

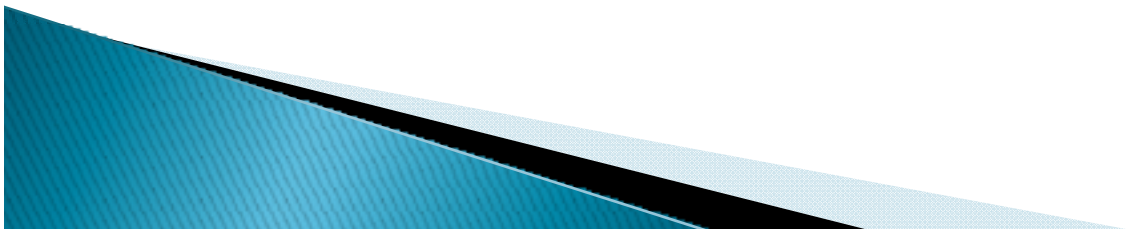
**Chen, Kannan, Loungani, and Trehan:
“New Evidence on Cyclical and Structural Sources
of Unemployment”**

Discussion by Valerie A. Ramey

**Federal Reserve Bank of San Francisco
March 16, 2012**

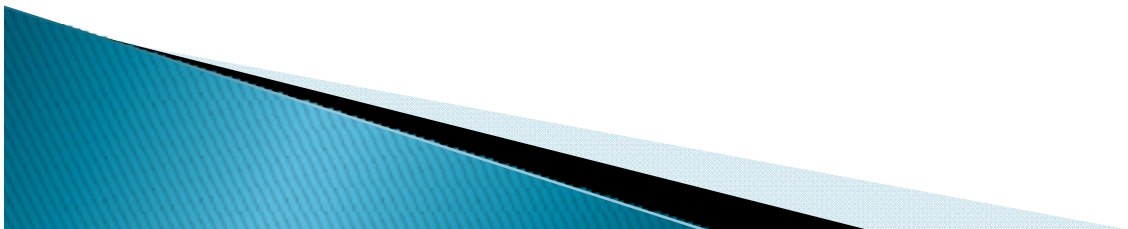
What this paper does

- ▶ Revisits Lilien's "**Sectoral Shift Hypothesis**" using more recent data.
- ▶ Uses Loungani, Rush and Tave (1990) measure of sectoral shifts: the **dispersion of stock returns** across industries.
- ▶ Studies the effects of this sectoral shift shock measure on unemployment rates for **different durations**.



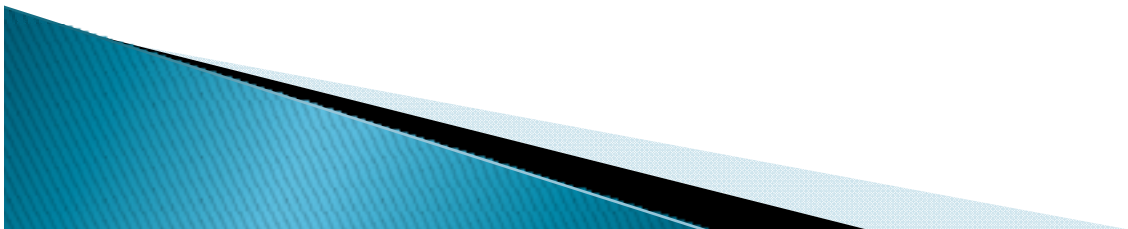
Main Results

- ▶ 25% of the forecast error variance of the overall unemployment rate is due to **sectoral shifts**.
- ▶ Up to **40%** of the **long-duration** unemployment rate is due to sectoral shifts.
- ▶ The stock returns dispersion index is highly correlated with **Bloom's uncertainty index**. However, the Bloom's index predicts short-duration unemployment whereas the dispersion index predicts long duration unemployment.



