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Fundamental Disagreement

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Introduction

- Very nice paper:
  - It presents new empirical evidence on expectations.
  - It brings a model (actually two models) of imperfect information and learning to the data.
  - It has not been published yet, but it is already cited and «used» in other author's published papers (for example Dovern (2015), European Economic Review).

The ingredients

- The main ingredients:

  - **The stylized facts**: the authors measure disagreement on financial forecasters expectations obtained from BCFF Survey, taking advantage of the **multi-horizon** and **multivariate** dimension of the survey.

  - **The theoretical part**: the authors present a very general **model of imperfect information**, that nests two well known approaches in modelling information frictions: the noise information and the sticky information model.

  - **The econometric approach**: It uses the stilized facts from the survey to **impose constraints on the estimates** of the model's parameters.

The stylized facts

- Three facts:
  - Forecasters disagree both about the **short term but also the medium- and long-run prospects** of the economy.
  - The disagreement among forecasters is **time varying**, even for long-term forecasts.
  - The shape of the **term structure of disagreement differs markedly across variables**.

The theoretical part

- Forecast disagreement occurs because forecasters are informationally constrained in two different ways.
    - First, they **do not perfectly observe the current true state** of the economy due to the idiosyncratic noise term.
    - And second, they have to infer which changes are due to **transitory shocks** and which changes are due to **permanent shocks.**

The econometric approach

- What I really like is the econometric approach: in order to discipline the estimate of the parameters the authors introduce a penalty when observed moments from the survey forecasts are "far" from the corresponding model-implied moments

$$\mathcal{C}\left(\theta_1, \theta_2, \tilde{\Sigma}^{\eta}; \alpha\right) = \mathcal{L}\left(\theta_1, \tilde{\Sigma}^{\eta}; \mathcal{Y}_1, \ldots, \mathcal{Y}_T\right) + \alpha \cdot \mathcal{P}\left(\theta_1, \theta_2; \mathcal{S}_1, \ldots, \mathcal{S}_T\right)$$

