University of Bern
Institute for Financial Management

Syllabus

Disagreeing about future returns

Julien Cujean

Office 211, Engehaldenstrasse 4, Phone: +41 31 684 37 75, Email: julien.cujean@unibe.ch

Focus and class content

This class considers how investors' disagreement is used to explain facts in financial economics and reflects on ways it may be used in future research. Disagreement is often considered as resulting from divergences in learning outcomes, whether information is processed rationally or with some bias. The emphasis is placed on recent contributions in this area with new ways of addressing old economic questions, and discussing new economic questions that could be addressed with a modification of these frameworks. The idea is to complement existing SFI classes in information economics (e.g., "Information and financial markets" and "Information and asset pricing" taught, respectively, by Antonio Mele and Pierre Collin Dufresne) by moving away from canonical theories.

In preample the class discusses ways in which researchers measure disagreement empirically, and highlights open questions in this area, e.g., the concept of "co-beliefs" based on my own research and how it can be used in future research. The class goes on to review recent, theoretical models that can be categorized into 4 groups (and that give the class a natural structure): in a Bayesian context investors may disagree because *1.* they have different priors (they "agree to disagree") or *2.* because they have different information sets (or both), and this may take place in a *a.* static or *b.* dynamic context. The distinction between *1.* and *2.* is whether prices have informational content. Regarding *a.* and *b.* certain insights do not arise in a static framework. For instance, consider a model in which investors have information that others do not (*2.*) and are never able to infer assets' payoffs entirely. When investors can only trade once (*a.*) prices reveal as much information as can be justified by Bayes' rule, whereas if investors can trade multiple times (*b.*) they do not, indicating that the distinction between *a.* and *b.* is economically important. Another example is sequential information acquisition: in a static context information is acquired when uncertainty is greatest, whereas in a

dynamic context information is purchased when an action of high value but high risk is about to be taken.

The table below summarizes the articles and topics discussed in each of the four parts of the class. Part *a.* and *b.* each starts with a recap on relevant concepts in Bayesian updating that we use in class. I take this opportunity to illustrate non-mainstream applications of learning in finance, such as the "too good to be true" phenomenon; to appreciate the main argument each paper makes I always start by putting the question in perspective. For instance, in Part *1a.* I use the model of Ottaviani and Sørensen (2015) to show how disagreement leads to under-reaction in a simple setup, but first explicitly showing what happens without disagreement. I then turn to Bayesian persuasion taking the example in Kamenica and Gentzkow (2011) and discuss how this would apply to a price mechanism along the lines of Benabou and Laroque (1992). Similarly, I use the static version of Kyle, Obizhaeva, and Wang (2023) to discuss an old debate on the origin of noise, in which the authors follow the idea of Fischer Black of modeling noise traders as a form of "agreement to disagree" ("noise traders trade on noise as if it were information.") I start by presenting the debate and its main implications for Keynes' beauty contest using Allen, Morris, and Shin (2006), which allows me to highlight how this new way of modeling noise affects this implication. In part *1b.* I use the setup of Breon-Drish (2015) and Pálvölgyi and Venter (2015) to discuss how moving away from typical linear equilibria in rational-expectations models may cause novel features in the disagreement-return relation, such as "crash-boom dynamics" or effects related to the skewness of returns. Part *2a.* examines two different mechanisms of polarization of beliefs, in the form of "Bayesian persuasion" (DeMarzo, Vayanos, and Zwiebel, 2003) or centrifugal learning in bad times (Cujean and Hasler, 2017). Finally, part *2b.* discusses the dynamics of private information, with an application to information percolation in centralized markets, a context in which the dynamics of disagreement are particularly rich and which illustrates an alternative application of rational-expectations models. In another application I will discuss how the flow of private information can be recovered in specific empirical frameworks exploiting data at high frequency. I will take this opportunity to illustrate how this kind of setups can be applied to new questions through ongoing work. As an epilogue the class concludes with Banerjee (2011) who tests the empirical importance of *1.* and *2.* in a dynamic context.

