Discussion of:
Local Effects of Monetary Policy

BEJM/FRBSF

Conference on Empirical Macroeconomics Using Geographical Data
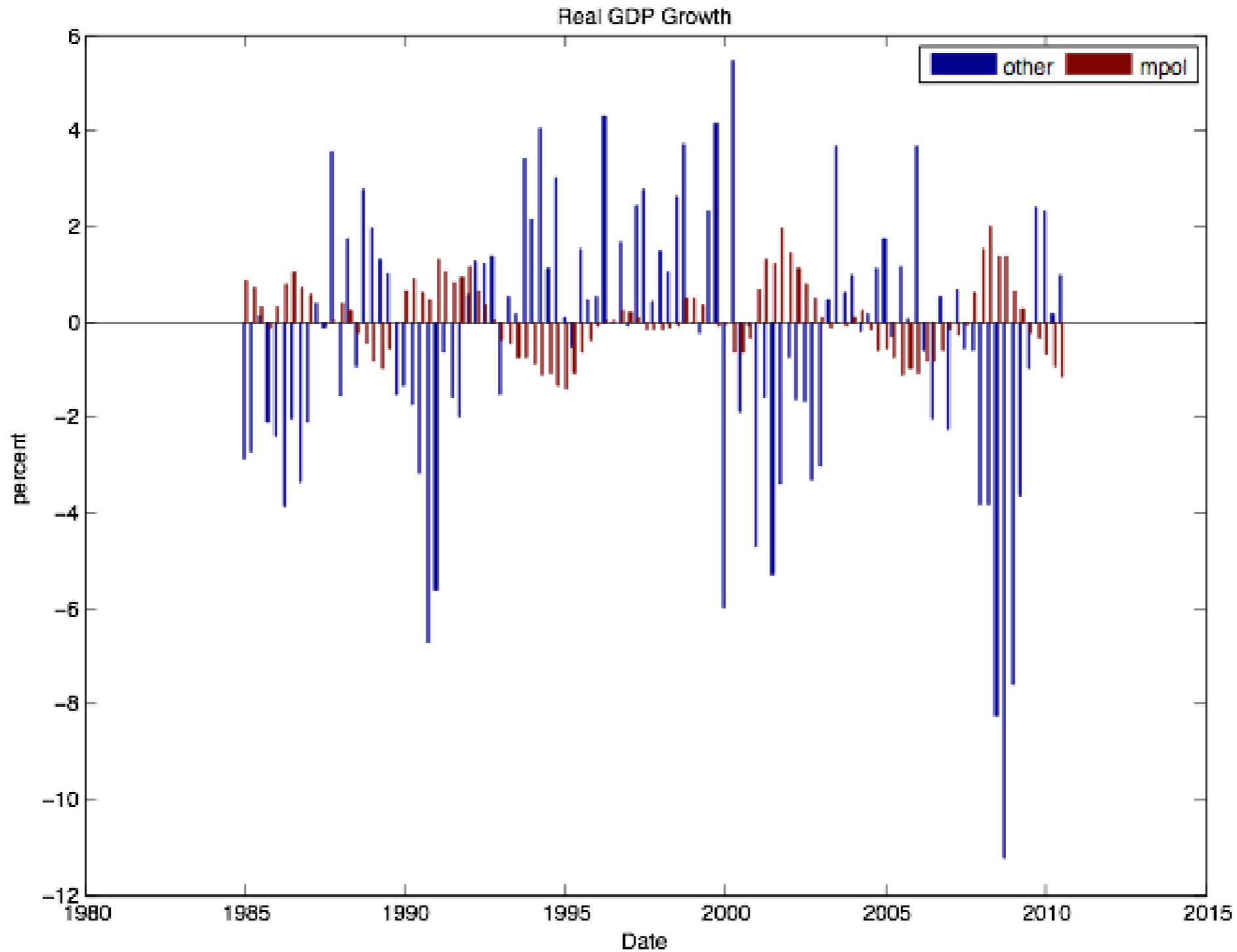
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What Francis, Owyang, and Sekhposyan do

- Existing evidence suggest that regional responses to monetary policy shocks differ -- primarily at the state and BEA region level

- FOS use MSA-level data in a Bayesian VAR framework to re-examine the issue. This allows them to estimate large VAR systems.

