Aggregate unemployment and expectations formation

Christopher Roth and Johannes Wohlfart

There is growing evidence that expectations about macro variables such as inflation or house prices are a central determinant of individual consumption and investment behavior (Armantier et al, 2015; D'Acunto et al., 2016; Armona et al., 2016). Moreover, with nominal interest rates at the zero lower bound, central bankers have introduced new monetary policy instruments, such as forward guidance, to directly influence economic agents' expectations to affect their behavior. Understanding the determinants of individuals' economic expectations is therefore of crucial importance.

In this paper we conduct an information experiment to examine whether and how economic agents' perceptions of macroeconomic variables affect their expectations about personal economic outcomes, such as income prospects and the perceived chance of job loss. In addition, we test key predictions of important macroeconomic models, such as the New Keynesian model that have posited a negative relationship between the deviation of the unemployment rate from the natural rate and inflation expectations.

For our experiment, we plan to recruit 1,500 participants from an online panel that is representative for the U.S. population in terms of age, gender, income and region of residence. Our design proceeds in three different stages of data collection: First, in the baseline experiment we elicit people's prior expectation regarding their own income, their job loss probability and inflation.[1] Thereafter, our respondents complete a series of questions on their demographics. Second, one day after the baseline experiment, we re-invite all of our participants for the main part of the experiment. Here, we elicit their beliefs about the current unemployment rate in the U.S.. Only individuals in the treatment group are then informed about the actual unemployment rate (4.8 percent in January 2017), while individuals in the control group receive no such information. Subsequently, we again ask people about their expectations regarding inflation, their personal job loss probability and earnings. Then, we ask respondents whether they think it is a good time to buy major consumer durables. Finally, we ask people about their perception of where the economy currently is in the business cycle by asking them whether they think that production will get close to full capacity over the next 12 months. Third, to examine whether our treatment

[1] The elicitation of prior and posterior beliefs about our variables allows us to analyze the updating behavior of participants in a Bayesian framework (Cavallo et al., forthcoming) and increases statistical power relative to only comparing posterior beliefs between treatment and control group.

effects persist we re-invite participants two weeks after the main experiment and again ask them about their economic expectations.

Our design allows us to test whether economic agents update their expectations about their personal economic situation as well as their inflation expectations when their subjective beliefs about the unemployment rate change. This would shed light on important individual factors underlying business cycle dynamics and inform the effectiveness of different policy tools aimed at changing people's economic expectations about variables such as inflation.

In our paper we also test whether a model of rational inattention can explain the patterns in our data. We make use of novel estimates of correlations between earnings growth and GDP growth for different demographic groups working in different industries from Guvenen et al. (2017). Specifically, we examine whether people whose earnings are more correlated with aggregate conditions i) are better informed about the current unemployment rate, ii) whether they update differentially when they receive the information and iii) whether they are less likely to forget the information until the follow-up survey.

Our findings would contribute to a growing literature on the determinants of people's expectations about important economic variables. A series of recent papers conduct information experiments to study the role of perceived past realization such as past inflation (Cavallo et al., forthcoming) or past house price growth (Armona et al., 2016). Other studies use observational data to examine how economic expectations are influenced by social interactions (Arrondel et al. 2016, Bailey et al., 2016), macroeconomic and local experiences (Malmendier and Nagel, 2011, 2016; Kuchler and Zafar, 2015) or trust in the central bank (Christelis et al., 2016). Our paper would be the first to i) document whether people extrapolate from aggregate statistics to their personal economic outlook and to ii) examine whether individual inflation expectations are consistent with a Phillips curve.

It will be possible to make the data publicly available without violating confidentiality agreements. These data would be the first to elicit individuals' beliefs about the current unemployment rate. Also, we plan to collect data on a rich set of background variables such as demographics or individuals' financial positions, and potentially also ask respondents about other beliefs and expectations, e.g. regarding interest rates and stock prices. These features would make the data very attractive to other researchers in macroeconomics and household finance.