Intro:	How do we measure disagreement and empirical outlooks	Patton and Timmermann (2010) Daniel, Klos, and Rottke (2022) Giacoletti, Laursen, and Singleton (2021)
1a.	Agreeing to disagree in static models + Persuasion and manipulation	Ottaviani and Sørensen (2015) Kyle et al. (2023) Benabou and Laroque (1992)
1b.	Private info in static models	Breon-Drish (2015) Pálvölgyi and Venter (2015)
2a.	Polarization of beliefs	DeMarzo et al. (2003) Cujean and Hasler (2017)
2b.	Dynamics of info collection	Moscarini and Smith (2002) Cujean (2020) ongoing work

Organization of the course and teaching style

The course is structured in a traditional lecture format and based on a set of lectures notes (slides), which consistutes the main material for the class. There will be a list of readings, which involves all papers that will be discussed in class and which students are expected to have read ahead of lectures.
There are no prerequisite for the class that an SFI PhD student would not meet. I assume students have basic knowledge of economics, statistics and mathematics. For the main tool we use in class I offer a recap. In the second part of the class I will work in continuous time.
Regarding teaching style the format will be standard, but I will try my best to discuss non-mainstream papers that are usually not discussed in existing classes, and which propose an original angle on a research question.

References

[1] Allen, F., S. Morris, and H. S. Shin (2006, 03). Beauty Contests and Iterated Expectations in Asset Markets. *The Review of Financial Studies 19*(3), 719–752.

[2] Banerjee, S. (2011). Learning from prices and the dispersion in beliefs. *The Review of Financial Studies 24*(9), 3025–3068.

[3] Benabou, R. and G. Laroque (1992, 08). Using Privileged Information to Manipulate Markets: Insiders, Gurus, and Credibility*. *The Quarterly Journal of Economics 107*(3), 921–958.

[4] Breon-Drish, B. (2015). On existence and uniqueness of equilibrium in a class of noisy rational expectations models. *Review of Economic Studies 82*(3), 868–921.

[5] Cujean, J. (2020). Idea sharing and the performance of mutual funds. *Journal of Financial Economics 135*(1), 88–119.

[6] Cujean, J. and M. Hasler (2017). Why does return predictability concentrate in bad times? *The Journal of Finance 72*(6), 2717–2758.

[7] Daniel, K., A. Klos, and S. Rottke (2022, 10). The Dynamics of Disagreement. *The Review of Financial Studies 36*(6), 2431–2467.

[8] DeMarzo, P. M., D. Vayanos, and J. Zwiebel (2003, 08). Persuasion Bias, Social Influence, and Unidimensional Opinions*. *The Quarterly Journal of Economics 118*(3), 909–968.

[9] Giacoletti, M., K. T. Laursen, and K. J. Singleton (2021). Learning from disagreement in the u.s. treasury bond market. *The Journal of Finance 76*(1), 395–441.

[10] Kamenica, E. and M. Gentzkow (2011, October). Bayesian persuasion. *American Economic Review 101*(6), 2590–2615.

[11] Kyle, A. S., A. A. Obizhaeva, and Y. Wang (2023). Beliefs aggregation and return predictability. *The Journal of Finance 78*(1), 427–486.

[12] Moscarini, G. and L. Smith (2002). The law of large demand for information. *Econometrica 70*(6), 2351–2366.

[13] Ottaviani, M. and P. N. Sørensen (2015, January). Price reaction to information with heterogeneous beliefs and wealth effects: Underreaction, momentum, and reversal. *American Economic Review 105*(1), 1–34.

[14] Pálvölgyi, D. and G. Venter (2015). Multiple equilibria in noisy rational expectations economies. *Unpublished Manuscript*.

[15] Patton, A. and A. Timmermann (2010). Why do forecasters disagree? lessons from the term structure of cross-sectional dispersion. *Journal of Monetary Economics 57*(7), 803–820.