- Given estimated across-MSA impulse responses to monetary policy shocks, FOS look for local factors that account for the asymmetric responses.

- Key factors appear to be population density, government share of local employment, unionization rate, small business lending, etc.
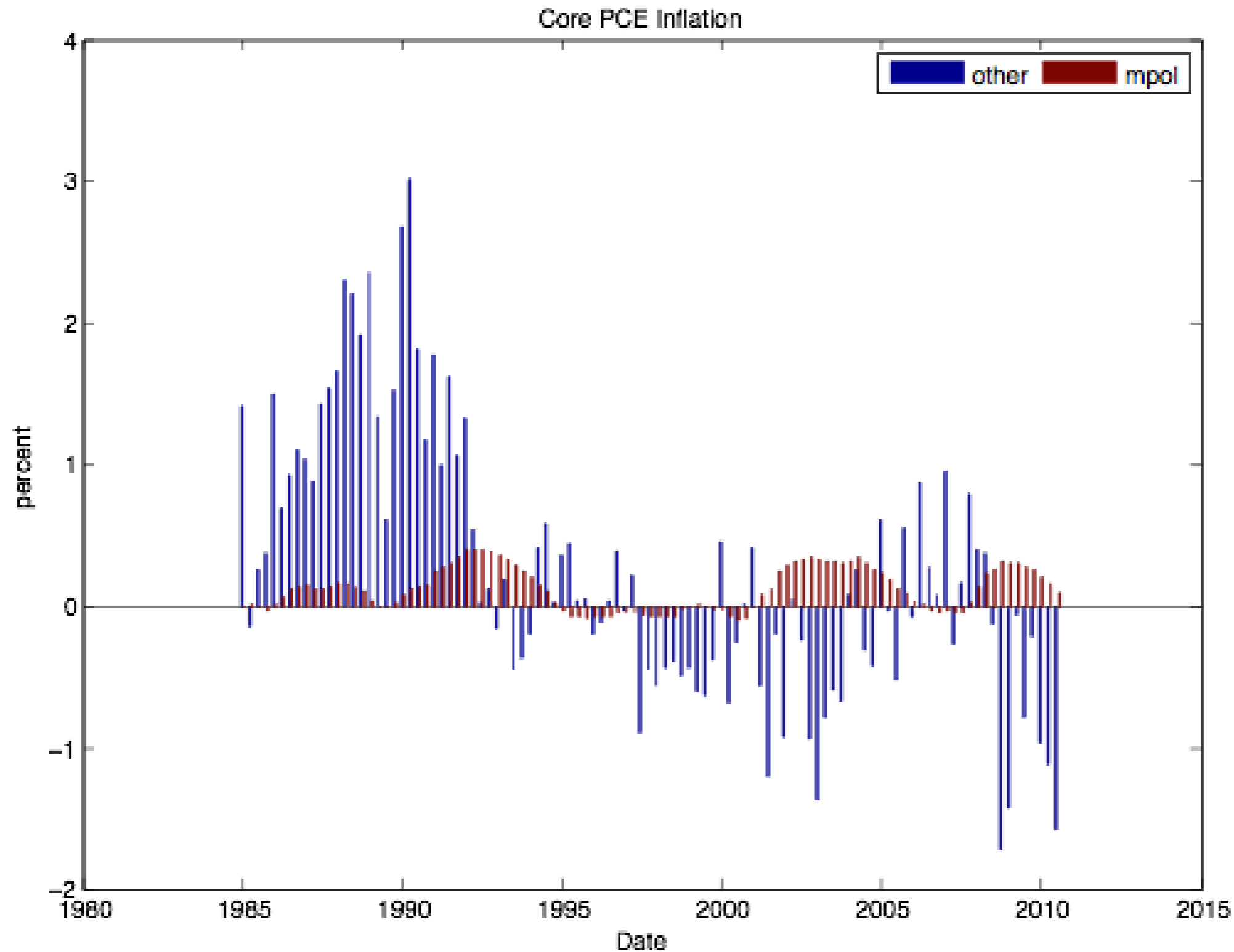
How important are monetary policy shocks for business cycle dynamics?

