Stock Market Dispersion and Long-Term Unemployment

Jinzhu Chen

Prakash Kannan

Prakash Loungani

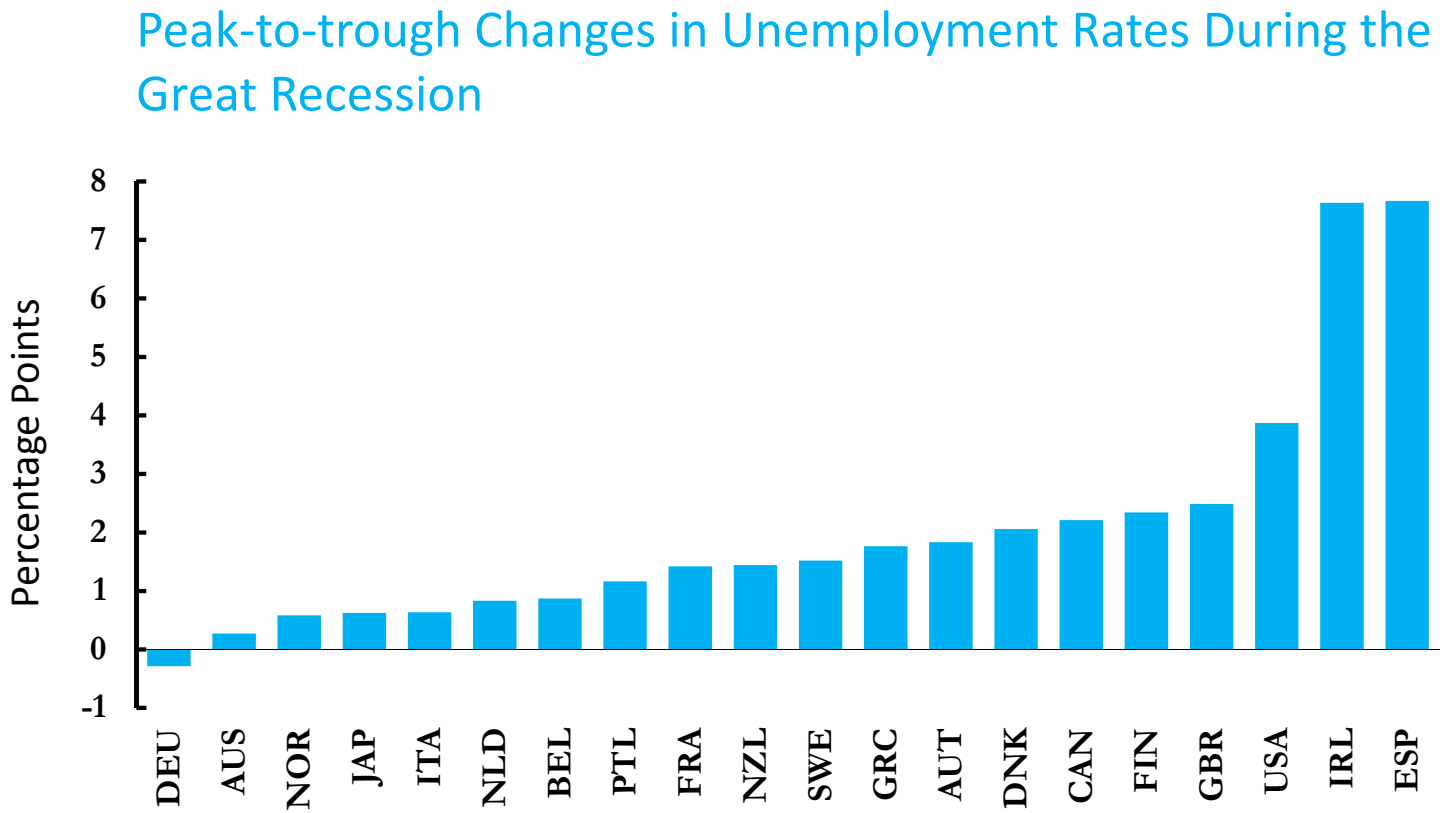
and

Bharat Trehan

October 22, 2010

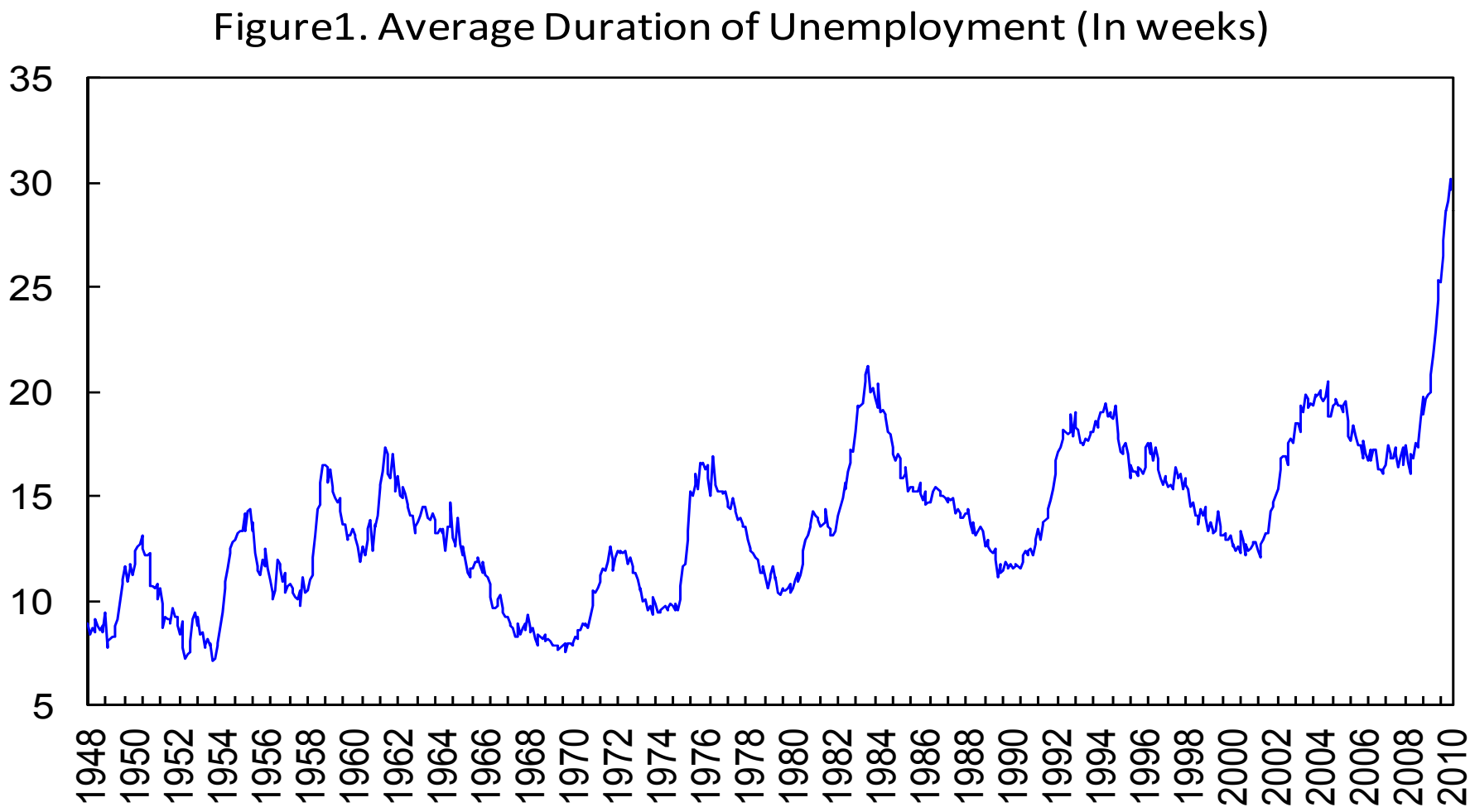
Prepared for an IMF workshop on "The Unemployment Crisis: Causes, Costs and Cures"