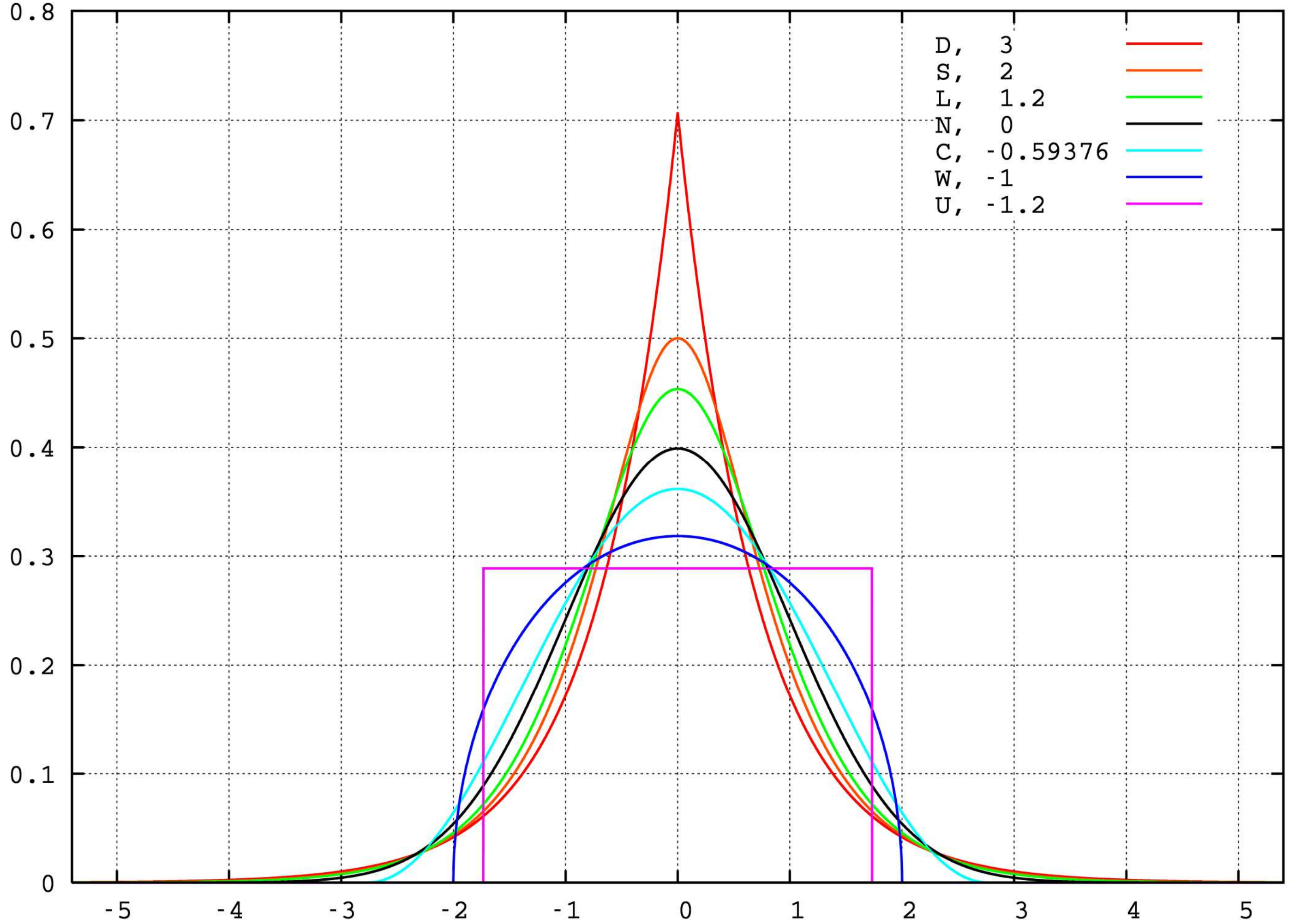
Measuring disagreement

- How **disagreement is measured**?
  - "measured by the **average forecast of the highest ten responses minus that of the lowest ten responses**";
  - "almost perfectly correlated with the **cross-sectional standard deviation** of forecasts;
  - "highly correlated with the **interquartile range of individual forecasts**".

- OK if the **cross-sectional** forecasts are distributed according to a **Gaussian** (or something similar: a little bit of skewness and kurtosis it's ok), but …