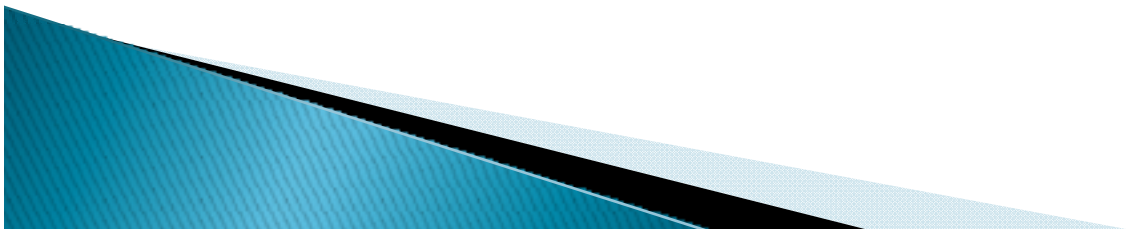
Assessment

- ▶ Important investigation into why the unemployment rate is currently so high
- ▶ Revives useful empirical measures of sectoral shifts from the 1990s
- ▶ Comparison of the effects of Bloom's uncertainty measure and authors' dispersion measure is really intriguing and warrants further research.



Outline of Discussion

1. Literature background and potential weaknesses of dispersion measure
2. Ambiguities in the sectoral shift vs. aggregate shock distinction
3. Sources of Fluctuations in Dispersion Index
4. Robustness checks on VARs
5. Conclusions



Background on Dispersion Indexes

- ▶ Lilien (1982) introduced idea of sectoral shifts
 - used the dispersion of employment growth across industries
- ▶ Abraham and Katz (1986) critique
 - some industries may be more cyclically sensitive
 - show that Lilien's dispersion measure is negatively correlated with help-wanted index

Alternative Measure: Dispersion of returns

- ▶ Based on idea by Fisher Black (1987)
- ▶ **Loungani, Rush and Tave (1990) (LRT):** Weighted average of cross-sectional deviations of industry stock market returns from S&P500 composite.

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

where R_{it} is the growth rate of industry i 's stock price index and R_t is the growth rate of the S&P500 composite.

Potential Problem

- ▶ Some industry stock returns may be more **cyclically sensitive**, so aggregate shocks could increase dispersion of returns
- ▶ Impact on **vacancies**: Zagorsky (1994) performs second Abraham–Katz test on LRT measure and finds that it is **negatively correlated with vacancies**, suggesting the measure is picking up aggregate rather than sectoral shocks.
- ▶ However, Hosios (1994) presents a model in which a negative short–run correlation between unemployment and vacancies is consistent with reallocation shocks.

Brainard–Cutler Modification

- ▶ Brainard and Cutler (1993): Get rid of cyclical effects by using **excess returns**. First regress industry returns on market returns:

$$R_{it} = \beta_{0i} + \beta_{1i}R_t + \varepsilon_{it}$$

- ▶ Use dispersion of excess returns instead of total returns:

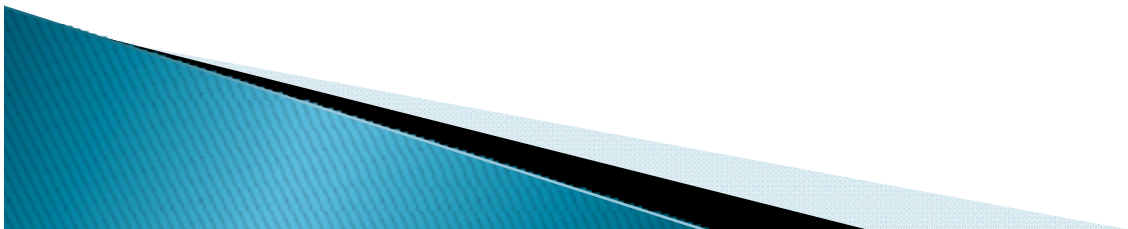
$$\eta_{it} = \hat{\beta}_{0i} + \varepsilon_{it}$$

- ▶ **Brainard–Cutler dispersion measure:**

$$CSV_t = \left[\sum_{i=1}^n W_i (\eta_{it} - \bar{\eta}_t)^2 \right]^{1/2}$$

Brainard–Cutler Results

- ▶ Their measure suggests that sectoral shifts account for only a **small part** of variation in unemployment, though they are important in some periods, such as 1974–75
- ▶ The Brainard–Cutler measure leads to a rise in both the unemployment and the **vacancy rate**.

