Regional Business Cycle vs. National Business Cycle

How the Illinois Economy Responds to Shocks from the Nation and Surrounding States

IEO Report 2003-5

Presentation by the Illinois Economic Observatory

RCF Economic and Financial Consulting Incorporated

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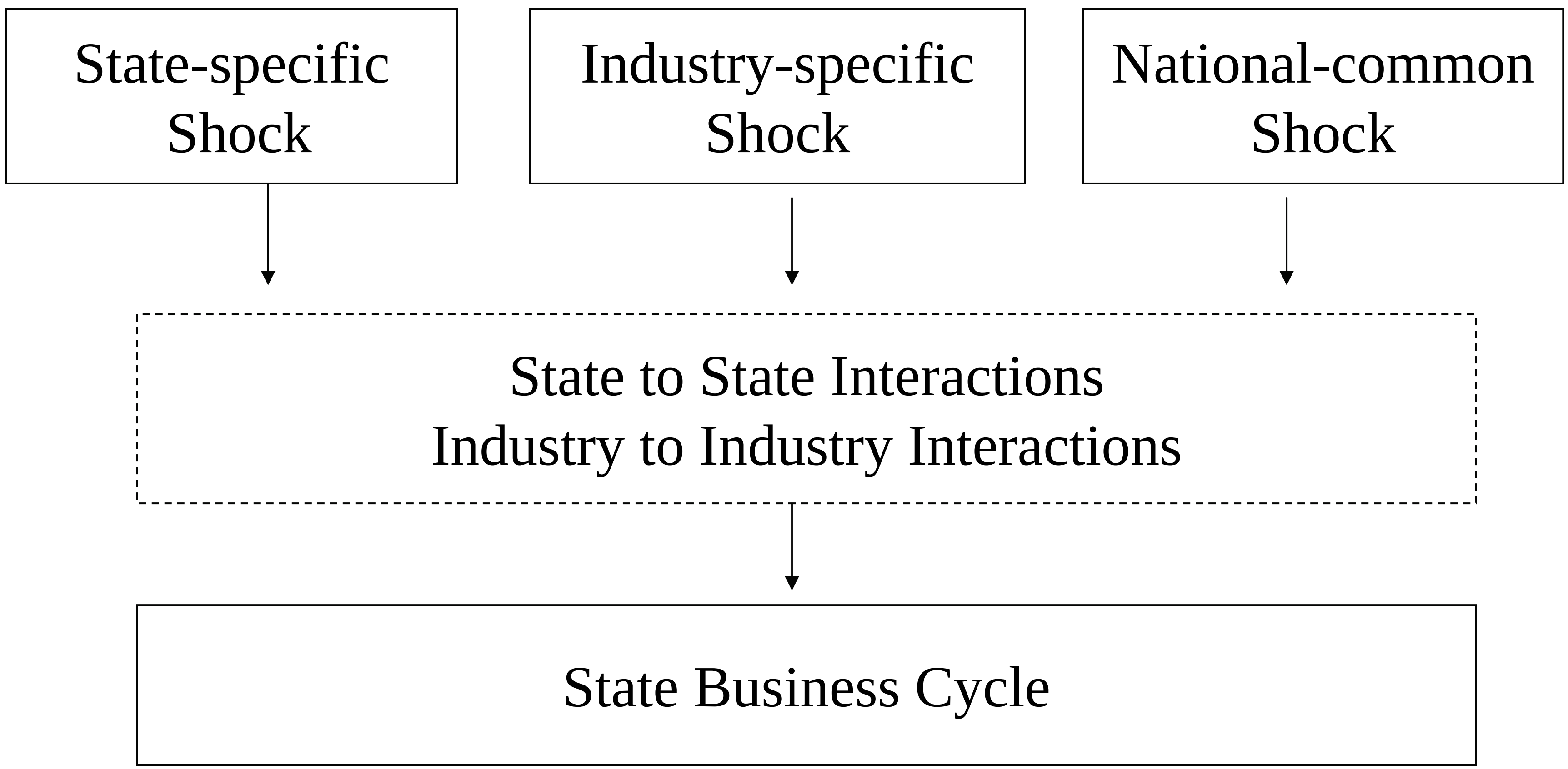
Introduction

- All economies are subject to business cycle fluctuations
- This report explores the impact of national and regional (other state) business cycles on the Illinois economy
- Analysis attempts to answer the question –
  - how does the Illinois economy respond to changes in
    - National cycles
    - Other state cycles

Structure of Regional Business Cycle



National Business Cycle vs. Regional Business Cycle

Dominant Shock	Results
National-common Shock	Similar cyclical pattern
State-specific Shock	Different cyclical pattern

- The proportion of national shock to total variance: 66:34 (annual data), 49:51 (quarterly data). Residual is regional-specific shock