References:

Armantier, Olivier, Wändi Bruine de Bruin, Giorgio Topa, Wilbert van der Klaauw and Basit Zafar. "Inflation Expectations and Behavior: Do Survey Respondents Act on Their Beliefs?," International Economic Review, 2015, 56(2), pp. 505-536.

Armona, Luis C., Andreas Fuster, and Basit Zafar. "Home Price Expectations and Behavior: Evidence from a Randomized Information Experiment," Working paper, 2016.

Arrondel, Luc, Chryssi Giannitsarou, Michael Haliassos, and Hector Calvo Pardo. "Informative Social Interactions," Working Paper, May 2016.

Bailey, Michael C., Ruiging Cao, Theresa Kuchler and Johannes Stroebel. "Social Networks and Housing Markets," Working Paper, 2016.

Cavallo, Alberto, Guillermo Cruces and Ricardo Perez-Truglia. "Inflation Expectations, Learning, and Supermarket Prices: Evidence from Survey Experiments," American Economic Journal: Macroeconomics, forthcoming.

Christelis, Dimitris, Dimitris Georgarakos, Tullio Jappelli and Maarten van Rooij. "Trust in the Central Bank and Inflation Expectations," Working Paper, 2016.

D'Acunto, Francesco, Daniel Hoang and Michael Weber. "The Effect of Unconventional Fiscal Policy on Consumption Expenditure," Working Paper, 2016

Guvenen, Fatih, Sam Schulhofer-Wohl, Jae Song, Motohiro Yogo. "Worker Betas: Five Facts about Systematic Earnings Risk" Working Paper, 2017.

Kuchler, Theresa and Basit Zafar. "Personal Experiences and Expectations about Aggregate Outcomes," Working Paper, 2015.

Malmendier, Ulrike, and Stefan Nagel. "Depression Babies: Do Macroeconomic Experiences Affect Risk-taking?." The Quarterly Journal of Economics, 2011, 126(1), pp. 373-416.

Malmendier, Ulrike and Stefan Nagel. “Learning from Inflation Experiences,” The Quarterly Journal of Economics, 2016, 131(1), pp.53-87.

Aggregate unemployment and expectations formation – Itemized budget

Christopher Roth and Johannes Wohlfart

We need the potential award to pay for the show-up fee for our participants and for pilot experiments.

Costs for Representative online panel:

We plan to recruit 1500 participants from a representative online panel. We will recruit participants in collaboration with the company "Research Now". We have already worked with the company Research Now several times and are very happy with the data quality delivered by the respondents from their panel. We have talked to other providers of representative online panels and found out that (i) they are significantly more expensive and (ii) are less flexible in implementing follow-up surveys - which is essential for the success of our study.

Our design proceeds in three data collection stages and our contact from the representative online panel told us that the cost per subject for all three stages of data collection will be $7.00.

This means that the total cost for the online provider will be around **1500*$7 = $10500.**

Costs for pilot experiments on Amazon Mechanical Turk:

We plan to run several pilot experiments on Amazon Mechanical Turk (a commonly used online labor market platform) in order to assess whether people understand our questions well.

We plan to run pilot experiments with in total 1000 respondents and at a cost of $3 per subject (for all three stages of data collection). This implies a total cost for pilots of **$3,000.**

Total Costs:

The total costs for our experiments is thus **$13,500**.

Christopher Roth

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Personal Details

Date of Birth	May 4th, 1989.
Nationality	German
Gender	Male

Education

2014 - 2018 (expected)	DPhil. (PhD) in Economics, University of Oxford.
2012 - 2014	MPhil. in Economics (with distinction), University of Oxford.
2009 - 2012	BSc. Economics (First Class Honours), University of Warwick.

