

MICRO III: INFORMATION AND EXCHANGE

MAXWELL B. STINCHCOMBE

This course introduces you to several of the basic approaches to modeling information and its interaction with exchange in modern capitalist economies, approaches that are currently fashionable amongst academic economists.

Sources:

- (1) The textbook for the class is A. Mas-Colell, M. Whinston, and J. Green's (MWG) *Microeconomic Theory*, Oxford University Press, New York, 1995.
- (2) Much of the advanced mathematics that we will sometimes use is well presented in Kolmogorov and Fomin [16], which is a very good place to start. Much more comprehensive is Dudley [11], a revised and improved, paperback version of a 1989 classic.
- (3) There are also a number of articles that we will refer to. I will keep an updated version of this syllabus at the link here, and it will link to copies of the papers.

Evaluation: Homeworks due roughly every week and a half, 50%. Final exam 50%.

- (1) Models of information (class meetings 1 - 4, March 27, 29, April 3 and 5.)
 - (a) Signals, partitions, MWG 19A-C.
 - (b) Conditional expectations and probabilities.
 - (c) Unambiguously better/worse information, (Blackwell [9], Blackwell [8]).
 - (d) Relation to risk(iness). (Athey [4], Baker [7], Müller [20].)
 - (e) Relation to decisions. (Athey and Levin [5], Gollier [13])
- (2) Variants on the trade and no-trade theorems (class meetings 5 - 7, April 10, 12, and 17.)
 - (a) With a common prior and state independent, expected utility preferences over own consumption.
 - (i) Insurance demand and risk averters, MWG 19H.
 - (ii) Thrills and risk lovers.
 - (iii) Don't bet in it. (Sebenius and Geanakoplos [23])
 - (iv) Agreeing to disagree. (Aumann [6])
 - (v) From a Pareto optimal starting point. (Milgrom and Stokey [19])
 - (b) With a common prior and state independent, risk averse, non-expected utility preferences. (Machina [18])
 - (c) With different priors. (Ledyard [17])
 - (d) With other-regarding preferences.

- (e) With state-dependent preferences. (Karni [15])
 - (i) Animal spirits.
 - (ii) Mechanism design and eliciting probabilities. (Savage [22], (Friedman [12]))
- (f) With ambiguity.
- (3) General equilibrium and “rational expectations” equilibria (class meetings 8 - 14).
 - (a) Prices coordinate alternative uses of resources, optimality results. (MWG 15-17, 19D-H)
 - (b) Prices carry information. (von Hayek [24])
 - (c) Generically, prices carry all information. (Radner [21])
 - (d) Generically, prices carry all information, even in production economies. (Boyarchenko [10])
 - (e) Information can be priced (Allen [1] [2])
 - (f) Not really, private information gets in the way. [Lemons, insurance, moral hazard, reactive risk]
 - (g) Not really, information is costly. (Grossman and Stiglitz [14])
 - (h) Not really, a better definition of REE. (Anderson and Sonnenschein [3])
- (4) Prediction markets:
 - (a) There are many. [Wolfers and Zitzewitz]
 - (b) They may or may not work. [Manski, Serrano-Pardial]
 - (c) Experimental evidence. [Plott and Sunder, follow-ups]
 - (d) Mechanism design for elicitation [FSW (2007)]

REFERENCES

1. Beth Allen, *The demand for (differentiated) information*, Rev. Econom. Stud. **53** (1986), no. 3, 311–323. MR MR850402 (87i:90056)
2. ———, *General equilibrium with information sales*, Theory and Decision **21** (1986), no. 1, 1–33. MR MR849745 (87i:90057)
3. Robert M. Anderson and Hugo Sonnenschein, *On the existence of rational expectations equilibrium*, J. Econom. Theory **26** (1982), no. 2, 261–278. MR MR655331 (84b:90022)
4. Susan Athey, *Characterizing properties of stochastic objective functions*, 2000.
5. Susan Athey and Jonathan Levin, *Value of information in monotone decision problems*, 2001.
6. Robert J. Aumann, *Agreeing to disagree*, Ann. Statist. **4** (1976), no. 6, 1236–1239. MR MR0433654 (55 #6627)
7. Erin Baker, *Increasing risk and increasing informativeness: equivalence theorems*, Operations Research **54** (2006), no. 1, 26–36. MR MR0056251 (15,47b)
8. David Blackwell, *Comparison of experiments*, Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability, 1950 (Berkeley and Los Angeles), University of California Press, 1951, pp. 93–102. MR MR0046002 (13,667f)
9. ———, *Equivalent comparisons of experiments*, Ann. Math. Statistics **24** (1953), 265–272. MR MR0056251 (15,47b)
10. Svetlana Boyarchenko, *Arrow’s equivalency theorem in a model with neoclassical firms*, Econom. Theory **23** (2004), no. 4, 739–775. MR MR2059376 (2005d:91074)

11. R. M. Dudley, *Real analysis and probability*, Cambridge Studies in Advanced Mathematics, vol. 74, Cambridge University Press, Cambridge, 2002, Revised reprint of the 1989 original. MR MR1932358 (2003h:60001)
12. Daniel Friedman, *Effective scoring rules for probabilistic forecasts*, *Management Science* **29** (1983), 447–454.
13. Christian Gollier, *The comparative statics of changes in risk revisited*, *J. Econ. Theory* **66** (1995), 522–535.
14. S. J. Grossman and J. E. Stiglitz, *On the impossibility of informationally efficient markets*, *American Economic Review* **70** (1980), 393–408.
15. Edi Karni, *A definition of subjective probabilities with state-dependent preferences*, *Econometrica* **61** (1993), no. 1, 187–198. MR MR1201708 (93k:90012)
16. A. N. Kolmogorov and S. V. Fomin, *Introductory real analysis*, Dover Publications Inc., New York, 1975, Translated from the second Russian edition and edited by Richard A. Silverman, Corrected reprinting. MR MR0377445 (51 #13617)
17. John O. Ledyard, *The scope of the hypothesis of Bayesian equilibrium*, *J. Econom. Theory* **39** (1986), no. 1, 59–82. MR MR846947 (88e:90019)
18. Mark J. Machina, *“Expected utility” analysis without the independence axiom*, *Econometrica* **50** (1982), no. 2, 277–323. MR MR662283 (83f:90030)
19. Paul Milgrom and Nancy Stokey, *Information, trade and common knowledge*, *J. Econ. Theory* **26** (1982), no. 1, 17–27.
20. Alfred Müller, *Comparing risks with unbounded distributions*, *J. Math. Econom.* **30** (1998), no. 2, 229–239. MR MR1652641 (99m:90049)
21. Roy Radner, *Rational expectations equilibrium: generic existence and the information revealed by prices*, *Econometrica* **47** (1979), no. 3, 655–678. MR MR533078 (80f:90029)
22. Leonard J. Savage, *Elicitation of personal probabilities and expectations*, *J. Amer. Statist. Assoc.* **66** (1971), 783–801. MR MR0331571 (48 #9903)
23. James K. Sebenius and John Geanakoplos, *Don’t bet on it: contingent agreements with asymmetric information*, *J. Amer. Statist. Assoc.* **78** (1983), no. 382, 424–426. MR MR711118 (84k:62009)
24. F. A. von Hayek, *The use of knowledge in society*, *American Economic Review* **XXXV** (1945), no. Four, 519–530.