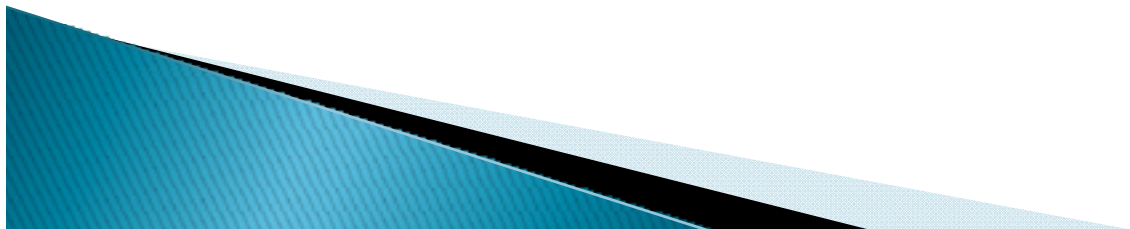


Dispersion based on total vs. excess returns

- ▶
- ▶ The two measures are the same if β_i does not vary across industries in the following equation:

$$R_{it} = \beta_{0i} + \beta_{1i}R_t + \varepsilon_{it}$$

- ▶ What is the evidence?



My regression of industry returns on market returns

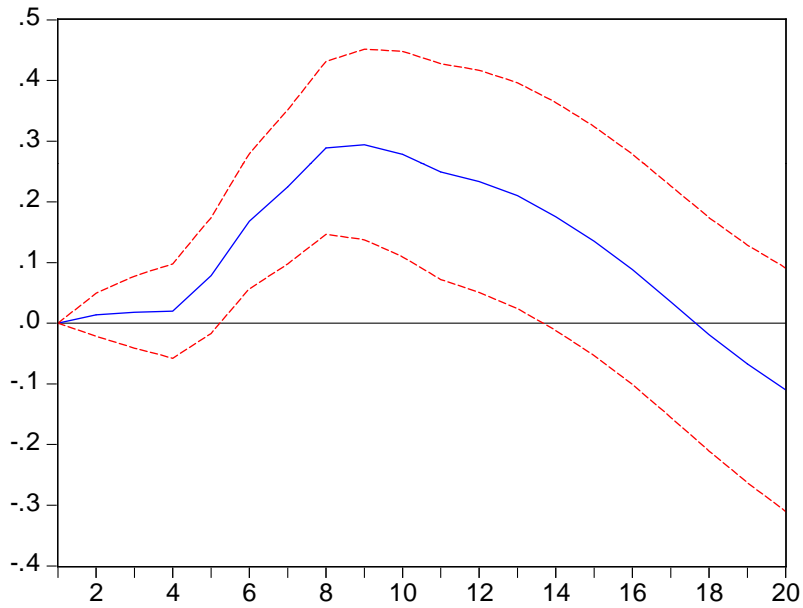
Industry	β_1	Standard Error
Consumer nondurables	0.773	0.014
Consumer durables	1.369	0.026

Based on monthly data CRSP, from 1926 to 2006.