Cumulative increase in unemployment during the Great Recession was particularly high in the U.S.

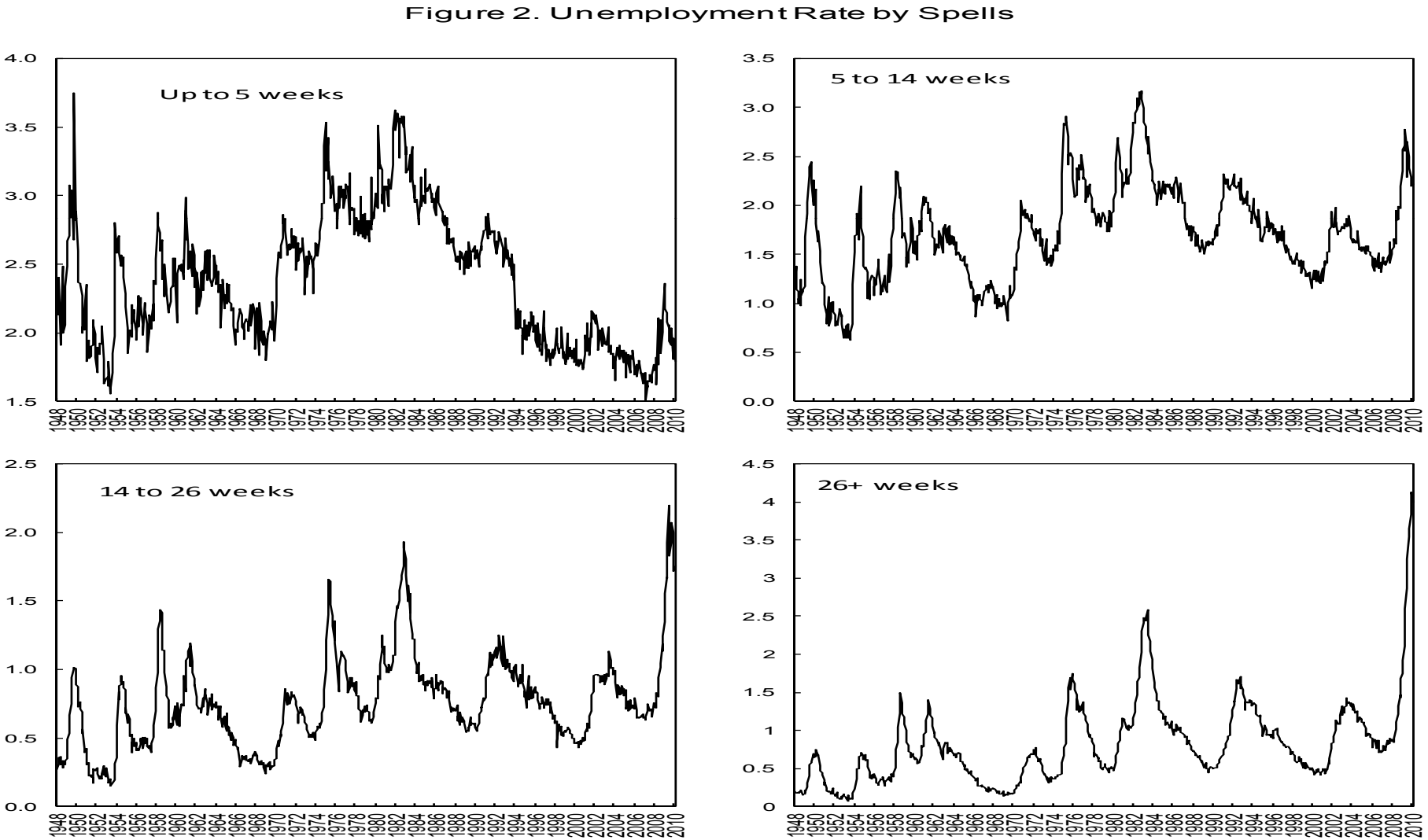


Do you want jobs with that recovery?

More worryingly, the average duration of U.S. unemployment has inched up …



… reflecting increases in long-duration unemployment spells



Can the rise in U.S. unemployment duration be explained by the changing intensity of sectoral shocks?

- Difficult identification question.

- One possible measure of sectoral shocks: **dispersion in industry stock returns** (Loungani, Rush and Tave, *JME* 90, and Brainard and Cutler, *QJE* 93)

- Motivated by Fischer Black (1987)

  "The sector-by-sector behavior of stocks is useful in predicting sector by-sector changes in output, profits, or investment.

