

Discussion of “Identifying Ambiguity Shocks in
Business Cycle Models Using Survey Data”
by Bhandari, Brovička, and Ho

Eric Sims

University of Notre Dame

June 2017

Very Brief Overview

- ▶ This is a very interesting and well-done paper that combines subjective survey expectations data with a structural macroeconomic model to study the effects of ambiguity shocks
- ▶ Ambiguity shock in this model: time-variation in worst-case beliefs on which decisions are made. “Pessimism” = how concerned agents are about model mis-specification
- ▶ Empirically exploit “wedges” between Michigan Survey data and SPF data on inflation, unemployment, and output to identifying time-varying ambiguity concerns
- ▶ Document macroeconomic effects of common variation in these wedges
- ▶ Build a NK model with a search-and-matching frictional labor market with robust preferences with time-variation in concern for worst-case model

My Discussion

- ▶ I like the paper quite a bit
- ▶ My comments are going to focus mostly on the survey data wedges, what we learn from them, and how the model relates to the data
- ▶ In particular, I will focus on the inflation expectations series
 - ▶ Downside: their wedge factor (common factor of the three belief wedges) explains least of the inflation wedge – equivalently, the other two wedges which I'm not focusing on are more important for factor shock
 - ▶ Why do it this way? Because it's easy – Michigan Survey and SPF give the same information. To get unemployment or GDP forecast wedges, need to work harder (and make stronger assumptions)
- ▶ Key questions:
 1. What can we learn from the survey data wedges?
 2. How important are ambiguity shocks (as specified and identified in this paper) for business cycles?

Belief Wedges

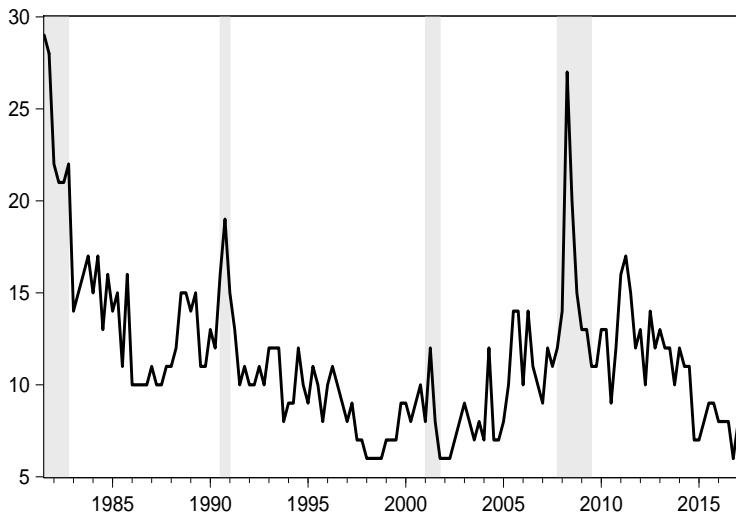
- ▶ The belief wedges are defined as the average forecast in the Michigan survey minus the average forecast in the SPF
- ▶ For inflation expectations, this is easy to construct – one year ahead point estimate of inflation in the Michigan Survey minus one year ahead forecast for the CPI in the SPF
- ▶ Idea is that the SPF forecasts are “rational” and Michigan forecasts are subjective
- ▶ Difference is the degree of pessimism, or concern for worst case model. Basic argument:
 - ▶ Positive on average
 - ▶ Important time-variation
- ▶ Again, don't have point estimates for unemployment forecasts or GDP growth forecasts in the Michigan survey. Have to make strong assumptions

Some Facts About the Michigan Inflation Expectations Data

1. There are a good number of “crazy” right-tail answers
 - ▶ The number of right-tail answers spikes at beginning of recessions
2. A lot of disagreement
 - ▶ Disagreement is clearly countercyclical
3. Median always significantly below mean
4. Distribution of answers clearly not normal
 - ▶ Excess kurtosis and skewness in almost all of the sample