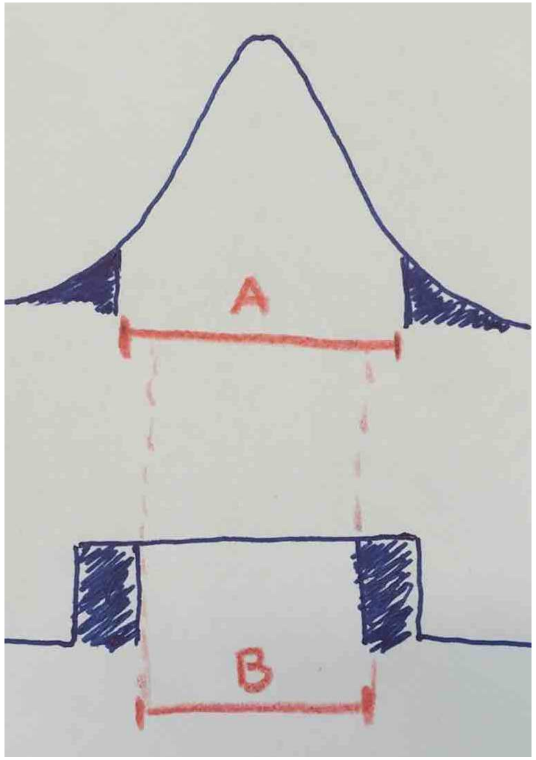
Measuring disagreement

- … let's focus on distributions with different kurtosis



Measuring disagreement

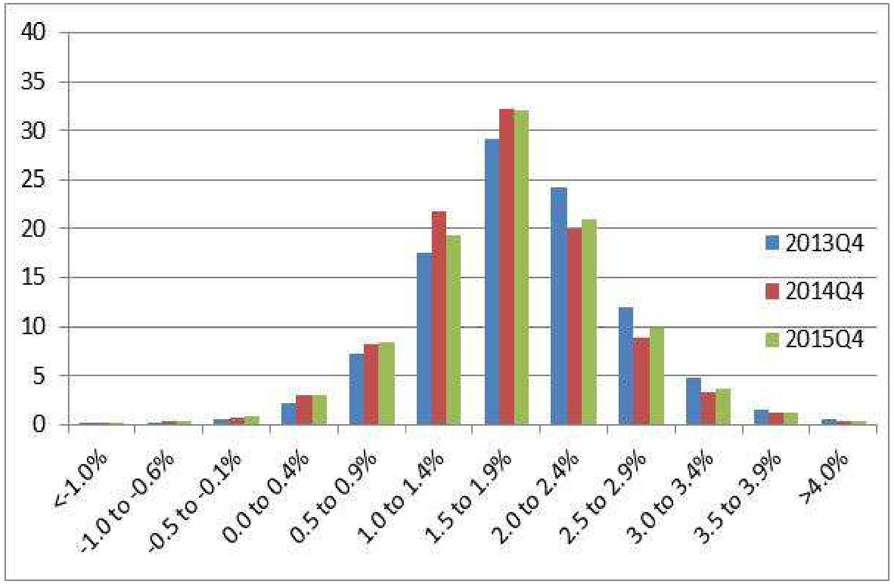
Consider the following two distributions; the blue areas represent the top and the bottom 10%-quantile of the distributions; the red segments would be the corresponding measure of disagreement, with A>B. Could we say that disagreement is higher in the first case?