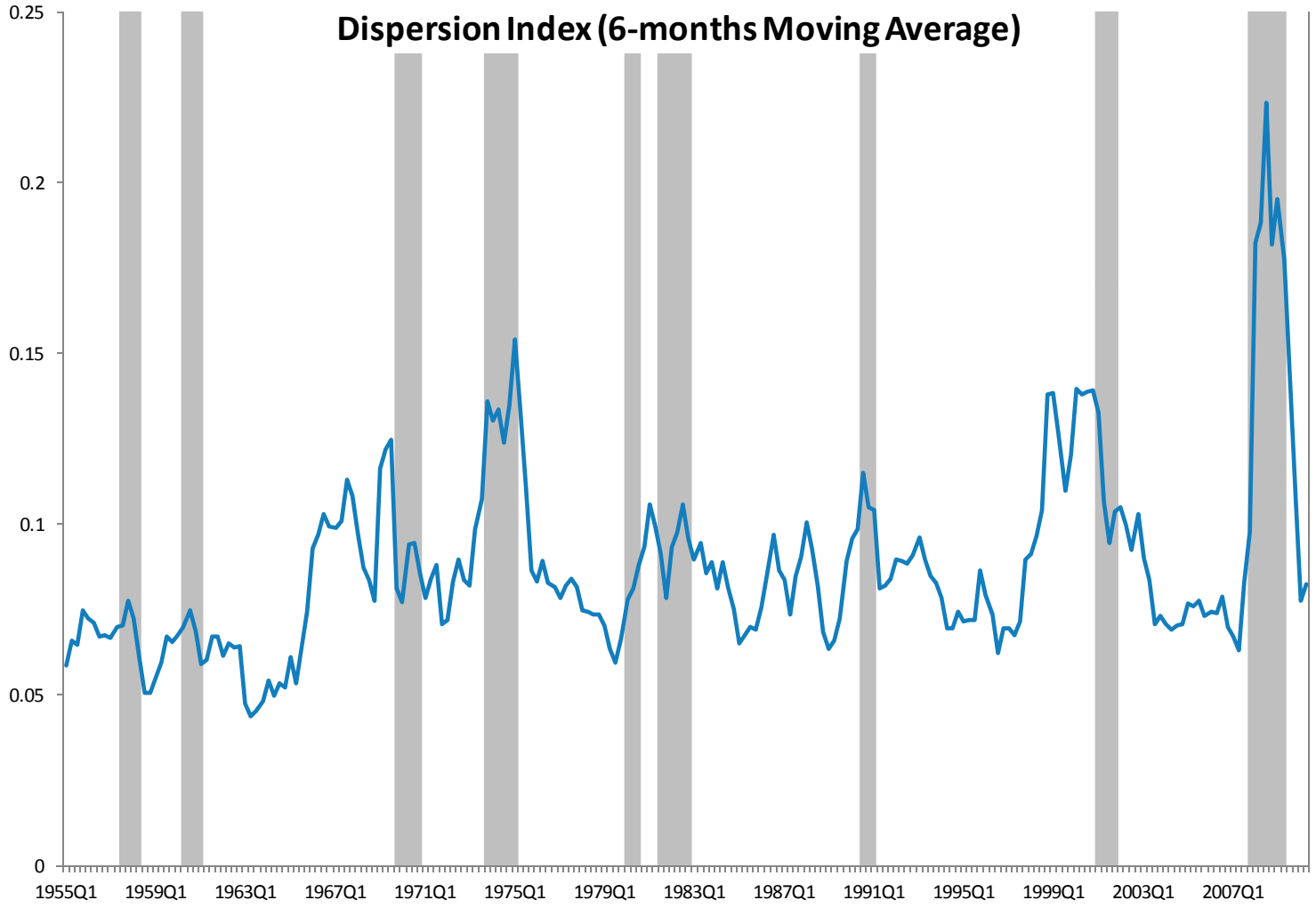
  When stocks in a given sector go up, more often than not that sector will show a rise in sales, earnings, and outlays for plant and equipment ...

  We could use the behavior of individual sectors of the stock market to predict unemployment.

  If my theory is correct, large moves in opposite directions in different sectors should be followed, normally, by an increase in unemployment."

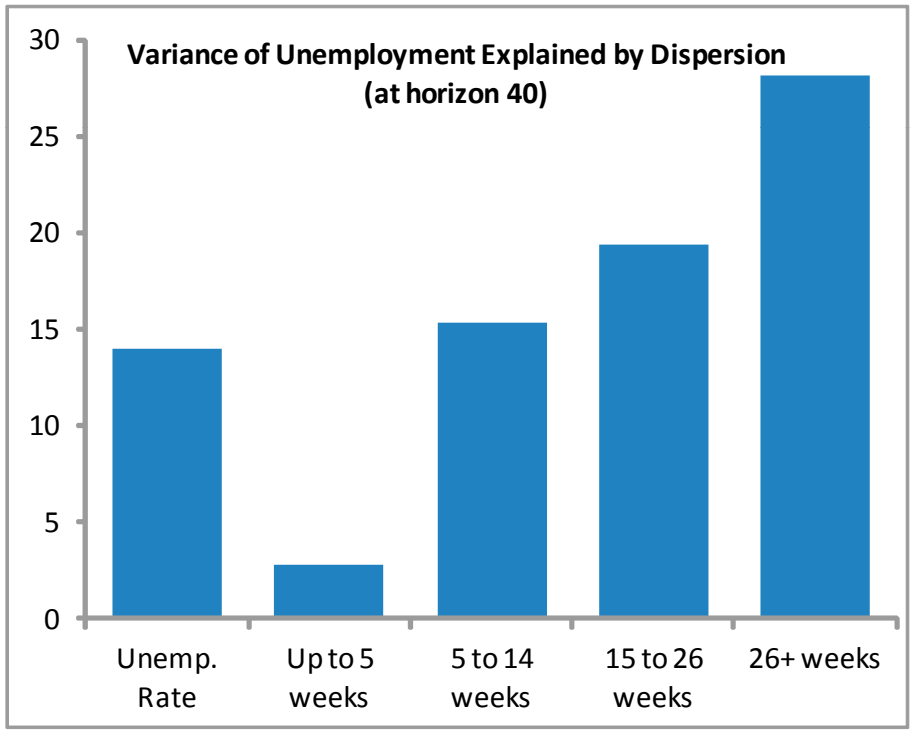
$$Dispersion_t = \left[\sum_{i=1}^{n} W_i \, (R_{it} - R_t)^2 \right]^{1/2}$$