- At the aggregate level, we can use a standard structural model to tease out the contribution of monetary policy shocks

- This example uses a variant of the model in Del Negro, Schorfheide, Smets, and Wouters (2007)

  - New Keynesian DSGE model with sticky wages, sticky prices, investment adjustment costs, and habit formation in consumption

  - Has seven shocks: 2 to technology, 2 to preferences, monetary policy, price markup, and government spending

  - Model is competitive forecaster compared to VARs and simple time-series models (see Schorfheide, Sill, and Kryshko 2010)

NKDSGE shock decomposition: output growth
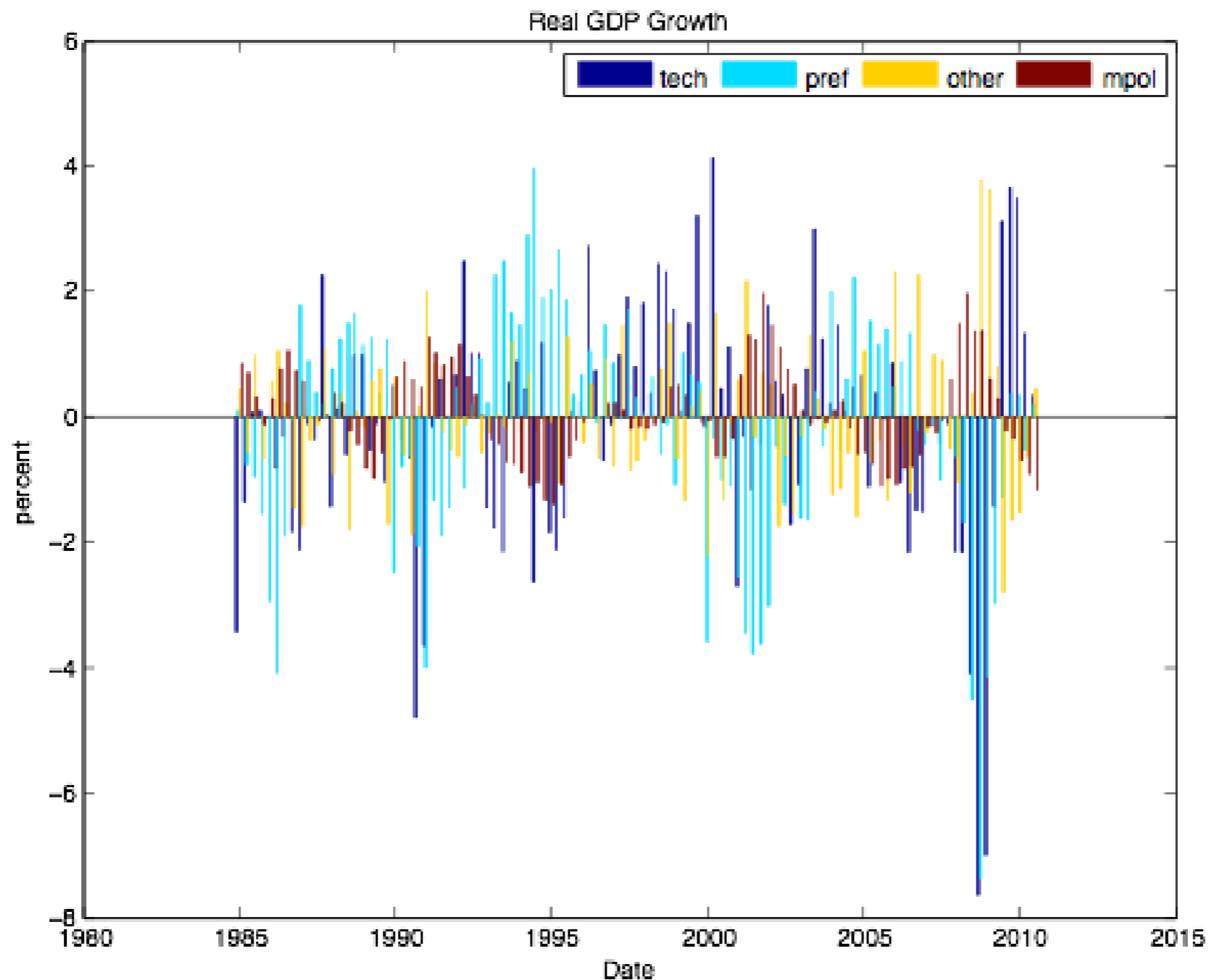

Real GDP Growth

NKDSGE shock decomposition: inflation

Tentative conclusion at the aggregate level

- Monetary policy shocks appear quantitatively significant, though perhaps not the single most important factor driving aggregate fluctuations

Real GDP Growth

What's the evidence on the importance of monetary policy shocks at the MSA level?

