

## Joseph S. Vavra

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**Citizenship:** United States of America

**Gender:** Male

**Fields of Concentration:**

Macroeconomics and Monetary Economics  
Labor  
Computational Economics

**Desired Teaching:**

Macroeconomics (Graduate and Undergraduate)  
Computational Economics

**Comprehensive Examinations Completed:**

May 2007 (Written) Macroeconomic Theory (*with distinction*) and Microeconomic Theory  
May 2008 (Oral) Macroeconomics (*with distinction*) and Labor

**Dissertation Title:**

Essays on the Aggregate Implications of Heterogeneity

**Committee:**

Professor Eduardo Engel  
Professor Giuseppe Moscarini  
Professor Anthony Smith

**Expected Completion Date:** May 2012

**Degrees:**

Ph.D., Economics, Yale University, Expected May 2012  
M.Phil., Economics, Yale University, Expected May 2012  
M.A., Economics, Yale University, May 2008  
B.A. (*Magna Cum Laude*), Math, Mathematical Economic Analysis, Statistics, Rice University, 2006

**Fellowships, Honors and Awards:**

Computing in Economics and Finance Conference (San Francisco), Best Student Paper Prize, 2011  
Carl Arvid Anderson Fellowship, Cowles Foundation, Yale University, 2010-2011  
Dissertation Fellowship, Yale University, 2010-2011  
Doctoral Fellowship, Yale University, 2006-2010

Summer Fellowship, Yale University, 2007, 2008  
NSF Fellowship Competition Honorable Mention, 2006  
Phi Beta Kappa Honor Society, 2006  
Omicron Delta Epsilon, Economics Honor Society, 2006  
Academic Honors, Rice University, 2002-2006  
Engineering Alumni Outstanding Senior Statistics Major, Rice University, 2006  
Engineering Alumni Outstanding Junior Statistics Major, Rice University, 2005  
National Merit Scholar, Rice University, 2002

**Conference/Workshop Presentations:**

2011: NBER Summer Institute, NY Fed Monetary Workshop, Stanford Institute for Theoretical Economics, Society for Economic Dynamics, Society for Computational Economics, Cologne  
Macro Workshop, Midwest Macro

**Teaching Experience:**

Teaching Fellow: Econ 116: Introductory Macroeconomics (Undergrad), Fall 2011  
Guest Lecturer: Econ 525: Advanced Macroeconomics (Graduate 2nd Year), Fall 2011 and 2010  
Teaching Fellow: Econ 122: Intermediate Macroeconomics (Undergrad), Spring 2011  
Teaching Fellow: Econ 122: Intermediate Macroeconomics (Undergrad), Spring 2010  
Teaching Fellow: Econ 511: General Economic Theory: Macroeconomics (Graduate), Spring 2009  
Teaching Fellow: Econ 154: Intermediate Macroeconomics (Undergrad), Fall 2008

**Work Experience:**

Research Assistant, Professor Eduardo Engel, March 2009 – Present.  
Research Assistant, Professor Aleh Tsyvinski, February 2009 – February 2010  
Research Assistant, Professor Tony Smith, Summer 2008  
Grader, Graduate Macroeconomics, Yale University, Fall and Spring 2007. Spring 2008  
Research Assistant, Professor Bjoern Bruggemann, Yale University, Summer 2007  
Research Assistant, Professor John Diamond, Rice University, Spring 2005 – Summer 2006  
Research Assistant, Professor George Zodrow, Rice University, Fall 2004 – Spring 2006  
Intern, White House Council of Economic Advisers, Summer 2005

**Working Papers:**

“Inflation Dynamics and Time-Varying Uncertainty: New Evidence and an Ss Interpretation”  
“Consumption Dynamics During the Great Recession” with David Berger  
“Dynamics of the U.S. Price Distribution,” with David Berger  
“The Empirical Price Duration Distribution and Monetary Non-Neutrality”

**Work In Progress:**

“Customer Costs of Price Changes”

**References:**

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## **Dissertation Title: Essays on the Aggregate Implications of Heterogeneity**

In recent years there has been an explosion of micro data that can be used to inform models of the macro economy. A common feature of these expansive data sets is that there is vast heterogeneity at the micro level. In my dissertation, I contribute to the literature examining the macroeconomic implications of this heterogeneity.

My dissertation focuses on the micro data that underlies the Consumer Price Index. I use this micro price data to answer questions about firm price-setting and the effects of monetary policy: Does the effectiveness of monetary policy vary across time? What can micro price data tell us about the nature of business cycle shocks? Is the frequency of price adjustment at the micro level consistent with substantial stickiness at the macro level? What are the sources of nominal price rigidity for individual items?