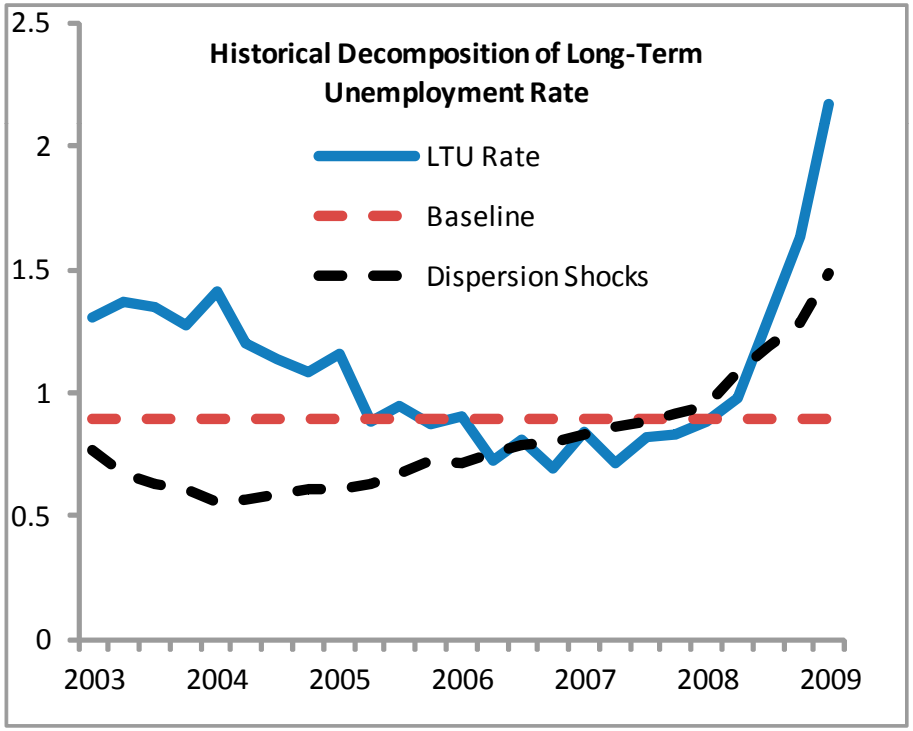
U.S. Stock Market Dispersion Index



The “take-away” slide

Stock market dispersion can explain variation in U.S. long-duration unemployment

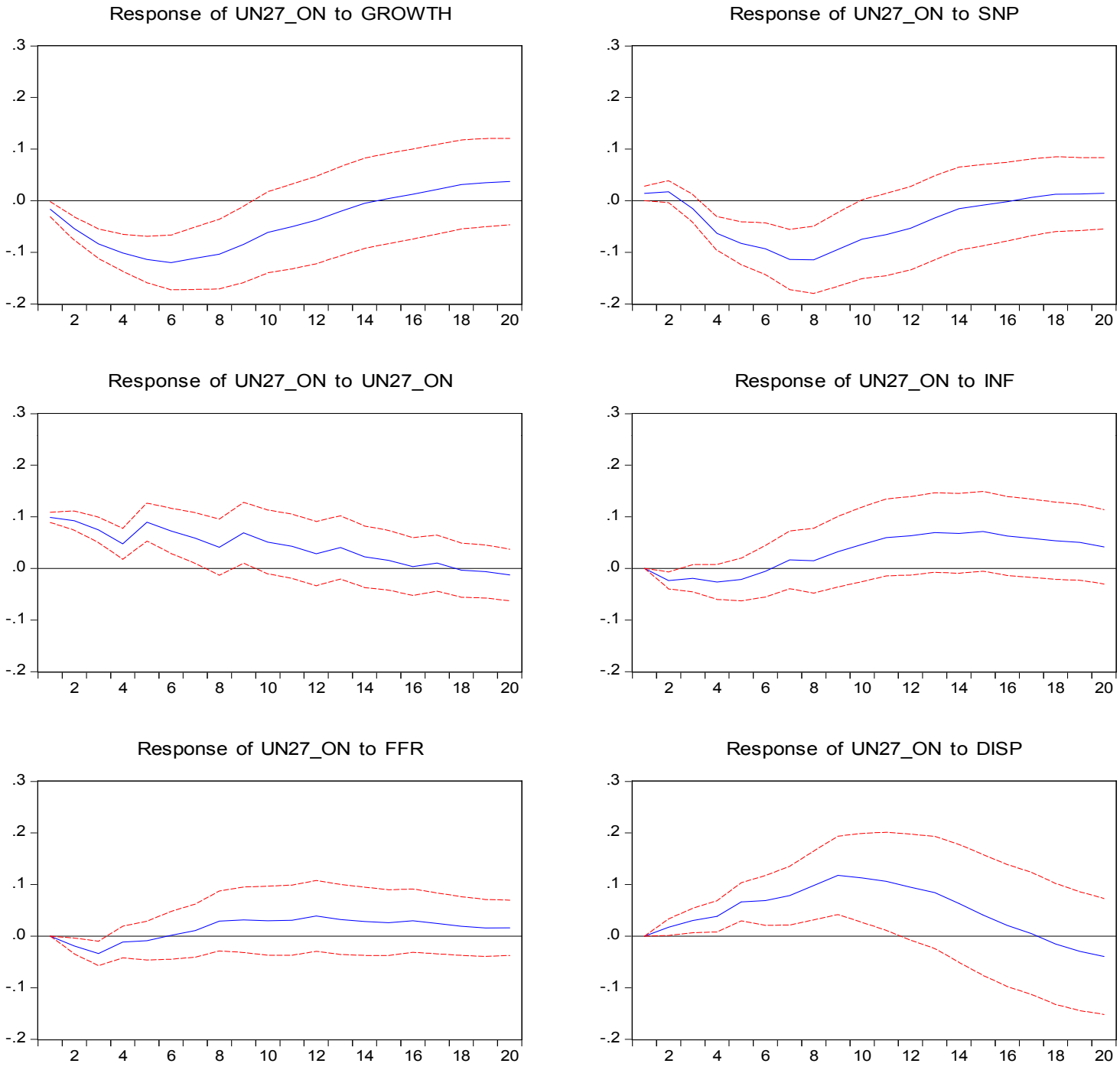




Details

- 6-variable VAR
  - GDP growth
  - Market return (S&P 500)
  - Long-Term unemployment rate
  - Inflation
  - Federal funds rate
  - Stock market dispersion index

Response to Cholesky One S.D. Innovations ± 2 S.E.