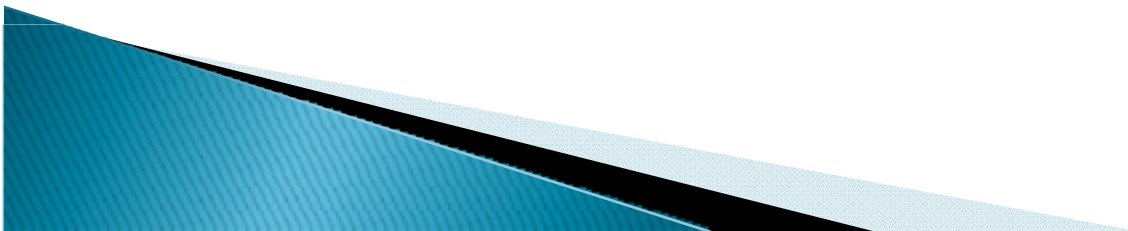
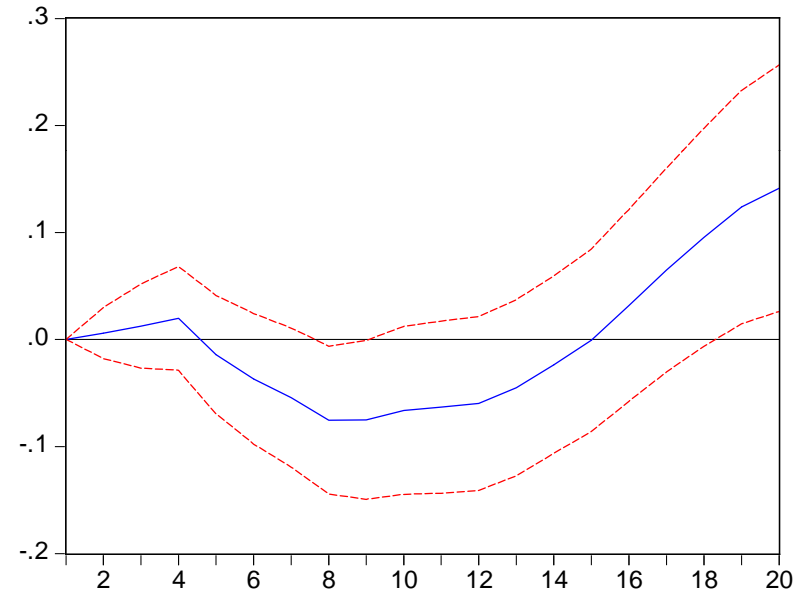
- Stock returns for consumer durables industries vary much more with market returns than consumer nondurables.
- These results imply that the LRT and CKLT dispersion measure is probably **subject to the Abraham-Katz critique**.

Effects of Dispersion Shocks on Unemployment and Vacancy Rates

Response of UNEMPLOYMENT to Cholesky
One S.D. DISPERSION Innovation

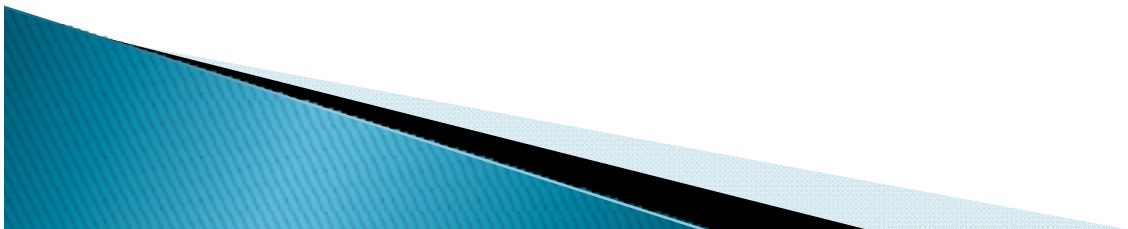


Response of VACANCY_RATE to Cholesky
One S.D. DISPERSION Innovation



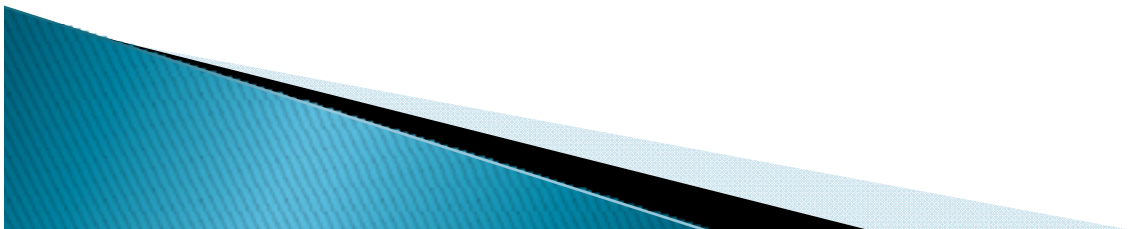
Bottom line on dispersion measure

- ▶ I think this approach to measuring sectoral shifts is one of the best, but I would feel more comfortable with the measure if it used excess returns rather than total returns