- Carlino, Defina, Sill (2001) use a structural VAR framework to examine employment fluctuations in 5 MSAs -- Chicago, LA, Tuscon, San Francisco, Oklahoma City.

Table 3: Industry Contribution to MSA Forecast Error Variance
(Fraction of total MSA error variance at indicated horizon)

Source of Variance	Chicago 1 month	Chicago 12 month	Chicago 36 month	Los Angeles 1 month	Los Angeles 12 month	Los Angeles 36 month	Oklahoma City 1 month	Oklahoma City 12 month	Oklahoma City 36 month	San Francisco 1 month	San Francisco 12 month	San Francisco 36 month	Tucson 1 month	Tucson 12 month	Tucson 36 month
Government	0.189	0.180	0.163	0.081	0.056	0.056	0.172	0.150	0.149	0.103	0.105	0.104	0.398	0.336	0.323
Construction	0.050	0.059	0.073	0.071	0.070	0.079	0.045	0.058	0.065	0.174	0.146	0.146	0.146	0.171	0.168
Manufacturing	0.377	0.360	0.326	0.332	0.377	0.345	0.244	0.216	0.210	0.203	0.188	0.184	0.184	0.178	0.173
Trans., Comm., and Utilities	0.075	0.069	0.075	0.049	0.055	0.059	0.066	0.074	0.076	0.120	0.117	0.116	0.059	0.062	0.063
Trade	0.101	0.084	0.079	0.096	0.076	0.083	0.143	0.140	0.140	0.094	0.104	0.103	0.110	0.112	0.108
FIRE	0.016	0.036	0.064	0.026	0.054	0.059	0.038	0.048	0.048	0.016	0.022	0.026	0.014	0.024	0.024
Services	0.183	0.138	0.130	0.295	0.211	0.189	0.286	0.249	0.243	0.232	0.214	0.209	0.083	0.078	0.079
3-month T-bill	0.010	0.065	0.079	0.006	0.047	0.066	0	0.025	0.026	0.011	0.038	0.043	0.005	0.015	0.019
Productivity Growth	0	0.010	0.011	0.043	0.054	0.064	0.006	0.040	0.043	0.048	0.067	0.068	0.003	0.025	0.044

MSA-level evidence continued

- Coulson (1999) uses a shift-share framework to motivate identification in a structural VAR on employment growth in 4 MSAs (Baltimore, Houston, Denver, New York).

- Uses 1-digit SIC employment growth over a post-war sample that ends in 1996

- Key restriction is that each sector's employment growth to reacts identically to shocks in other sectors.

- He finds that sectoral shocks account for 67 to 97 percent of 36-month-horizon forecast error decomposition. Aggregate shocks play little role in this analysis as well.

This paper ...

- Use a sample of 105 MSAs that together account for 63% of aggregate nonfarm employment

- Richer specification than previous work: Bayesian methods allow them to estimate large structural VARs

- VAR contains MSA-level employment, GDP, core CPI, index of leading indicators, federal funds rate, monetary variables

- Identification: local shocks contemporaneously affect region of origin, aggregate shocks affect locality with on-period lag. Restrictions within the aggregate block are recursive
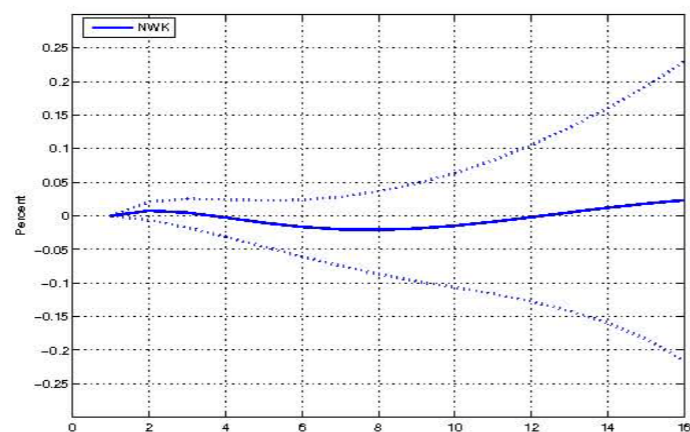
Monetary policy shocks at the MSA level

- Do MSAs respond differently to monetary policy shocks? Group MSAs into six clusters using k-means test. Modal responses vary across clusters, but probability coverage intervals are large.