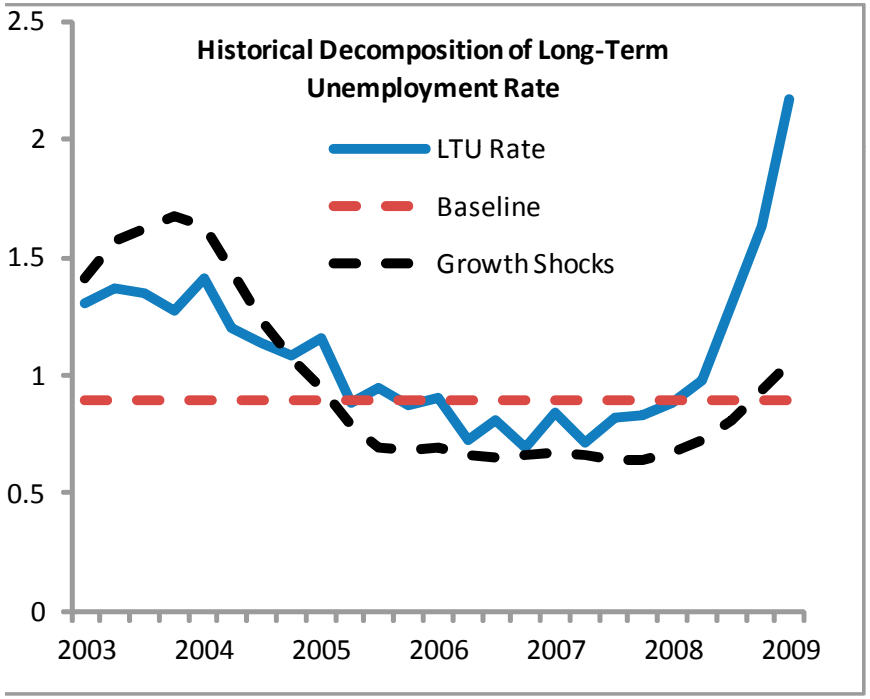


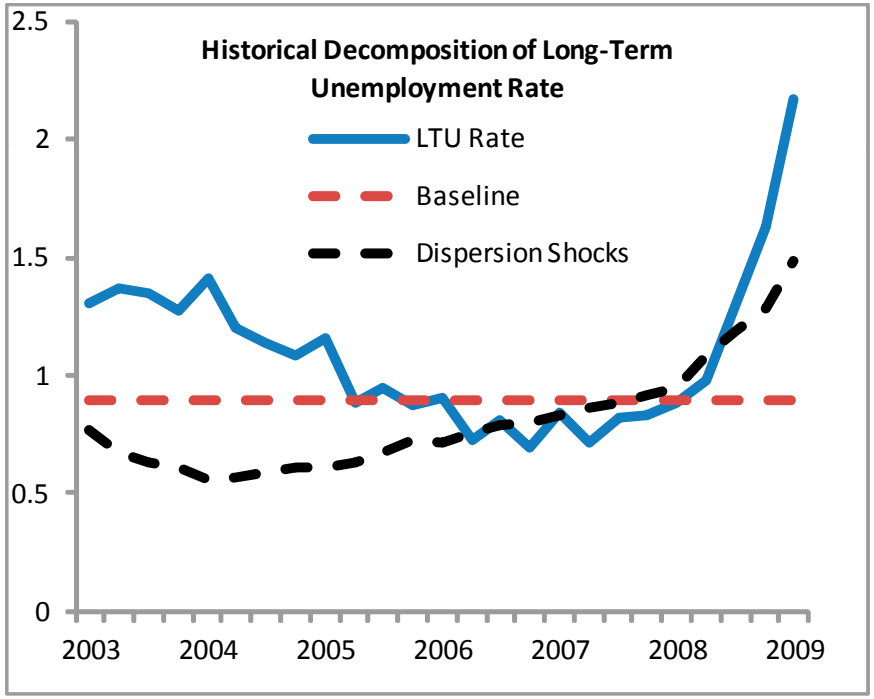
Dispersion matters for long-duration unemployment

Forecast-error variance decomposition for long-term unemployment

Horizon (Quarters)	Growth	Market Return	Long-Term Unemp.	Inflation	Fed Funds Rate	Dispersion
5	37.1	12.9	38.0	2.3	1.9	7.9
10	31.6	23.5	20.0	2.2	1.8	20.9
20	25.0	19.3	15.8	11.7	3.3	24.9
40	24.5	17.1	14.0	12.9	3.4	28.1

Shocks to dispersion account for significant part of the rise in long-duration unemployment during the recent recession