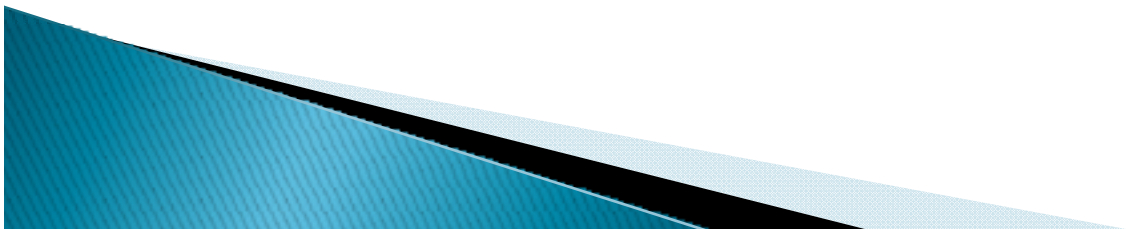
Sectoral Shift Shocks vs. Aggregate Shocks

- ▶ This literature is predicated on the assumption that there is a meaningful distinction between **aggregate shocks and sectoral shifts**.
- ▶ I am not so sure that this is a meaningful distinction.
- ▶ I will present **two examples** of why it is hard to decompose shocks this way.



Is a change in **government spending** an aggregate shock or a sectoral shock?

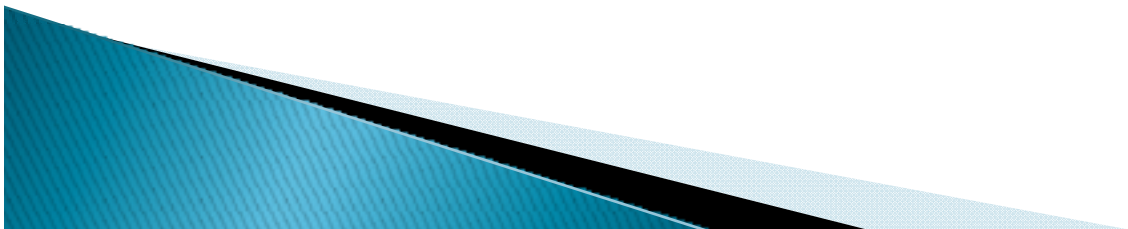
- ▶ **Ramey–Shapiro** (1998): This paper investigated the effects of **costly capital mobility** in a 2–sector DSGE model.
- ▶ We developed our original military dates because we thought that military buildups were good examples of **sector shifts that we could measure!**
- ▶ For example, **72% of the increase in shipments** to the government from 1977 to 1987 was concentrated in a small set of industries that represented only 4% of total manufacturing shipments in 1977. In 1987, two–thirds of these industries’ shipments went to the government.



