Paul Fontanier

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Recommendation Letter Writer: Jeremy Stein

Curriculum Vitae

Education

Ph.D. Candidate, Economics, Harvard University 2016 – current.

Fields: Macroeconomics, Behavioral Economics, Finance

Graduate Government Program, Corps des Mines, 2015

Msc. in Mathematics and Economics, Ecole Polytechnique, 2012-2015

Ranked 5th out of 400

Research

Optimal Macroprudential Policy without Rational Expectations

This paper studies the impact of irrational expectations processes on optimal policy in environments with financial frictions and fire sales externalities. It provides simple formulas for macroprudential policy to restore constrained efficiency that depend on a small number of sufficient statistics. It shows how the macroprudential tax compares with the Rational Expectations case, and stresses that the impact of irrationality can be ambiguous on the size and sign of the intervention. While financial frictions introduce wedges between the competitive allocation and the first-best, irrational expectations introduce a supplementary investment wedge between the perceived and true marginal product of capital. The optimal macroprudential policy corrects the investment wedge with an ex-ante Pigouvian tax, and adds a tax to correct for pecuniary externalities. Finally I contrast two special cases of irrationality: overoptimism and predictable expectation reversals, and show when "leaning against the boom" is optimal. The main lesson of the paper is that irrational expectations interact with financial frictions in such a way that what matters for the planner is to understand in which state of the world agents are financially constrained.

Partial Equilibrium Thinking in General Equilibrium (with Francesca Bastianello)

We study the aggregate implications of information diffusion in a financial market where agents fail to understand the general equilibrium consequences of their actions, a form of limited thinking that we call “Partial Equilibrium Thinking" (PET). In particular, we model a financial market where agents think they are the only ones inferring information from prices, when actually everyone is behaving in the same way. Since PET agents use a misspecified model of the world, they extract and trade on the wrong information. Although agents

adopt a thought process that is in between the rational expectations and the competitive equilibrium benchmarks, the resulting equilibrium does not lie in the convex set of these two standard equilibrium concepts, and results in over-reaction to news. Next, we exploit the tractability of our model to allow for heterogeneous agents with very general forms of model misspecification that can accommodate various biases and cognitive limitations. This leads to endogenous heterogeneous beliefs which are all consistent with the equilibrium price agents observe.

Partial Equilibrium Thinking in Motion (with Francesca Bastianello)

We present a dynamic model where some agents mistakenly attribute any price change they observe to new information alone, when in reality part of the price change is due to other agents' buying/selling pressure. We show how the endogenous feedback between prices and beliefs which arises naturally in our model may lead to two different types of equilibria: if the information content in prices is high enough, be it because there are enough informed agents or because the information they receive is very precise, then the equilibrium is stable, so that prices and beliefs converge to a state-dependent equilibrium which exhibits over-reaction relative to the Rational Expectations Equilibrium. If instead the information content is too low, so that the feedback effect between prices and beliefs is too strong, the equilibrium is unstable, and prices and beliefs become extreme and decoupled from fundamentals. Moreover, we show how it is possible for the transition dynamics to endogenously switch from an unstable to a stable path. We leverage this insight to build a theory of bubbles driven by PET behavior, and we provide conditions for when a bubble endogenously arises, and when it may burst. We finally show how speculation interacts with our behavioral bias and provide conditions for speculation to amplify or dampen bubbles.

Work in Progress

Optimal Policy for Monopsonistic Competition

Equilibrium Selection and Macroprudential Policy with Collateral Externalities

Teaching

Capital Markets

Intermediate Macroeconomics

Behavioral Finance

Completed PhD courses

International Finance

International Macroeconomics

Advanced Topics in Macroeconomics

International Trade

Corporate Finance

Psychology and Economics

First-year sequence (Macroeconomics, Microeconomics, Econometrics)

Awards and Fellowships

Harvard Graduate Scholarship, 2016–2018

Corps des Mines Full Scholarship, 2015

Ecole Polytechnique Full Scholarship, 2012–2015

Certificate of Distinction in Teaching, Harvard University

Seminars and Conferences

2020: AFA poster session

2019: Sloan-Nomis Workshop on the Cognitive Foundations of Economic Behavior (NYU), Miami Behavioral Finance Conference

Referee service

Quarterly Journal of Economics, AEJ: Macroeconomics

Professional Experience

Orange Middle East and Africa, Acquisition Analyst, 2015–2016

Societe Generale, Financial Engineer, 2015

References

Andrei Shleifer
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Research description

My work in Behavioral Macroeconomics is composed of two projects that pursue different goals: one normative and one positive. My first project studies the aggregate impact of non-rational behavior (in the form of expectational errors) in a macroeconomic model with financial frictions, and seeks to characterize the optimal macroprudential policy design in this general setup. The second project develops a theory where agents are subject to a behavioral mistake in their strategic interactions. Agents are "Partial Equilibrium Thinkers" (PET) in the sense that they neglect the general equilibrium consequences of the actions taken by agents similar to them.