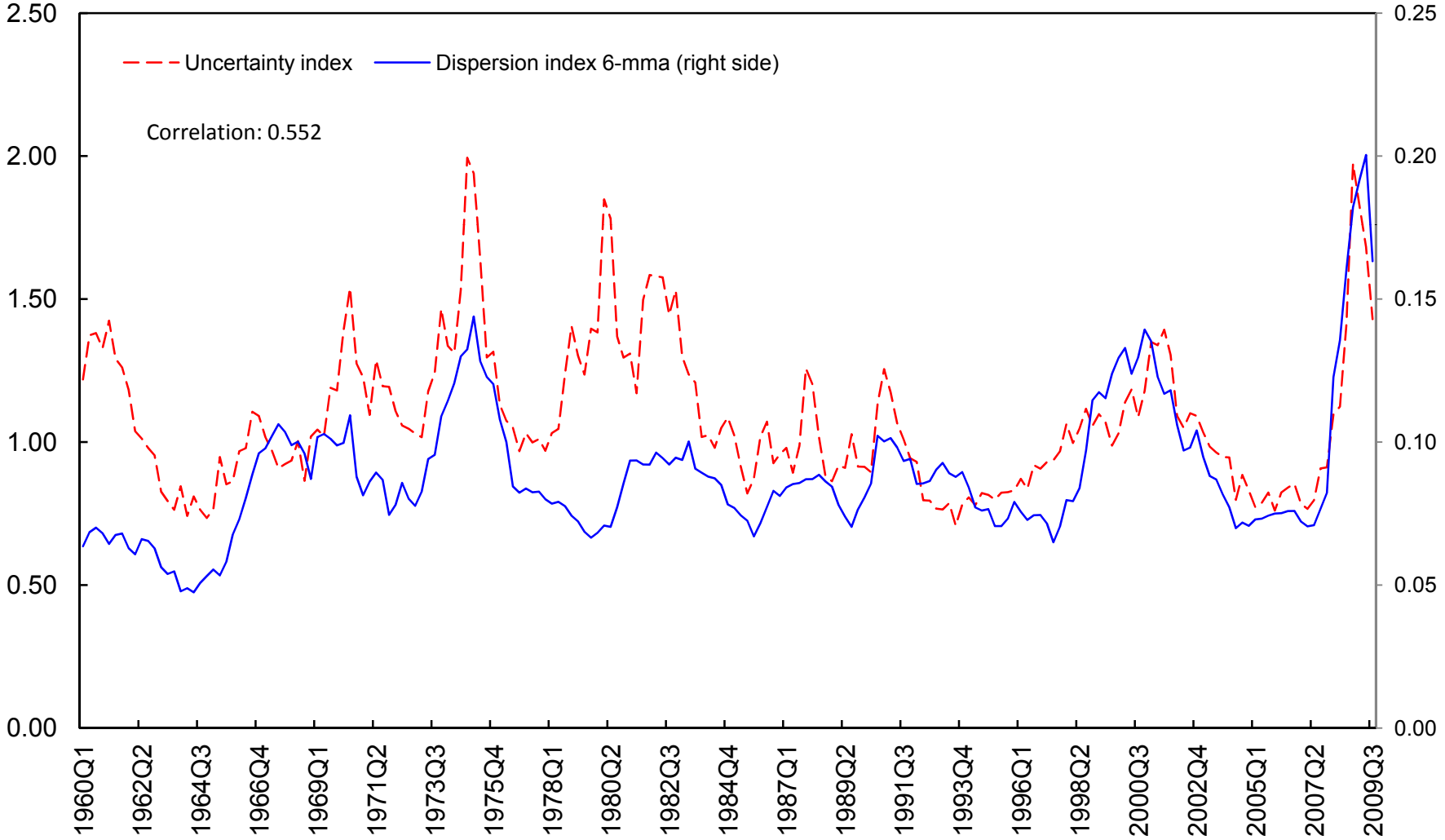


Peeking under the hood

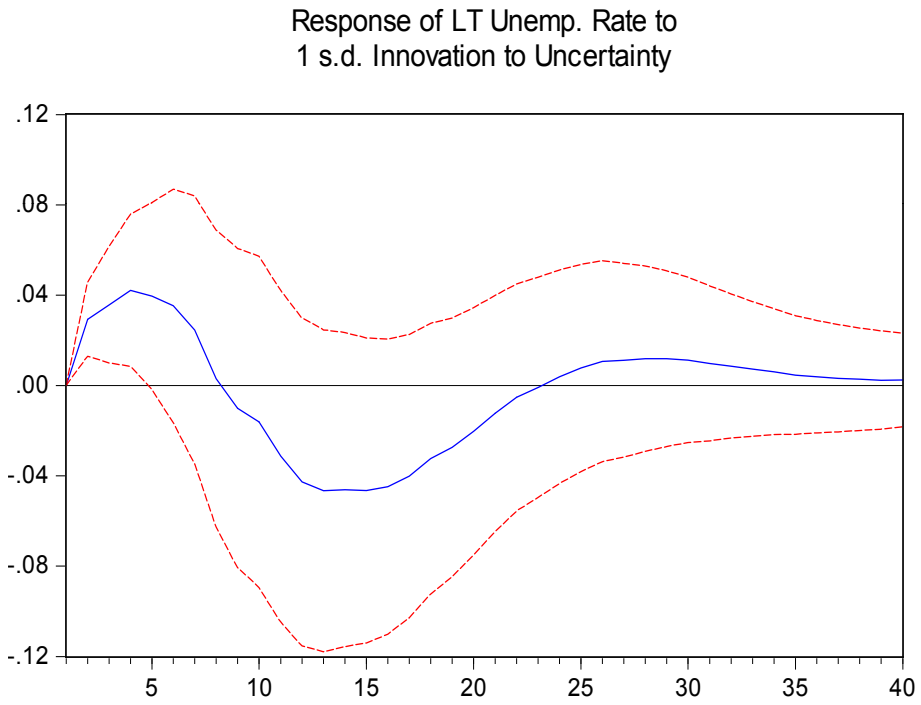
- Is the stock market dispersion index really picking up sectoral shocks?

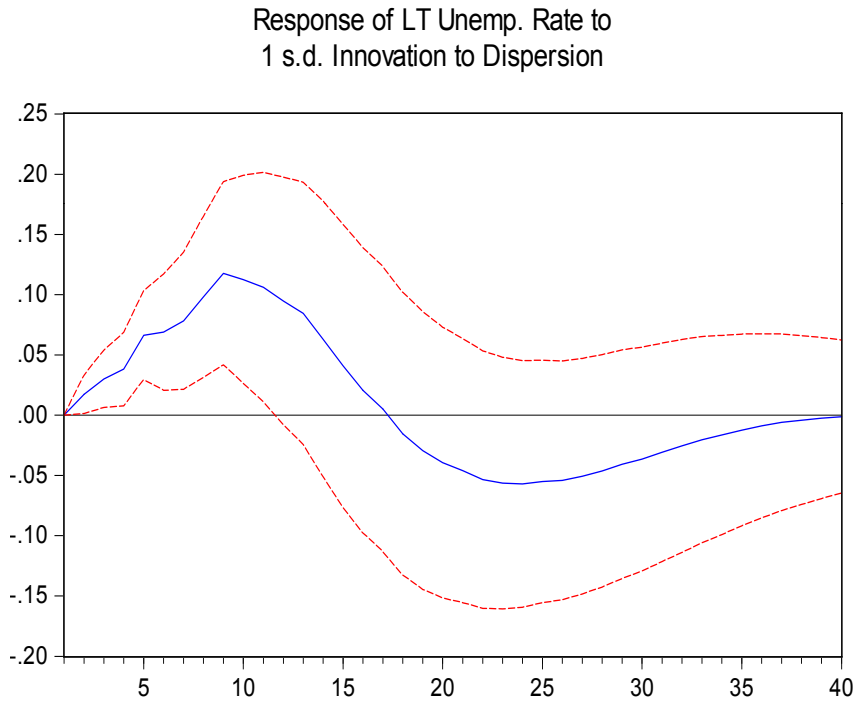
- Two alternative stories:
  1. Index is a proxy for uncertainty (Bloom, 2009)
  2. Index is nonetheless picking up aggregate shocks