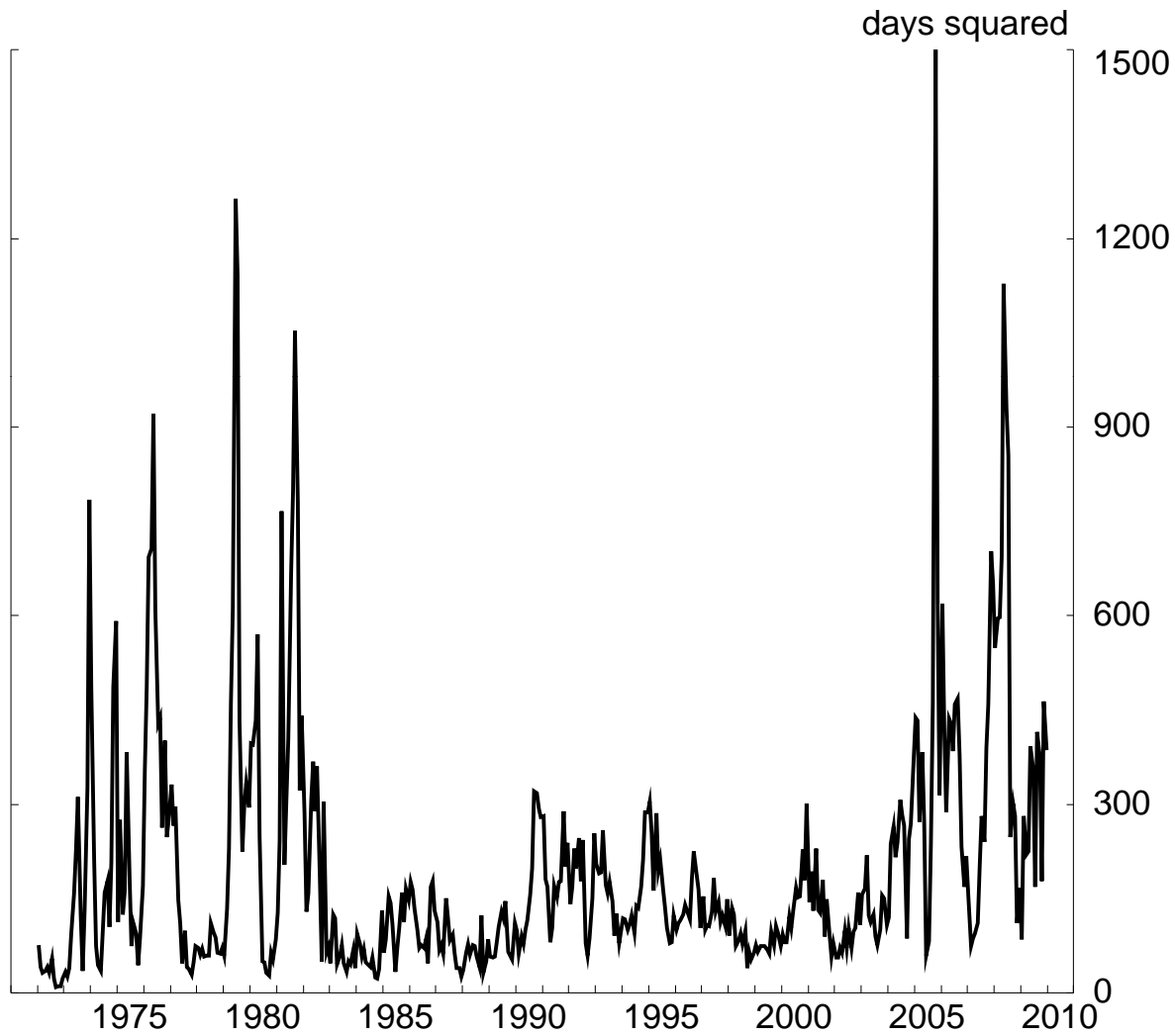
Is an **oil shock** an aggregate shock or a sectoral shock?

- ▶ Loungani (ReStat 1986) “Oil Price Shocks and the Dispersion Hypothesis” argues that once the differential effect of oil shocks across industries is taken out of Lilien’s employment dispersion measure, his measure no longer explains variation in unemployment.
- ▶ Bresnahan–Ramey (AER 1993) and Ramey–Vine (NBER Macro Annual 2010): Oil shocks lead to **sectoral shifts within the automobile industry**.