Visiting Positions

2016 - 2017	Visiting PhD Student, Institute on Behavior and Inequality (briq), Bonn.
2015 - 2016	Marie Curie Early Stage Research Fellow, Bocconi University.
Summer 2015	Research Fellow, Busara Center for Behavioral Economics, Nairobi Kenya.
Summer 2014	Visiting Researcher, National Team for the Acceleration of Poverty Reduction (TNP2K), Jakarta, Indonesia.

Research and Teaching Fields

Primary: Experimental Economics, Psychology and Economics
Secondary: Development Economics, Political Economy, Labor Economics, Public Economics

Teaching Experience

2017 (scheduled)	Undergraduate Tutorials in Quantitative Economics: Worcester College, University of Oxford
2014 - 2015	Tutorials for the MSc. in Economics for Development Course on Quantitative Methods: University of Oxford

Presentations in seminars and conferences

2017 (planned): Berlin (Behavioral Colloquium)

2016: University of Oxford (Firm and Development Research Group); Choice Lab PhD workshop Bergen, Norwegian School of Economics (NHH); ESA Annual European Meeting, Bergen; University of Bonn Applied Coffee; IIES Stockholm Applied Micro Brown Bag; University of Oxford, CSAE workshop; University of Frankfurt, Applied Micro Brown Bag.

2015: University of Oxford (Firm and Development Research Group); University of Oxford CSAE workshop; University College London (PhD workshop); PACDEV UC San Diego; CSAE Annual Conference; Royal Economic Society Conference, Manchester; Centre for Experimental and Social Sciences (CESS), Nuffield college Oxford; University of Kiel; University of

Oxford (Firm and Development Research Group); Barcelona GSE Summer Forum, Economics of Socalization; BPL Meeting, Busara Center for Behavioral Economics, Nairobi, Kenya; OXDEV workshop, University of Oxford; CEPR annual symposium and PODER conference, Barcelona; Bocconi University (Brown Bag); University of Oxford (Firm and Development Research Group).

2014: The National Team for the Acceleration of Poverty Reduction (Jakarta); INET PhD workshop (Kuala Lumpur); University of Warwick; The NEUDC conference (Boston University); University of Oxford (Gorman Seminar); University of Oxford (Informal Seminar).

Workshop Attendance

2016: Spring School in Behavioral Economics, Rady School of Management, UC San Diego; Russel Sage Summer School in Behavioral Economics, New Hampshire.

Conference Organization

2017: RES Symposium of Junior Researchers.

Refereeing

CSAE Annual Conference (2016, 2017), Economic Development and Cultural Change, Journal of Development Studies, Management Science, Review of Economics of the Household.

Working Papers

De Quidt, Jon, Haushofer, Johannes and Christopher Roth "Measuring and Bounding Experimenter Demand Effects." (2017)

Roth, Christopher and Johannes Wohlfart "Public Debt and the Demand for Government Spending and Taxation" (2017)

Grigorieff, Alexis, Roth, Christopher and Diego Ubfal "Does Information Change Attitudes Towards Immigrants? Evidence from Survey Experiments" (2016) IZA DP No. 10419.

Roth, Christopher and Johannes Wohlfart "Experienced Inequality and Preferences for Redistribution" (2016) SSRN working paper.

Christian, Cornelius and Christopher Roth "Can Cash Transfers Prevent Suicides? Experimental Evidence From Indonesia"(2016). SSRN working paper.

Christopher Roth "Conspicuous Consumption and Peer Effects: Evidence From a Randomized Field Experiment"(2015). SSRN working paper.

Work in Progress

Fehr, Ernst, Haushofer, Johannes, Roth, Christopher and Julien Senn "Do Voters Respond to Information? Evidence From a Natural Field Experiment."

Roth, Christopher and Johannes Wohlfart "Beliefs about Unemployment and the Formation of Economic Expectations"

Honors and Awards

2016	Royal Economic Society Junior Fellowship
2015	Marie Curie Fellowship
2014	Departmental Doctoral Scholarship, University of Oxford.
2013	The German Academic Exchange Service: Scholarship for Studies Abroad.
2012	Departmental Examiner's Prize for the Best Thesis, University of Warwick.
2012	Undergraduate Research Scholarship Scheme, University of Warwick.
2010-2014	The German National Merit Foundation Scholarship for undergraduate and graduate studies.