Positive correlation between stock market dispersion index & Bloom measure

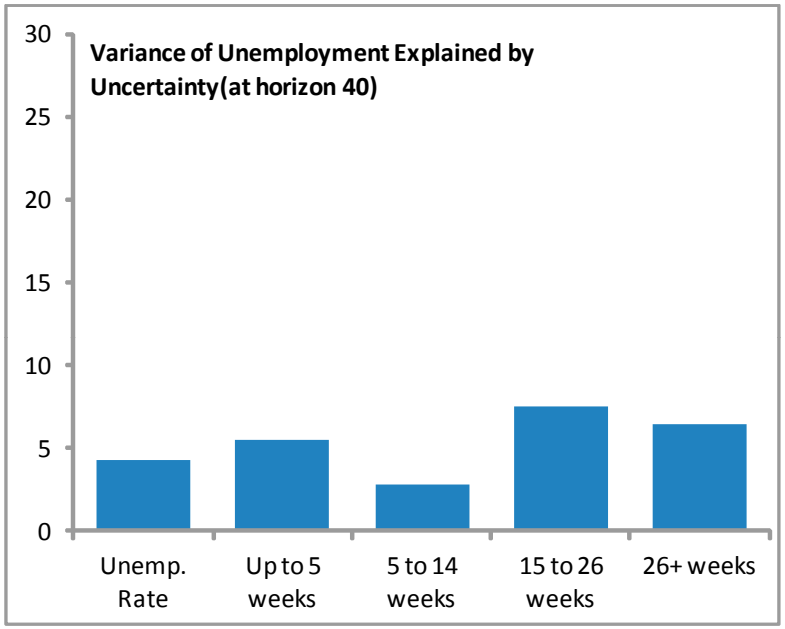


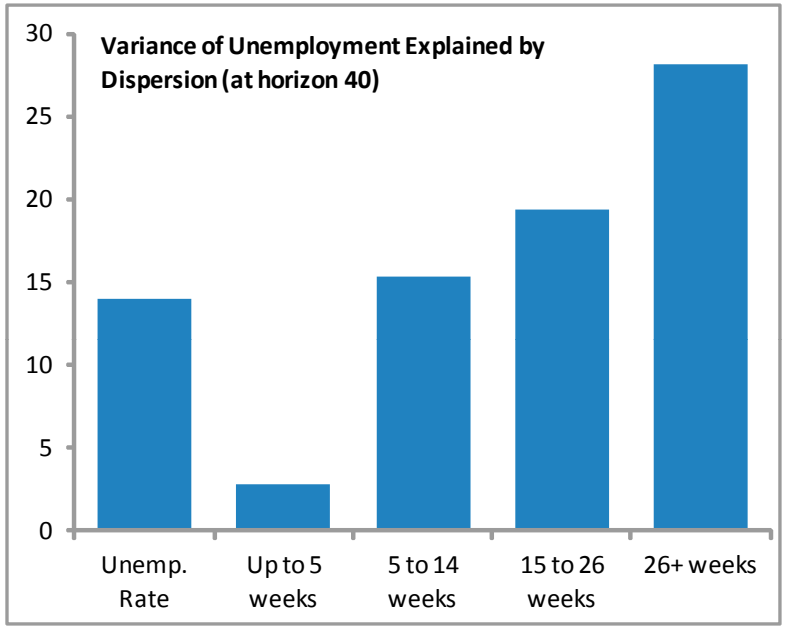
Perhaps both indices can bloom?





Dispersion index is better at explaining variation in Long-Term Unemployment





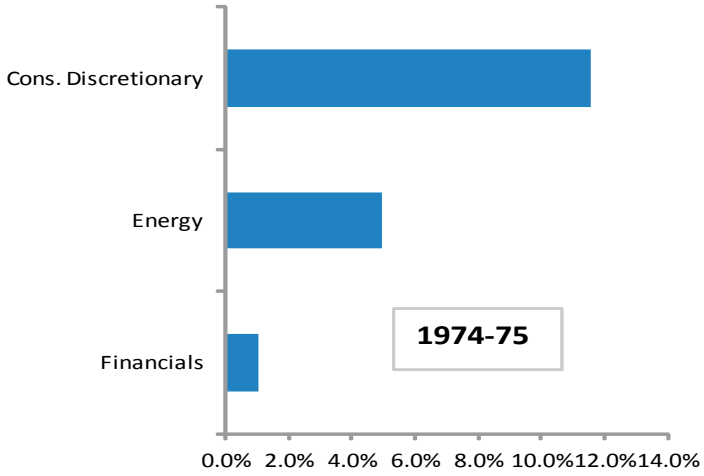
Forecast-error variance decomposition for long-term unemployment

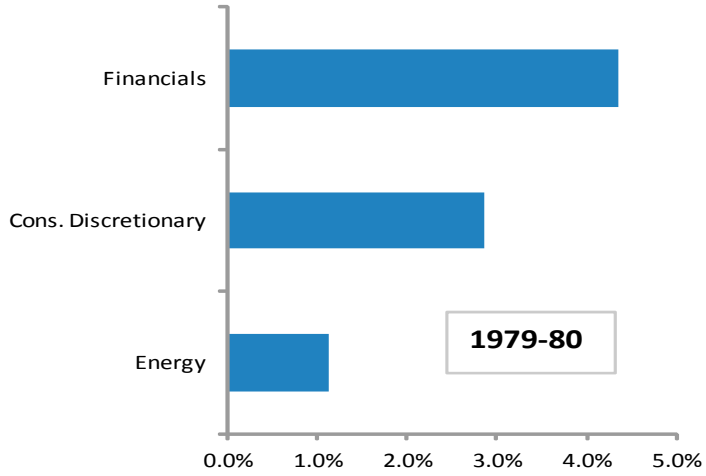
Horizon (Quarters)	Growth	Market Return	Long-Term Unemp.	Inflation	Fed Funds Rate	Uncertainty	Dispersion
5	30.7	13.7	37.8	2.6	2.8	6.4	6.1
10	29.8	22.4	20.9	2.5	1.6	2.9	19.9
20	23.3	17.4	16.4	12.5	4.2	4.7	21.5
40	22.0	16.1	14.4	15.8	4.1	4.7	22.9

