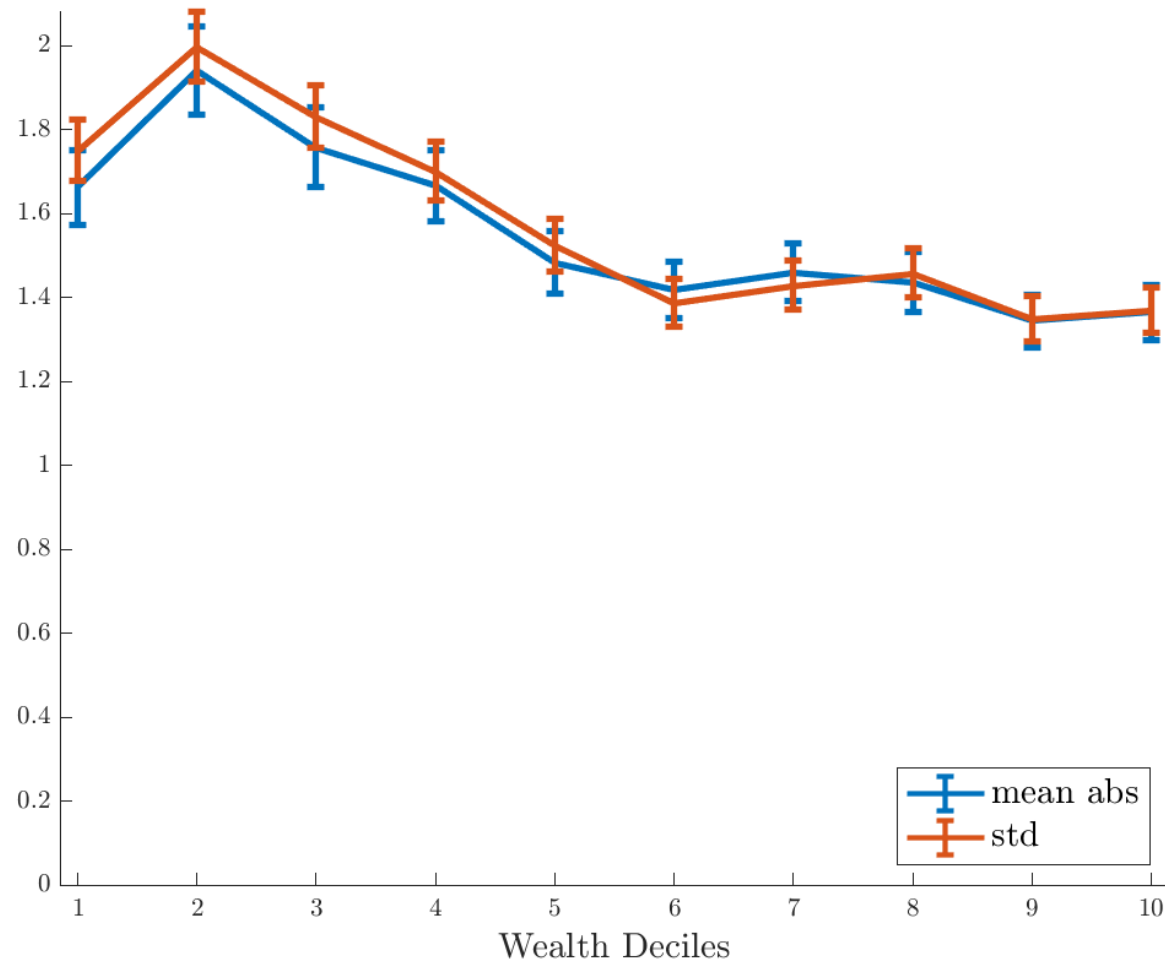
- Mean absolute forecast errors and standard deviation decreases for wealth deciles:
  - are differences significant? → perform tests
  - strong bias in inflation expectations; do results depend on the way we ask about inflation expectations?
  - only short-run inflation expectations, long-run expectations are more relevant
- Controlling for other variables affecting inflation expectations is important:
  - should be done by regression analysis
  - age, education, income, gender, etc.

Relationship between precision/uncertainty of expectations and wealth ϴNB

- Investigate relationship between precision/uncertainty of inflation expectations and wealth at the individual level:
  - run fixed-effects panel regressions with precision/uncertainty of short-run inflation expectations as dependent variable and wealth and other control variables, such as age, education, income, gender, etc., as explanatory variables

- From Rumler, Valderrama (2019):

Table 4

Dependent variable:
expectation error of short-term inflation expectations

Expanatory variables	deviation from actual CPI inflation	deviation from consensus forecast
inflation literacy (score 0-10)	-0.0999***	-0.1026***
	(0.0155)	(0.0133)
education (5 groups)	-0.0189	0.0166
	(0.0239)	(0.0204)
income (in 1,000 euros; 21 groups)	0.0886**	0.0364
	(0.0437)	(0.0356)
age (in years)	0.0224***	0.0066
	(0.0083)	(0.0071)
age^2	-0.0002***	-0.0001
	(0.0001)	(0.0001)
gender (dummy for male)	-0.0856	-0.0348
	(0.0570)	(0.0493)
constant	0.9035***	1.2423***
	(0.1871)	(0.1661)
Observations	1,323	1,323

Note: *** p-value<0.01, ** p-value<0.05, * p-value<0.1; OLS regression, robust standard errors in parentheses.
Source: Authors' calculations.

Relationship between precision/uncertainty of expectations and wealth ƎNB

- From Rumler, Valderrama (2019):

Table 3

Dependent variable:
degree of certainty of short- and long-term inflation expectations

Expanatory variables	1 year expectations	5 to 10 years expectations
inflation literacy (score 0-10)	-0.0633*	-0.0964***
	(0.0396)	(0.0369)
education (5 groups)	0.0115	-0.0493
	(0.0538)	(0.0534)
income (in 1,000 euros; 21 groups)	-0.0094	-0.0403
	(0.0877)	(0.0912)
age (in years)	0.0812***	0.0535**
	(0.0213)	(0.0206)
age²	-0.0008***	-0.0005**
	(0.0002)	(0.0002)
gender (dummy for male)	0.1128	0.1460
	(0.1277)	(0.1297)
constant	5.4448***	6.2491***
	(0.5092)	(0.4805)
Observations	1,217	1,207

Note: *** p-value<0.01, ** p-value<0.05, * p-value<0.1; OLS regression, robust standard errors in parentheses.
Source: Authors' calculations.

- New:

Dependent variable: expectation error of short-term inflation expectations

Expanatory variables	deviation from actual CPI inflation
uncertainty	0.0353**
	(0.0162)
wealth (dummy for savings)	-0.1387**
	(0.0675)
education (5 groups)	-0.0376*
	(0.0218)
age (in years)	0.0196**
	(0.0085)
age²	-0.0002**
	(0.0001)
gender (dummy for male)	-0.0899*
	(0.0544)
constant	0.5562***
	(0.2043)
Observations	1,473

Note: *** p-value<0.01, ** p-value<0.05, * p-value<0.1;
OLS regression, robust standard errors in parentheses.
Source: Authors' calculations.

Danke für Ihre Aufmerksamkeit

Thank you for your attention

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