Grants

2016	Time sharing experiments for the social sciences (TESS): Special Competition for Young Investigators providing access to representative data (funded by the National Science Foundation) (with Alexis Grigorieff) Role: PI.
2016	Oxford Economics Papers Fund:; Role: PI.
2016	Qualtrics Behavioral Research Grant: "Institutions and Social Preferences"; Role: PI.
2015	Centre for Experimental and Social Sciences, Nuffield College Oxford: (with Alexis Grigorieff); Role: Co-PI.
2015	Oxford Economics Papers Fund: (with Alexis Grigorieff); Role: PI.
2013 - 2016	Various Travel Grants: George Webb-Medley Fund, Keble Association Fund, Faith-Ivens Franklin Travel Award, Keble Graduate Support Fund, various conference travel grants, RES conference travel grant, etc.

Last updated: March 2017

Johannes Wohlfart

March 2017

Personal Data

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Website:	https://sites.google.com/site/johanneswohlfartecon
Nationality:	German.

Education

2015- Dr rer pol (PhD) in Economics, **Goethe University Frankfurt**, Germany.
Thesis title: *Essays in Household Finance.*
Advisor: Prof Michael Haliassos.

2012-2014 MPhil Economics with Distinction, **University of Oxford**, United Kingdom.
Thesis: *Relative Concerns for Consumption at the Top: Evidence from the UK.*
Advisors: Prof Sir Anthony B. Atkinson and Dr Climent Quintana-Domeque.

2008-2012 BSc International Economics, **University of Tuebingen**, Germany.
2010-2011 Visiting Student, **University of Denver**, United States.

Fields

Primary	Household Finance, Political Economy, Behavioral Economics.
Secondary	Consumption and Saving, Applied Econometrics.

Publication

"Relative Concerns for Consumption at the Top: An Intertemporal Analysis for the UK" (with Climent Quintana-Domeque), *Journal of Economic Behavior and Organization*, Vol. 129, September 2016, pp. 172-194, link to the paper.

Working Papers

"Public Debt and the Demand for Government Spending and Taxation" (with Christopher Roth), March 2017, link to the paper.

"Experienced Inequality and Preferences for Redistribution" (with Christopher Roth), December 2016, link to the paper.

Research Assistance

2015-	Research Fellow, Chair of Prof Michael Haliassos, DFG Project "Implications of Financial Market Imperfections for Wealth and Debt Accumulation in the Household Sector", **Goethe University Frankfurt**.
2013	Research Intern, Department of Financial Stability, **Deutsche Bundesbank**, Frankfurt, Germany.
2011-2012	Student Research Assistant, Chair of Prof Martin Biewen, **University of Tuebingen**.

Teaching Experience

2015-	Bachelor and Master Theses in Household Finance, supervision, **Goethe University Frankfurt**.
2016	Seminar on Household Finance, undergraduate seminar, **Goethe University Frankfurt**.
2015	Seminar on Household Finance, undergraduate seminar, **Goethe University Frankfurt**.
2011	Quantitative Methods in Economics, undergraduate class, **University of Tuebingen**.
2010	Intermediate Microeconomics, undergraduate class, **University of Tuebingen**.

Presentations at Conferences and Seminars

2016	Brown Bag Seminar, ZEW Mannheim; Money and Macro Brown Bag Seminar, Goethe University Frankfurt (2 x); 10th Workshop on Political Economy, Ifo Institute, Dresden Branch; European Winter Meeting of the Econometric Society, Edinburgh.
2017	1st Joint Seminar by the GSEFM and the IPP, Riezlern; Spring Meeting of Young Economists, Halle (scheduled); Money and Macro Brown Bag Seminar, Goethe University Frankfurt (scheduled); Brown Bag Seminar, ZEW Mannheim (scheduled).