Consider Ramey–Vine dispersion index, which is based on the dispersion of days–supply across size–classes of motor vehicles:



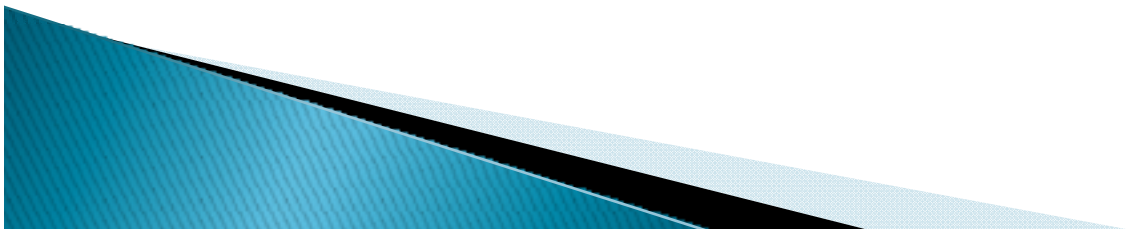
Variance of Domestic Days' Supply across Vehicle Segments



From Ramey and Vine (2010)

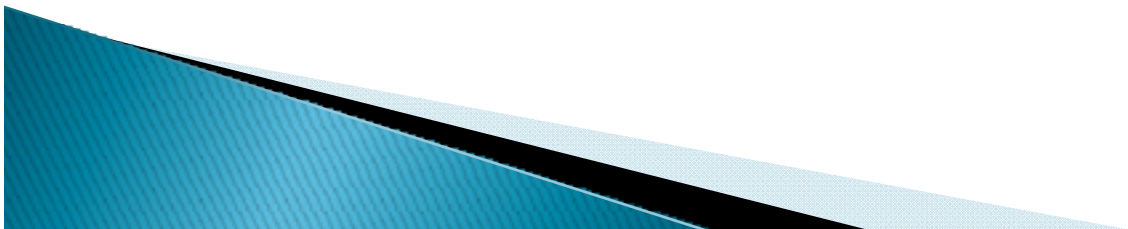
Ramey–Vine Findings of Effects of Oil Shocks on the Auto Industry

- ▶ Oil shocks significantly **shifted demand** from large vehicles to small vehicles
- ▶ **Half of the effect** of oil shocks on the auto industry is transmitted by the sectoral shift effect.



Implications of Examples

- ▶ Many shocks that are considered “aggregate shocks” have an impact on the economy because of their “sectoral shift” effects.
- ▶ The sectoral shifts can occur within 4-digit industries, so industry dispersion measures may **understate** the importance of sectoral shifts aspects.



But how much of dispersion measure can be explained with observable shocks?

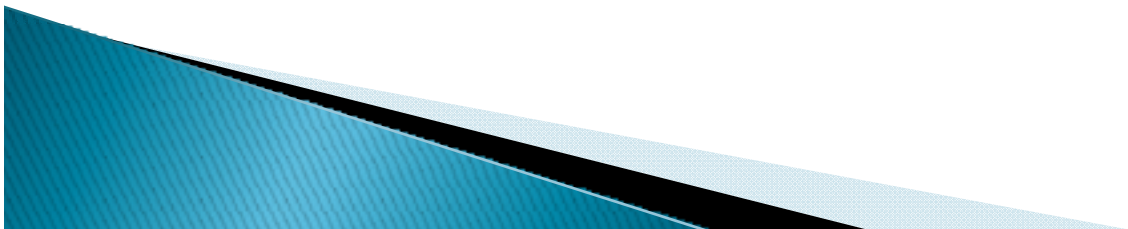
% of variance explained at 10 quarters

1. Gas prices	5	5. Productivity	3
2. Defense spending	3	6. Prices	4
3. S&P 500	8	7. Funds rate	10
4. Real GDP	5	8. Dispersion	61

