

## Question 1

The FT article describes the phenomenon of falling inflation expectations in the US and mentions that this is odd given the fact that the US economy has been expanding and that core consumer price inflation has risen slightly. Given this, it poses the following question:

‘So what explains falling inflation expectations?’

and presents different possible theories that could explain this phenomenon.

- (1) During the course we have talked about Friedman’s theory of positive economics. On which basis would Friedman judge the quality of the different suggested theories? Would it matter to him whether the theory is based on realistic assumptions?

Points that should be included can be found on slides 22-25 in lecture 4 and the associated mandatory reading

- (2) Relate Friedman’s theory of positive economics to Karl Popper’s concept of Falsifiability.

This lecture also refers to lectures 4 and 5. Some points that should be included are: the student should discuss the fact that Friedman was merely interested in the ‘narrow predictive power of theories’. This is related to falsifiability in the sense that we should discard theories that do not give ‘correct’ / good predictions. Of course Popper’s concept of falsifiability is stricter in the sense that he would disregard a theory if one of the underlying building blocks/assumptions proves to be falsified. Friedman would not. He would only discard a theory if it does not lead to good predictions.

- (3) Karl Popper was a Philosopher of Science close to the Logical positivists of the Vienna Circle. Another Philosopher of Science which took a completely different direction in his thinking was Thomas Kuhn. Please describe Thomas Kuhn’s ideas and concepts and explain in how far he differed in his thinking to e.g. Karl Popper.

Points that should be included in the answer can be found on slides 23 - 40 in lecture 5. Thomas Kuhn differed from e.g. Karl Popper in as much as he did not investigate how researchers should do their work, but how science actually develops. Popper was – like the logical positivists interested in demarcation: differentiating science from non-science. Falsifiability was his method that should draw a line between science and pseudo-science. A theory that contains empirical content and that allows for falsification was a scientific theory for Popper. Kuhn did not bother with such concepts and rather described the development of science and scientific progress.

## Question 2

The FT article suggests that consumers’ ethnographic background matters when forecasting inflation.

- (4) Based on this view, what are the potential dangers of designing models of expectation formation based on a representative agent assumption?

In response to Lucas’ critique, recent decades have witnessed various attempts to combine microeconomic models of household and firm behavior to derive structural macroeconomic

relationships. In practice, macroeconomists have generally embraced a representative-agent approach to tackle microfoundations. The representative-agent model takes economy-wide aggregates (e.g., GDP, price indices, average interest rates etc.) as equivalent to similarly-named variables associated with individual agents (i.e., incomes of individual workers, prices, interest rates, etc.). Therefore, the representative agent results as a “large” microeconomic agent that: 1) maximizes utility subject to a budget constraint given by the national-income identity; 2) maximizes profits subject to an aggregate production function. A direct implication of this assumption is that the form of the resulting aggregate macroeconomic relationships is isomorphic to the rules that have proved tractable in microeconomic analysis. As to the case considered by the article, working under a representative-agent assumption implies that consumers’ expectations are generally viewed as being homogenous. However, there is no reason to assume/expect macro behavior to be analogous to the behavior of individuals. In fact, recent evidence on survey inflation expectations has shown that heterogeneity is pervasive and that a variety of ethnographic factors may influence consumers’ forecasts. In such a context, working with a representative agent may potentially lead to misleading normative prescriptions. In fact, policy interventions might carry relevant distributional effects, so that aggregating individuals based on the assumption of homogeneity of their behavioral rules and expectations produces a biased measure of aggregate behavior. See *Lecture 9 and “Microfoundations and the Ontology of Macroeconomics” by Kevin D. Hoover in The Oxford Handbook of Philosophy of Economics (Edited by Don Ross and Harold Kincaid) for a more detailed discussion.*

(5) The heterogeneity of inflation expectations suggests that the rational expectations hypothesis is not fulfilled, so that the statistical analysis of the process of expectation formation should not rely on a “strongly aprioristic approach” based on structural models. What alternative approaches can be followed if we relax strong apriorism?