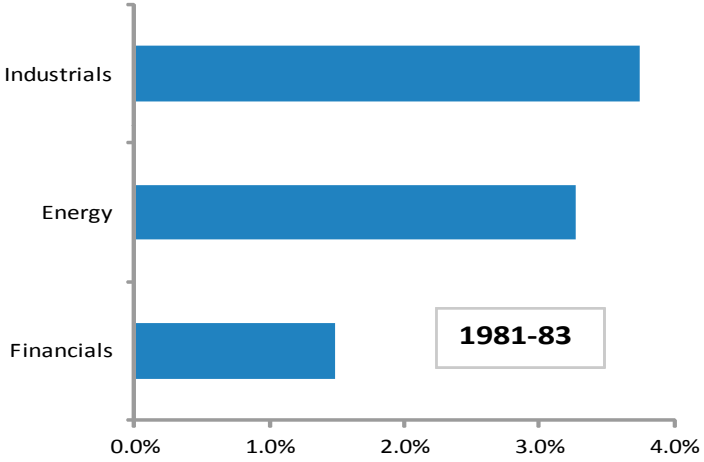
Aggregate shocks by another name?

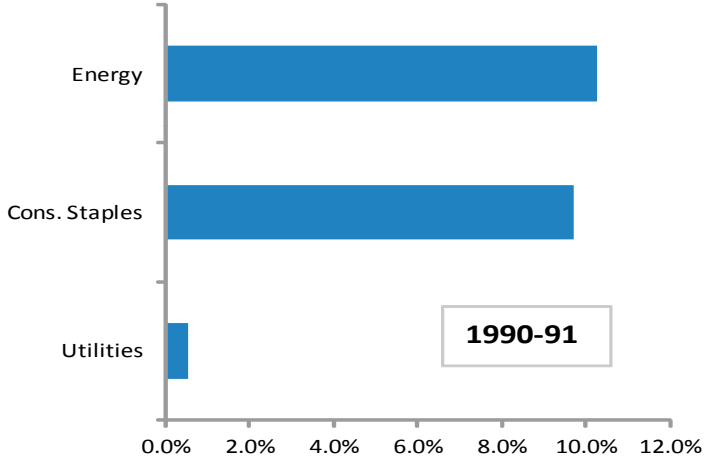
- Evidence seems to suggest that index is picking up something different from aggregate shocks:
  1. Regression tests show that dispersion index is not correlated with neither Romer and Romer monetary policy nor fiscal policy shocks (both contemporary and lags).

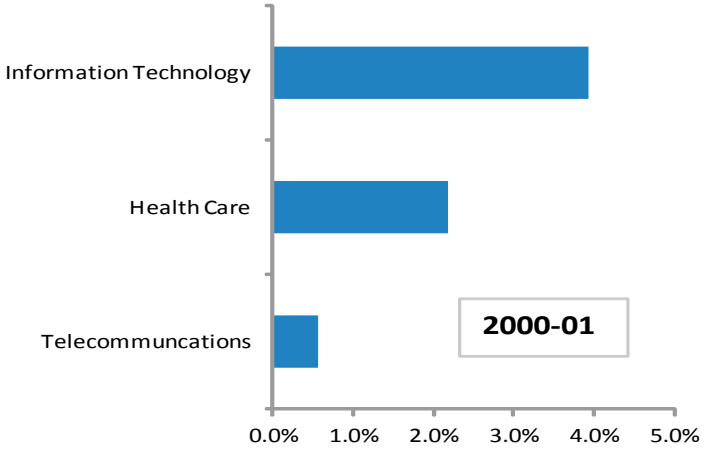
  2. Behavior of sectoral indices during recessions seem to match conventional wisdom.

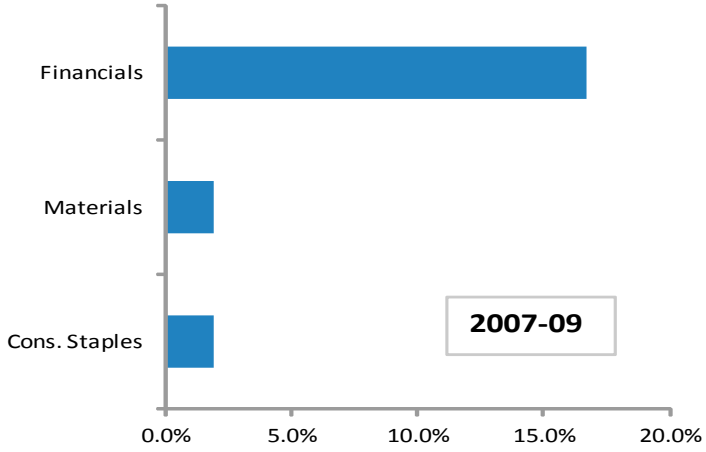

Cons. Discretionary
Energy
Financials
1974-75
0.0% 2.0% 4.0% 6.0% 8.0% 10.0% 12.0% 14.0%


Financials
Cons. Discretionary
Energy
1979-80
0.0% 1.0% 2.0% 3.0% 4.0% 5.0%


Industrials
Energy
Financials
1981-83
0.0% 1.0% 2.0% 3.0% 4.0%


Energy
Cons. Staples
Utilities
1990-91
0.0% 2.0% 4.0% 6.0% 8.0% 10.0% 12.0%


Information Technology
Health Care
Telecommuncations
2000-01
0.0% 1.0% 2.0% 3.0% 4.0% 5.0%


Financials
Materials
Cons. Staples
2007-09
0.0% 5.0% 10.0% 15.0% 20.0%

Conclusions

- Recessions leave scars on the labor market; the Great Recession has left gaping wounds
- Duration of unemployment has gone up dramatically in the U.S.
- Separating aggregate from sectoral shocks is a difficult task, but our proxy for sectoral shocks—the dispersion of stock returns—seems to indicate that sectoral shocks may be part of the explanation for the increased duration in the U.S.
- In ongoing work, we look at international evidence for the link between the stock market dispersion index and unemployment. Preliminary findings are encouraging.