Other Professional Experience

2014-2015	Trainee, Monetary Policy Strategy division, **European Central Bank**, Frankfurt, Germany.
2011	Intern, Economic Research unit, **Allianz SE**, Frankfurt, Germany.
2009	Intern, **h&z Unternehmensberatung** (business consultancy), Munich, Germany.

Refereeing

Review of Economics of the Household.

Grants, Awards and Prices

2016	Forschungstopf: Grant for the project "Public Debt and the Demand for Government Spending and Taxation", Faculty of Economics and Business Administration, Goethe University Frankfurt.
2014	George-Webb-Medley Prize: Prize for Best Performances in the Final Examination of the MPhil Economics (2nd Place).
2012	KMPG Award: Prize for Bachelor Examination and Thesis (1st Place).
2010	MLP Award: Prize for Excellence in Bachelor Studies of Economics (1st Place).
2013 - 2014	German Academic Exchange Service: Scholarship for Graduate Studies Abroad.
2009 - 2014	German National Merit Foundation: Scholarship for Undergraduate and Graduate Studies.

Further Details

Software	Stata (proficient), LaTeX(proficient), EViews (intermediate), R (intermediate), Matlab (beginner).
Languages	German (native), English (fluent), Spanish (advanced).

References

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NBER Working Group
On Household Finance

Re: NBER Small Grant in Household Finance

17 March 2017

Dear Colleagues,

I write this letter in support of the application of my PhD student, Johannes Wohlfart, for financial support under the NBER Small Grant in Household Finance program.

Johannes came to Goethe University from Oxford, where he completed his MPhil under the supervision of Climent Quintana-Domeque and the broader intellectual influence of Tony Atkinson. He has been conducting dissertation research in Frankfurt for almost two years. Johannes has an interest in how information and experiences affect people's expectations, attitudes, beliefs, and preferences; and in how these translate into actions of economic relevance. He has been using observational data and creating experimental data to explore questions in household finance and political economy. He already has one publication in the *Journal of Economic Behavior and Organization*, based on early work he conducted in Oxford focusing on whether consumption of the rich provides a reference point for consumption of poorer segments of the population.

In one of his recent projects, he studies the role of own experiences with inequality in shaping one's preferences for redistribution. Specifically, he shows that people who have lived through times of high income inequality are less in favor of redistributive policies later in life. He strengthens his case by conducting an experiment to show that own experiences with distributions of income can act as a reference point in people's views on distributive justice. This paper is at the stage of journal submission.

The project for which Johannes is seeking support from the NBER program is a survey experiment that examines the model of the economy that people have in mind when forming their economic expectations. He expects to document that people hold biased beliefs about the aggregate unemployment rate, partially explained by rational inattention. He plans to test whether people update their inflation expectations when

they learn about the true unemployment rate. He also wants to build a macro-micro bridge and examine effects of macro expectations on people's perceived chance of job loss and their income prospects, utilizing the recent empirical findings of Guvenen, Yogo, and coauthors. This setup will allow him to study whether people extrapolate from aggregate statistics to their individual economic situation.

Johannes has already gained some experience in the type of data creation and analysis necessary for the proposed NBER project, as he has recently drafted a paper on biases in people's beliefs about government debt and on the effect of provision of information about government debt on political attitudes, based on a smaller sample. He is also involved in a multi-author project of mine on using survey data with information about social interactions in order to understand better the links between subjective expectations and housing behavior.

As you can see, Johannes is a very active and dedicated researcher. I am happy to report that he is also a truly delightful person with whom to interact and work. He is very perceptive, responsive, efficient and thorough, as well as imaginative. Being awarded the NBER grant will not only enable the research project but also provide him with encouragement for his further dissertation work and preparation for a high-end academic career, to which he is committed. I expect Johannes to go on the academic job market in the Winter of 2018-19.

I very much hope that he will qualify for the NBER award, and I recommend him to you very strongly.

Best regards,