According to the Rational expectations hypothesis (REH), economic agents produce forward-looking expectations, using all the available information when making economic decisions and considering the true structure/model of the economy. Based on the arguments of the article, the heterogeneity of consumer expectations necessarily implies that not all agents are rational, as their forecasts are influenced by their ethnographic background. In this context, it is not possible to base the empirical analysis on a structural model, as a “strongly aprioristic approach” would suggest in order to secure invariance. In alternative, it is advisable to resort to more flexible approaches that do not rely on the “strong” assumption that a given model embodies the true causal structure of the phenomenon under scrutiny. To this end, two methodologies can be considered: 1) weak apriorism and 2) econometrics as observation. Weak apriorism is based on the assumption that theory and empirical results are interrelated, so that theory should provide some gives a priori restrictions on empirical investigation, while empirics should spur theory development. Therefore, as opposed to strong apriorism, weak apriorism recognizes the mutual interplay between empirical investigation and theory. Pursuing an econometrics as observation approach consists instead of looking at confluent relations that emerge as a consequence of an

unknown data-generating process. In this case, theory's role is to explain those observations and, ideally, also be generalizable to all observations.

*See Lecture 10 and “- Econometrics as Observation: The Lucas Critique and the Nature of Econometric Inference” by Kevin D. Hoover in The Philosophy of Economics An Anthology by Daniel M. Hausman for a more detailed discussion.*

### Question 3

(6) The article mentions a number of variables that may systematically affect consumers' inflation expectations (e.g., being under financial pressure, reading media discussions about inflation). One possible method for empirically analyzing the relationship between different variables are scientific experiments. Discuss the essential idea of how the experimental method can help to test whether a causal relationship between two variables exists (you can, but don't need use the examples from the article to illustrate your response).

*(4) Experimental method allows to control important variables of interest: the researcher knows and controls all important factors of the experiment (e.g., institutions, environment, etc.). In particular, experimenter knows which variable was exogenously given and which variable was endogenous.*

*(5) Together with random assignment of participants to different “treatments”, this high level of control allows to identify causal relationships between variables.*

*(6) Key idea to experimentally test for causal relationship between two variables: assign participants randomly to two different treatments of the experiment. Exogenously vary exactly one factor (i.e., the presumed cause, X) across treatments and measure how this affects the (hypothesized) outcome of interest, Y.*

*(7) For the example mentioned in the FT article: to analyze whether reading media discussions about inflation has a causal impact on people's inflation expectations, an experiment could for instance (i) invite participants to the laboratory, (ii) exogenously vary the level of exposure to inflation-related news across treatments (e.g., by randomly assigning newspaper articles about inflation vs. sports events to participants), (iii) control other information that participants might be exposed to (e.g., block access to news pages on the web during the experiment), and (iv) measure how inflation expectations differ across treatments after the experiment (e.g., through an incentivized or non-incentivized survey). Similar experiments could also be conducted outside the laboratory (e.g., field experiment that provides free subscription to business newspaper to treatment group) and for other hypothesized causes (e.g., experiment that exogenously alleviates financial pressure for random subgroup of participants).*

(7) One aspect that is frequently mentioned as an important feature of experiments is that they can easily be replicated, which in turn may help to detect errors and scientific misconduct. Discuss (at least) 3 different forms of scientific misconduct. Which institutional features of the academic system might facilitate or provoke these forms of unethical behavior of scientists?

- (8) Examples for different forms of scientific misconduct discussed during the course (define and explain  
→ see course materials from Lectures 17 and 18 for detailed discussion):*
- (9) Plagiarism and self-plagiarism*
- (10) Fabrication of research results*
- (11) Misrepresentation of scientific results by strategically exploiting researcher degrees of freedom  
(e.g., dropping “outliers”, coding of variable, multiple testing, etc.)*
- (12) Examples of institutional features that might facilitate unethical behavior (explain and connect to  
the types of misconduct discussed in your examples):*
- (13) Incentives in academia, in particular, publication pressure*
- (14) Limitations of the peer-review system (relatively low number of reviewers, strategic incentives of  
reviewers, etc.)*
- (15) “Publication bias” in favor of surprising findings and against “non-results”*