**Chapter 1 (Job Market Paper):** Is monetary policy less effective during recessions? In this paper, I investigate whether the transmission of monetary policy shocks to the real economy varies across time in micro founded Ss pricing models. I find that standard Ss models do not imply time-varying real effects of monetary policy, but these models have counterfactual implications for the dynamics of the distribution of price changes in BLS CPI micro data. In particular, Ss models with only first moment shocks imply a negative correlation between the average frequency of adjustment and the dispersion of price changes, and they imply that the dispersion of price changes is procyclical.

These implications are at odds with new evidence from the CPI micro data. I show that in the data the cross-sectional dispersion of price changes is strongly countercyclical, and there is a strong positive correlation between the dispersion of price changes and the frequency of adjustment.

I then introduce counter-cyclical "uncertainty shocks" to match these micro price facts and show that the price level becomes more flexible in times of high uncertainty, which in turn decreases the response of real output to nominal shocks. The estimated response of real output to a nominal shock in October of 2001, a highly uncertain time, is one fourth of the response in September of 1995, a time of low uncertainty. This increase in price flexibility during times of high uncertainty arises because the increase in volatility induces more firms to adjust prices and by larger amounts.

U.S. time-series evidence provides additional support for my model. I show that during times of high uncertainty, import prices react much more strongly to changes in nominal exchange rates. Exchange rate pass-through roughly doubles when moving from low uncertainty to high uncertainty periods. In addition, the price level responds more strongly to monetary policy shocks identified using a regime-specific FAVAR during such periods of uncertainty.

**Chapter 2 (In progress):** Why don't firms change prices more often? There is ample evidence that there are substantial fixed costs to adjusting prices. However, these typically include customer communication and negotiation costs, information acquisition costs and costs associated with internal firm organization rather than literal menu costs. Nevertheless, it is common to model all these costs as a "black-box" menu cost of price adjustment. To what extent does explicitly modeling the important sources of price rigidity matter for micro price setting behavior and for aggregate inflation dynamics?

In ongoing work, I provide evidence that individual items in the CPI are more likely to change price again if they changed price in the previous month than if they did not change price in the previous month. That is, the duration hazard of price adjustment is downward sloping. This

calculation is performed at the individual item level, so it is not subject to the well-known survivor bias, and it holds after excluding temporary sales. Motivated by survey evidence, I build a model of rigid prices where firms face a customer negotiation and communication cost changing price. I assume that the communication cost of changing to a new price grows with previous sales at the old price: the more customers that have purchased at the old price, the higher is the customer cost of changing prices. This model matches several micro facts that standard menu cost models miss: it implies a downward sloping hazard, small price changes, and with a simple extension, temporary sales.

Furthermore, my customer cost model implies greater real effects of monetary policy than standard menu cost models. The cumulative output impulse response to a nominal shock in the customer cost model is approximately three times larger than that in a menu cost model. This is because a downward sloping adjustment hazard means that most price changes in the economy are prices that have changed recently and already adjusted to old nominal shocks. These price changes thus contribute less to aggregate price flexibility. To provide intuition, I show that in a broad class of time-dependent models, a downward sloping hazard amplifies the average duration of prices for a given frequency of adjustment, which increases monetary non-neutrality.

**Additional Work: Consumption Dynamics During the Great Recession. (With David Berger)**

Business cycle models typically abstract from the distinction between durable and non-durable consumption. However, in the 2007 recession, durable expenditures fell by three times as much as GDP while non-durable expenditures fell by slightly less than GDP. We show that simple extensions of business cycle models (both with and without complete markets) that assume frictionless durable adjustment are no more successful at matching the behavior of consumption, as they imply a decline in durable expenditures that is too large and a decline in non-durable expenditures that is too small, relative to the recession.

Motivated by micro evidence, we introduce fixed costs of durable adjustment into the incomplete markets model and show that the model is able to match the behavior of consumption in the most recent recession. Fixed costs dampen the volatility of durable expenditures and amplify the volatility of non-durable expenditures, as a large fraction of households hold wealth in illiquid durables. In addition, the model implies non-linear dynamics that are in line with time-series data: durable expenditures respond more strongly to shocks during booms than during recessions. Finally, we provide additional evidence that supports our model: using micro panel data we show that households with a large fraction of wealth in durables are less able to insure against income shocks.