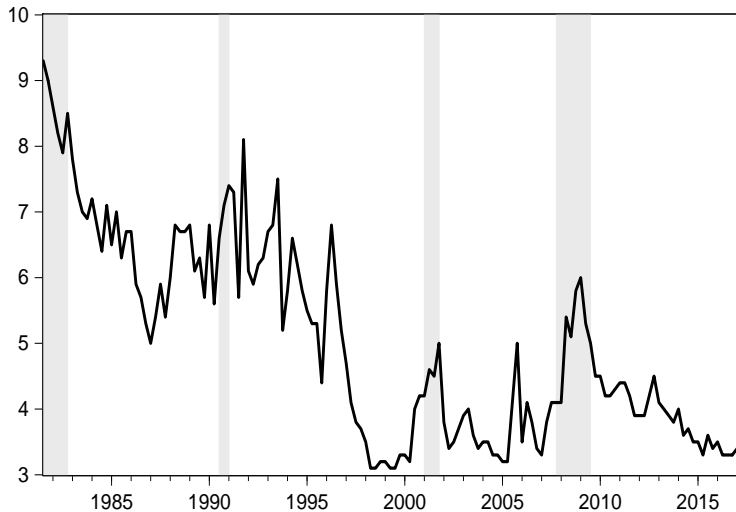
Crazy Answers

Percent Saying $\geq 10\%$ Inflation

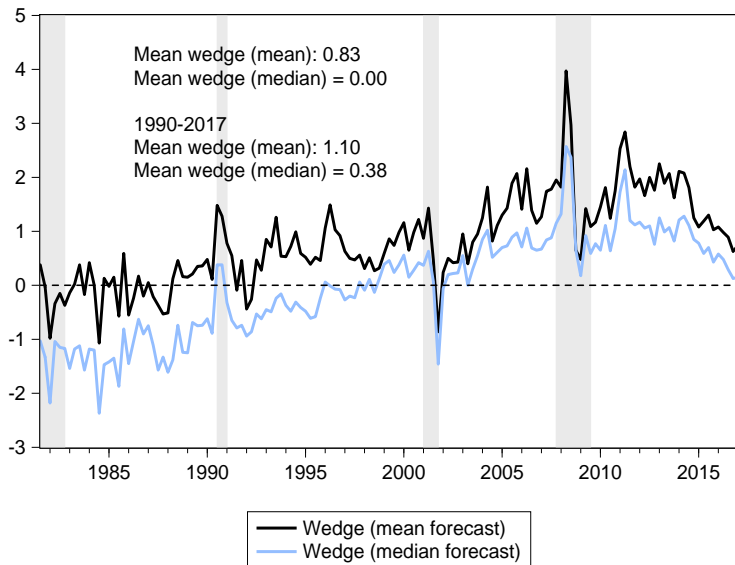


Dispersion

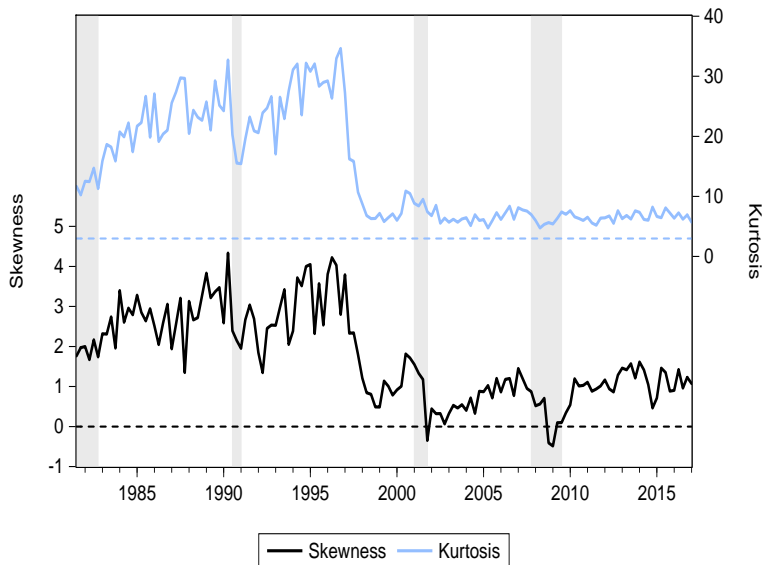
Dispersion of Michigan Inflation Forecasts



Inflation Wedge



Higher Moments



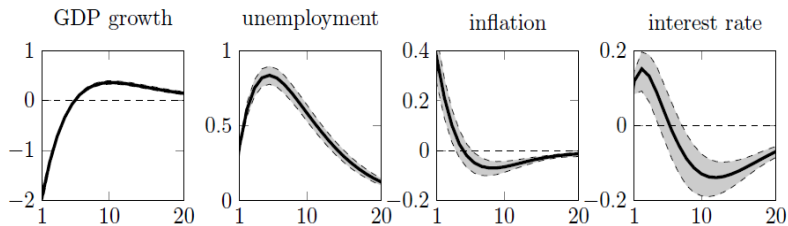
Observations

- ▶ Mean expectations are biased relative to SPF forecasts, but not so for median (crude way to eliminate crazy answers)
 - ▶ Of course, this masks a trend – wedge was negative early in sample, positive later in sample
- ▶ Wouldn't be so dismissive of learning: wedge tends to be negative in high inflation period, and positive in low inflation period
 - ▶ Suggestive of sluggish adjustment of expectations to macroeconomic regime
- ▶ Heterogeneity is important:
 - ▶ Disagreement always positive, countercyclical, higher in a high inflation regime
- ▶ During recessions, some people clearly afraid of very high inflation
- ▶ Interesting behavior of higher moments, with a clear break around 1998. Suggests approximation of normal distribution for unemployment expectations could be problematic