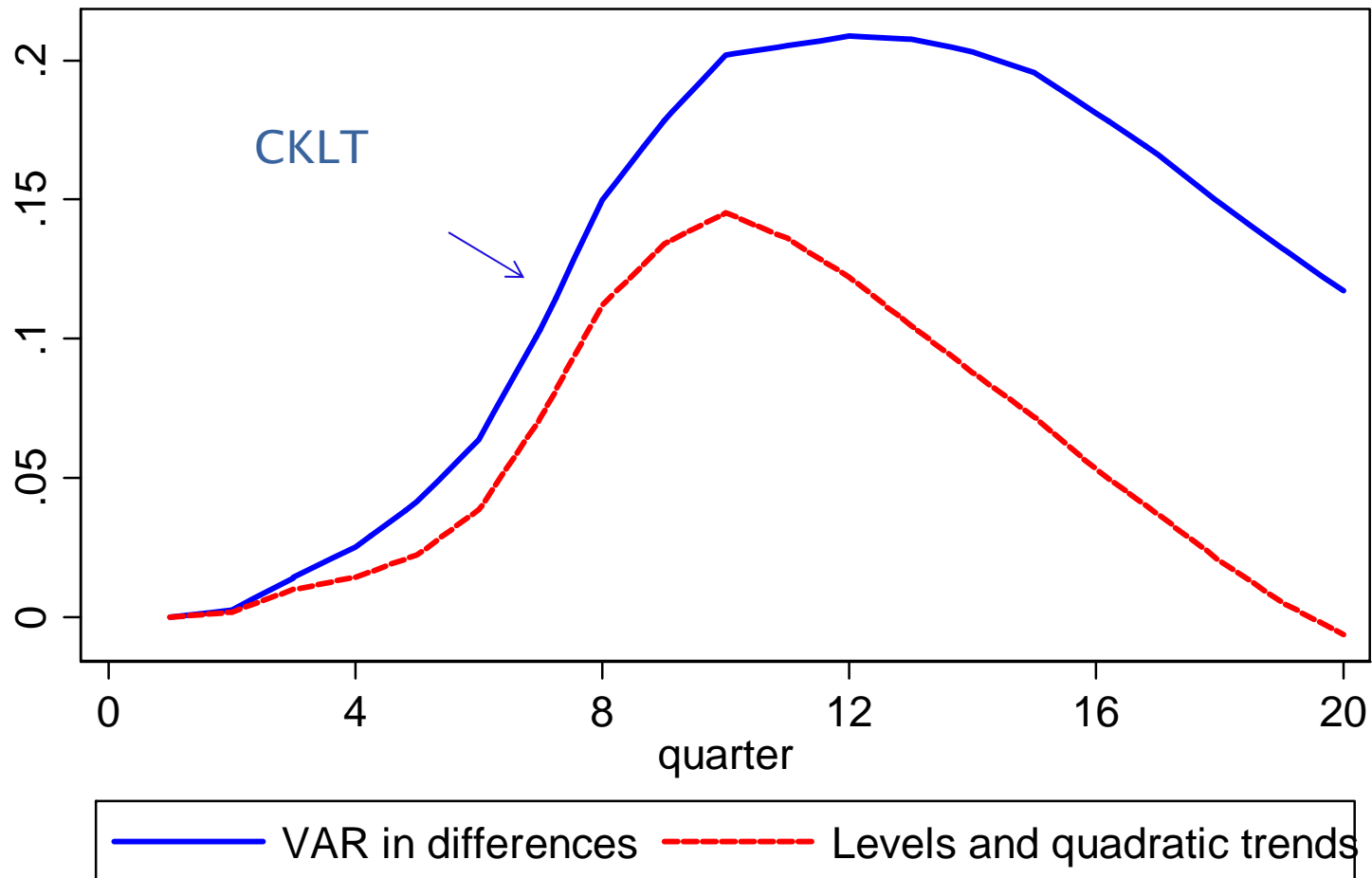
Based on VAR in levels with quadratic trend, 8 lags

Robustness of Results

- ▶ Sometimes VAR results are affected by elements of the specification, such as assumptions on trends, lag length, etc.
- ▶ The authors specify their VAR using **growth rates** of GDP, stock prices, and the price level, but **levels** of dispersion, unemployment, and the federal funds rate.
- ▶ Let's see how the impulse response functions change if the specification changes.



IRFs: Response of Long-Term Unemployment Rate to Dispersion Shock



Conclusions

- Despite my concerns with the particular formulation of the dispersion measure and the specification of the VAR, I think that the type of analysis used in this paper gives important new evidence on the role of sectoral shifts.
- It would be interesting to do follow-up research on the sources of movements in the dispersion index.