- Monetary policy shocks have transitory effects on employment levels. Broadly speaking, the impulse responses to shocks are similar with a peak decline typically coming around 8 quarters from the time of the shock

- Magnitude of responses and persistence vary to some extent (though hard to generalize when taking parameter uncertainty into account).

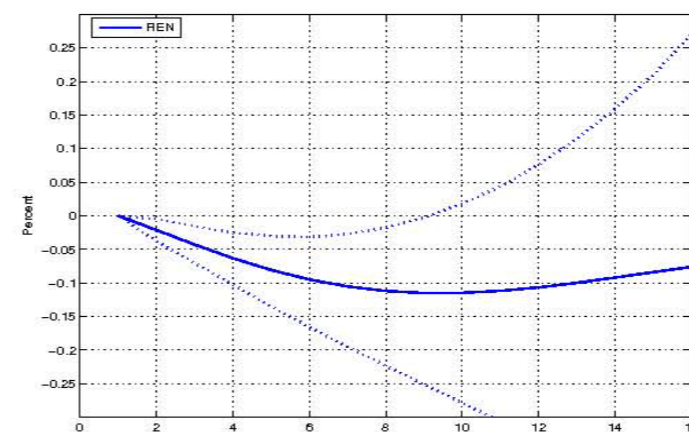- Given that MSA's respond differently to shocks, what accounts for it?

Explaining across-MSA differences

- FOS try to explain differences in modal responses using MSA-level data by regressing characteristics of modal responses on local characteristics

- The representative impulse responses in Figure 4 suggest a significant degree of parameter uncertainty in the SVAR monetary shock impulse responses
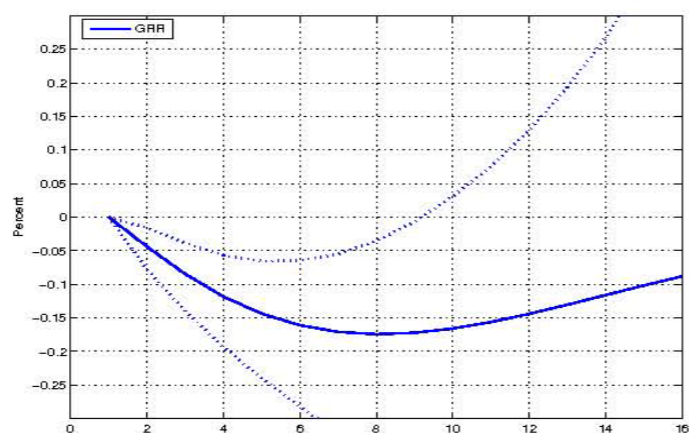
Figure 4: **Employment response to monetary shock - representative cities**
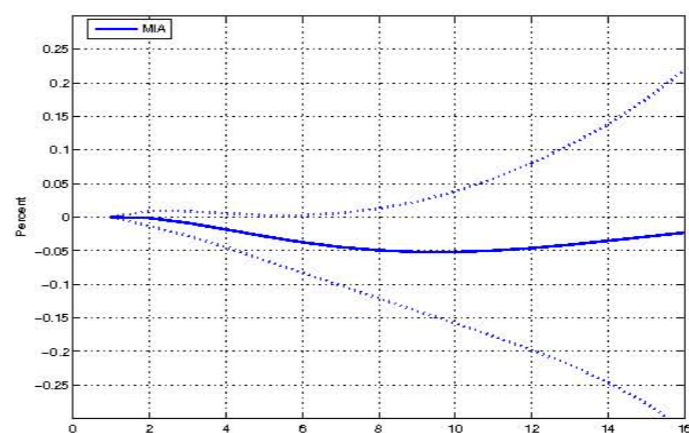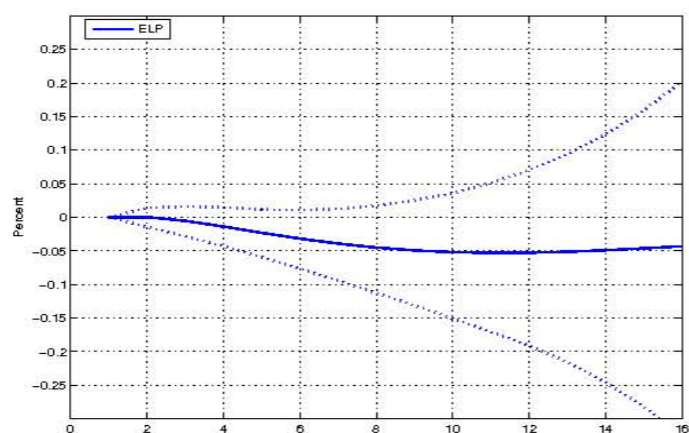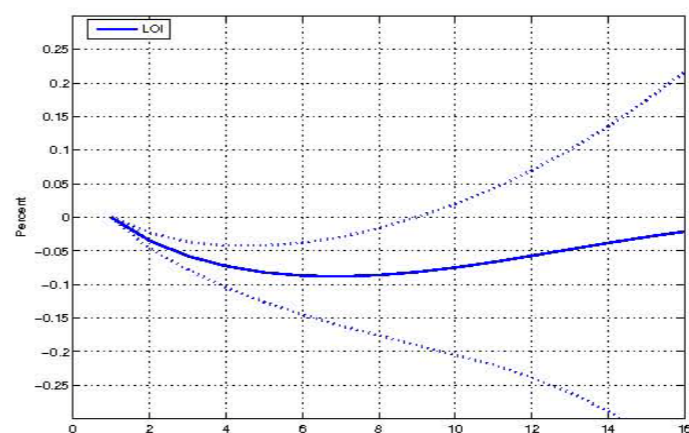