Model

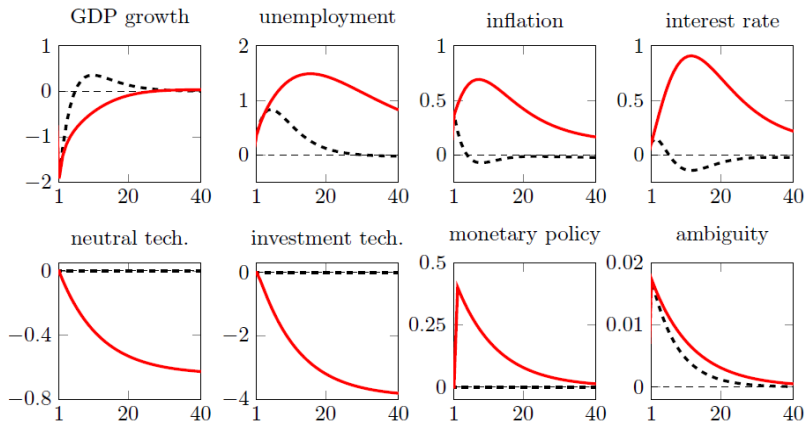
- ▶ Model has time-varying concerns for model mis-specification, captured by exogenous variable θ_t
- ▶ Ends up distorting mean value of shocks. Cool interaction between θ_t and continuation utility value – shocks which impact the continuation utility more strongly end up more distorted
- ▶ Conduct a variance decomposition and impulse response analysis to look at how shocks to θ_t , identified from belief wedges in data, affect macro variables
- ▶ These shocks are contractionary, and particularly so for labor market variables

IRFs



- ▶ Shock is contractionary for output and unemployment, but it is inflationary
- ▶ In other words, looks like a negative supply shock

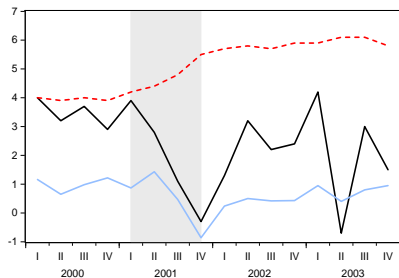
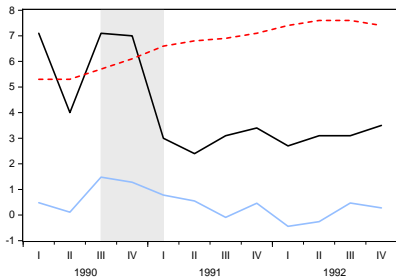
Mechanism



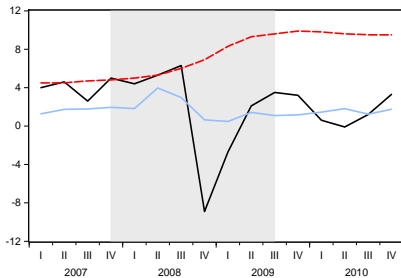
- ▶ What is generating inflationary effect of shock is expectation of low expected future productivity (both neutral and IST)

How Important are These Shocks for the Business Cycle?

- ▶ In the data (1981-2017), inflation (CPI) and unemployment are uncorrelated. Since 1985, correlation is -0.15 (reasonably stable since)
- ▶ In other words, looks like “demand shocks” are driving short run movements in output
- ▶ But in model, ambiguity shock moves inflation and unemployment in same direction
- ▶ Since this is at odds with unconditional co-movement, ambiguity shock can't be that important
- ▶ Post early 1980s recessions are deflationary, but inflationary pessimism at beginning of recessions



— Inflation
— Inflation Wedge
- - - Unemployment



Something to Think About

- ▶ Is there a way to get the ambiguity shock in the model to be deflationary, while at the same time the inflation wedge goes up?
- ▶ I don't know
- ▶ Model doesn't have strong structural demand shocks (e.g. preference shock or marginal efficiency of investment shock, as opposed to IST)
- ▶ What would happen if you augmented the model with more demand shocks?