Both projects would greatly benefit from attending the Behavioral Macroeconomics Research Boot Camp.

Optimal Macroprudential Policy without Rational Expectations

Macroprudential policy is now an ubiquitous tool in policy discussions. Even though the practice has marched ahead of theoretical research, the rationale for such policies is well understood: externalities in leverage choice combined with incomplete markets. At the same time, empirical research has in the last decade documented striking and robust facts about credit cycles. Credit expansions predict lower GDP growth, lower returns in stocks and in corporate bonds, while the price of risk is low just before a crisis. Cross-sectional measures aimed at constructing an indicator of credit "sentiment" are also successful at predicting subsequent reversals after high sentiment. These findings have revived the boom-and-bust narrative of Minsky and put behavioral accounts of expectation formations back at the center of the debate.

Since leverage choice seems to be partially formed by behavioral biases, and leverage choice features externalities advocating for policy, a natural question is whether these biases should be a concern for the policy maker. This project seeks to address this interrogation.

The first part of the project is building a very general model where agent's expectations are arbitrary, and featuring several dimensions for the planner to intervene. The goal is to provide a general and portable formula that can then be applied in many settings, but can identify the general principles of macroprudential policy when confronted with behavioral agents. The general theory highlights that, while short-term deviations from Rational Expectations can be corrected with Pigouvian taxes, systematic future irrationality have asymmetric effects for the optimal policy.

The project will then study in details several concrete applications to see how these general principles apply. I plan to focus first on two cases. The first one will feature homogeneous agents subject to extrapolative biases. This allows the economy to be overoptimisic before a crisis and overpessimistic during a crisis. Preliminary results on these application show that both deviations are relevant for the policy maker: optimism

in the first place provokes an overbuilding of capital. But predictable pessimism once the crisis hits also increases the expected cost of a crisis by amplifying fire sales. The second application will focus on heterogeneous sentiment: what is the optimal policy when the economy is composed of optimists and pessimists? The contrast of these two cases will make clear how irrational beliefs can interact with financial frictions from a normative perspective. Fleshing out these applications will highlight the key sufficient statistics needed by the policy maker preoccupied by sentiment-prone agents.

A Theory of Partial Equilibrium Thinking

(Joint with Francesca Bastianello) The idea that financial markets aggregate dispersed and private information is central to the Efficient Market Hypothesis, and can be traced back to Hayek. In a world where agents receive private news about the future payoff of a risky asset and trades on it, the price of the risky asset in equilibrium will aggregate all relevant information. However, correctly inferring this information from prices is far from straightforward, as this requires agents to perfectly understand what generated the price that they observe. This project puts forward a psychologically plausible bias in the extraction of information in complex settings and characterizes its implications.

We propose a new equilibrium concept, which we refer to as Partial Equilibrium Thinking (PET). Our agents are "partial equilibrium thinkers" in that they fail to realize the general equilibrium consequences of their actions. In particular, we think of our agents are rational, in that they infer information from prices, but they fail to realize that other agents are also rational, thus truncating common knowledge rationality to first order beliefs.

In a first paper, we investigate the static PET equilibrium from a purely theoretical perspective. We show how it gives rise to over-reaction, and can be extended along many dimensions: heterogeneous agents, partially revealing prices, arbitrary K-level thinking, general model misspecification, etc. In particular we show that this simple departure from the Rational Expectation Equilibrium can result in an *unstable* equilibrium, an insight we will use in a dynamic setup later on. At a broader level, our theory provides a sensible way to model feedbacks between outcomes and beliefs.

In a second paper, we introduce PET into a dynamic setup where information arrives gradually. Depending on the precision of the information and the number of informed agents, the system can initially be in the stable or unstable region. If the latter case, prices will diverge and become decoupled from fundamentals. But we show that the system endogenously shifts to the stable region once enough information arrives, and the price reverts back towards the fundamental. Importantly, the boom-and-burst dynamics are not relying on any "bad shock" to trigger the crash: it happens endogenously and we are able to characterize its exact time given the information structure.