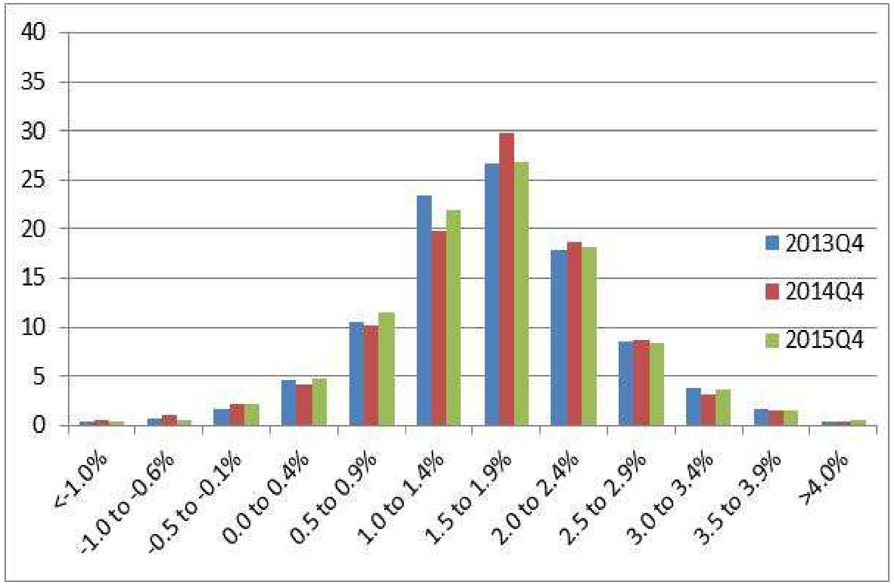
Measuring disagreement

- SPF euro area

Inflation Expectations 5Y



Output Expectations 5Y

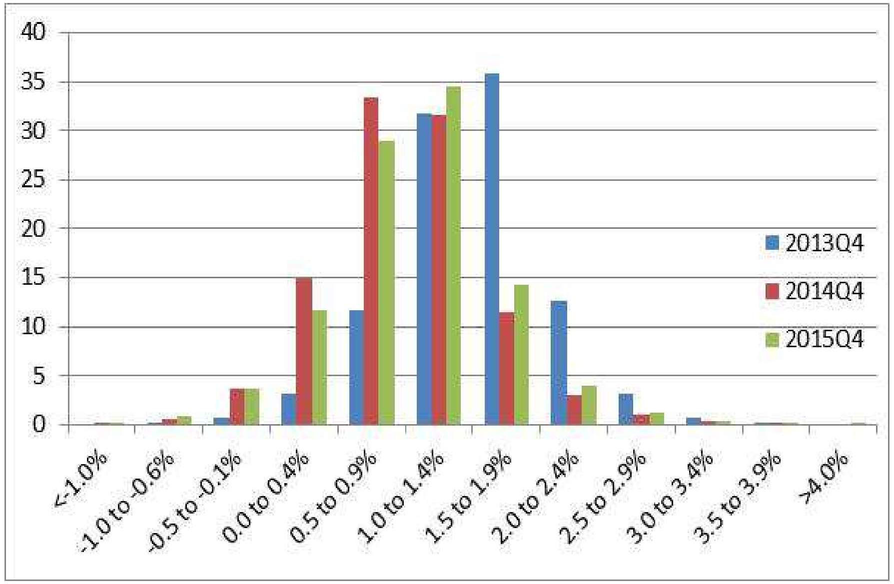


	STD (5Y)		
	2013Q4	2014Q4	2015Q4
inflation	0.3	0.2	0.2
output	0.3	0.3	0.3

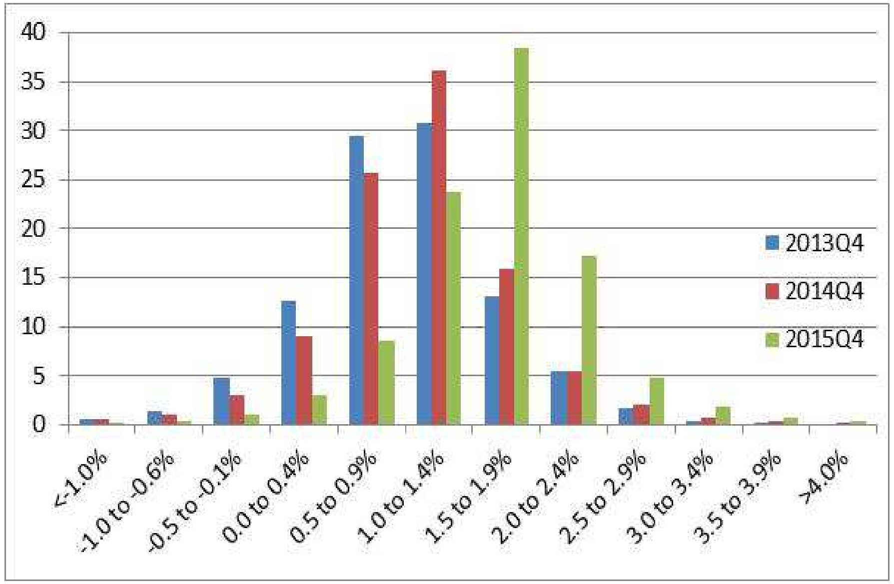
Measuring disagreement

- SPF euro area

Inflation Expectations 1Y



Output Expectations 1Y



	STD (1Y)		
	2013Q4	2014Q4	2015Q4
inflation	0.2	0.2	0.2
output	0.3	0.2	0.2

Measuring disagreement

- SPF euro area

		2004Q4		2005Q4	
		1Y	5Y	1Y	5Y
Inflation	Mean	1.1	1.8	1.1	1.9
	STD	0.2	0.2	0.3	0.2
	Skewness	-0.5	-0.7	-0.2	0.4
	Curtosis	2.2	-0.4	-0.7	1.7
Output	Mean	1.0	1.7	1.7	1.7
	STD	0.3	0.3	0.3	0.3
	Skewness	-0.3	0.7	0.8	0.4
	Curtosis	0.1	0.9	2.2	0.5

What if disagreement is not Gaussian

- In the theoretical part, each agent receives a noisy signal about the main variables.
- The noise is assumed to be Gaussian.
- Each agent uses a recursive algorithm to produce forecasts, the Kalman filter.
- Forecasts are updated by a term that depends on the last prediction error weighted by the gain sequence, that it depends on the estimate of the VCV of the noise.
- As a consequence also the forecasts of the agents are distributed according to a Gaussian.
- **What if they are not Gaussian in the data?**

From Positive to Normative

- Can we realistically exclude that disagreement about future developments of the main macroeconomic variables is not only due to **disagreement about fundamentals** but also about the **parameters** that drive the relation between those fundamentals?

- That is, excluding disagreement about the model it may be ok from a positive point of view, but from a normative one?

- Would it be possible to have economic agents in your model that not only have to extract information about fundamentals but also act like econometricians estimating recursively the parameeters of the model…
- … and use this structure in order to disentangle disagreement about fundamentals from disagreement about the economic structure?