(a) Newark

(b) Reno

(c) Gary

(d) Miami

(e) El Paso

(f) Louisville

Notes: Modal impulse response and 16th and 84th percentiles of the impulse response function distributions.

What about impulse response uncertainty?

- Take the *jth* draw from the SVAR posterior and calculate *i =1 to #MSAs* impulse responses -- store the impulse response characteristic in vector [y(j)]

- Conduct the second stage analysis to get a posterior [B(j)] of regression coefficients that is in turn conditioned on the *jth* draw from the SVAR posterior.

- Repeat: Compute the average across *j* modes, and the average of 25th and 75th quantiles across the *j* posteriors for B, same for other stats of interest.

- This could give a sense of how parameter uncertainty in the SVAR matters for the second stage results --- but maybe it takes a really long time? Could then restrict the number of covariates based on what you found for the modal responses (not so Bayesian though since you use the data to inform priors).

What accounts for asymmetric responses?

- The most prominent factors (based on top 3 inclusion probabilities) depend a bit on the metric:

  - For maximum response, its population density (-), government employment (-), and small business loans (+)

  - For total cost of business cycle, its population density (-), government (-), small business loans (+)

  - For impact response, population density (-), government (-), fraction owner occupied housing (+)

  - For long-horizon response: population density (-), services employment (+), establishment size (-)

Population density seems quite important

- Higher population density is associated with lower cost of business cycles, lower maximal response to monetary policy shock, and lower long-run response to monetary shock

- Authors don't really give us a story here. Allude to a propagation channel -- not sure what that means

- From the NKDSGE perspective, one could postulate that more dense regions have fewer (lower) frictions --- less wage and price rigidity

- Evidence?

Price and wage rigidity across MSAs

- Powers & Powers (2001) *Journal of Industrial Organization*, find that "More concentrated markets, larger firm size, and thinner product markets lead to infrequent and large price changes." (They used data on lettuce prices across grocery stores across cities ....)

- It seems plausible that denser areas might have thicker markets, improved search and matching, and more flexible wages.

  - Bleakley and Lin (2007) find that workers change occupation and industry *less* in more densely populated areas, after controlling for demographic factors.

  - Suggests that measured wages might be less flexible in high-density areas. It would be nice to see more work on this.

To sum up

- The paper is an ambitious merging of structural VAR and Bayesian methods that investigates the implications of monetary policy shocks across cities.

- It will help to focus a bit more on the findings and implications from the second stage regressions. How robust are the conclusions? There appears to be some interesting stuff there.

- Technology and/or other demand shocks seem just as important, if not more so, for local fluctuations. It would be nice to learn about asymmetries across MSAs along that dimension as well.