Future research will focus on bringing the PET theory into a macroeconomic setup, like credit cycles.

Gmail by Google

Elisa Pepe <epepe@nber.org>

joint letter for NBER Behavioral Boot Camp

Shleifer, Andrei <shleifer@fas.harvard.edu> Wed, Dec 4, 2019 at 7:00 AM
To: Elisa Pepe <epepe@nber.org>
Cc: Yuriy Gorodnichenko <ygorodni@econ.berkeley.edu>

Dear Elisa and Yuriy,

This is a brief joint letter for 6 Harvard Ph.D. students whom I work closely with applying for the Behavioral Macro bootcamp. They are all part of a group I am advising in this space, and they work together, come to same informal group meetings, and are generally part of a small community. They are also all amazingly good.

I would divide them into the "older" thesis writing category, and the "younger" starting out category, although even people in the younger category are actively doing research.

Older category includes Francesca Bastianello, Paul Fontanier, and Peter Maxted. All three are very talented and technically strong, all have completed first rate papers. I think all three are on the market next year, and all were in the very final few for the Sloan pre-doc last year (Francesca got it). (I think they may also all be getting letters from same people who are recommending them for pre-docs.) So I think at this point you are familiar with all of them.

Let me write two sentences about each of the other three -- all of whom I have known for some time because all three were Harvard undergraduates.

Spencer Kwon is a G2, and a very rare person I have seen as a Ph.D. student who has the intellectual ambition and potential to do transformative work. If there is a limit on how talented he is, I have not detected it. I can tell many stories, but this is not the place. Mike and Andrew can provide first hand testimony from the Sloan-Nomis camp.

Johnny Tang is a G2. He is specializing in finance, was at Nick Barberis camp last summer (Nick loved him), has fantastic empirical skills and is doing incredibly well in the program. He is working on a very exciting project with Spencer. He also happens to be just a great person, totally beloved by everyone in his class (it is a Canadian effect, I suppose).

Suproteem Sankar is a G1. He comes with a Computer Science background, went to Sloan Nomis like Spencer before starting grad school, seems to have placed out of most of G1 classes even though he did not major in economics as an undergraduate, and is figuring out what he wants to do. I recently saw his resume (he is applying for the Soros fellowship for first generation americans) and was quite stunned by his accomplishments, which he had not told me about. He is extremely bright and is looking for what he wants to do. I would love to draw him into this field -- his potential is enormous.

I hope this is helpful.

Warm regards,

as

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12/3/2019

To Whom it May Concern:

I am writing in support of **Paul Fontanier**, who is applying to participate in the NBER Behavioral Macroeconomics Research Boot Camp. Paul is in his fourth year in the PhD program at Harvard, and I have been serving as one of his advisors. Paul is one of our most talented students overall, with very strong modeling skills, and his interests are exactly in this space. I would guess that he has as good a chance of becoming a significant contributor to behavioral macro as any student we have had at Harvard in the last several years.

Paul has two ongoing projects which are relevant. The first is a model that combines arbitrary non-rational expectations (i.e., some form of investor sentiment) with fire-sale externalities, and shows how the two interact in interesting ways. He goes on to flesh out the normative properties of the model, and to consider potential macro-prudential policies. What I particularly like about what I have seen so far is that, while Paul clearly has a lot of technical horsepower, he is also able to do something that is often quite hard for students at this stage—to simplify the model in such a way as to really focus in on the important economic intuition. I was really quite impressed on this dimension, and think it bodes well for his future potential.

Paul's second project is joint with another of our students, Francesca Bastianello. They look at what happens in a standard Grossman-Stiglitz (1980) type of setting where some agents have a particular kind of behavioral bias, which they label "partial equilibrium thinking". The basic idea is that these agents are smart enough to try to infer information from prices, but not so sophisticated that they realize that other uninformed agents might be trying to do the same thing. Although this is still very early stage work, it strikes me as a promising alternative micro-foundation for various asset-pricing anomalies, such as underreaction in the short run and overreaction in the longer run. More speculatively, I think there is a chance that an extension of this framework might allow them to say something novel about the fragility of market prices in a world where agents are engaged in some form of k-level thinking. And as with his other project, you can see a first-class set of modeling skills on display—there is an elegant clarity to how they develop their logic.

So again, this strikes me as a perfect match. Paul has my most enthusiastic endorsement for this program.

Sincerely,

Jeremy Stein