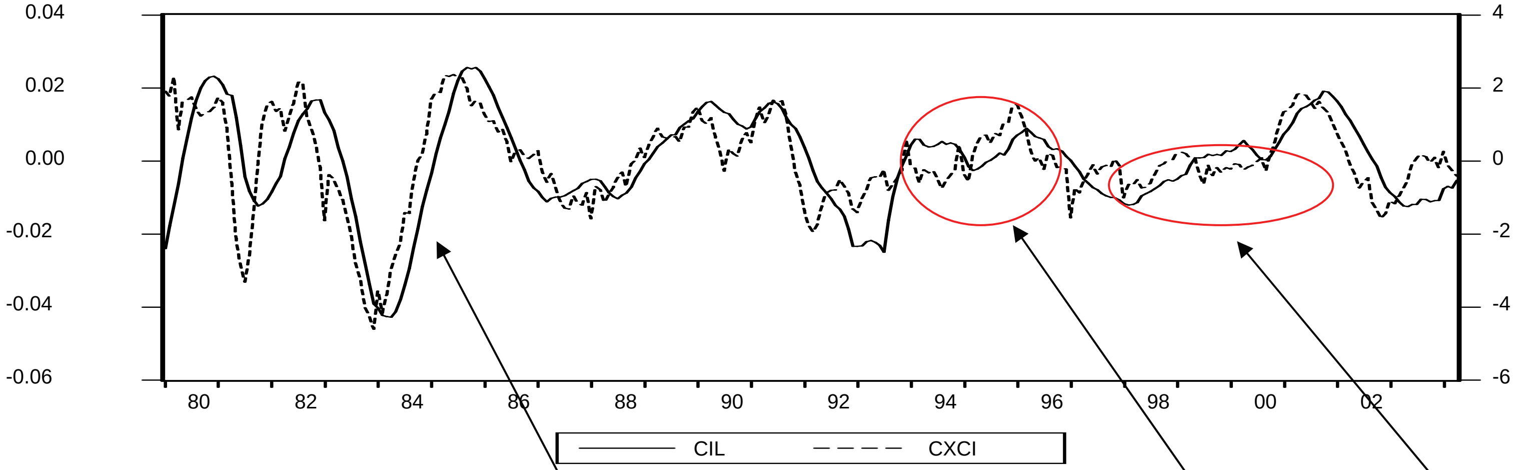
Common Wisdom about Relationship Between State and National Cycle

- Around Turning Points: National and Regional Cycle Coincide with Each Other

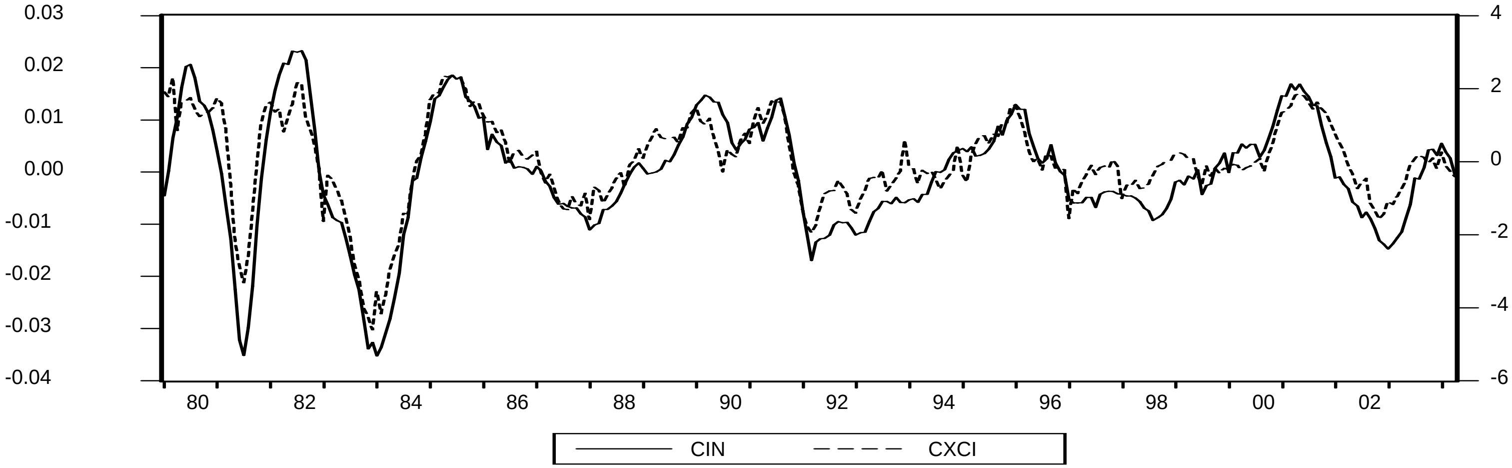
- In the Middle of Expansion or Contraction: National and Regional Cycle Behave Differently

- Big State Leads Neighborhood States

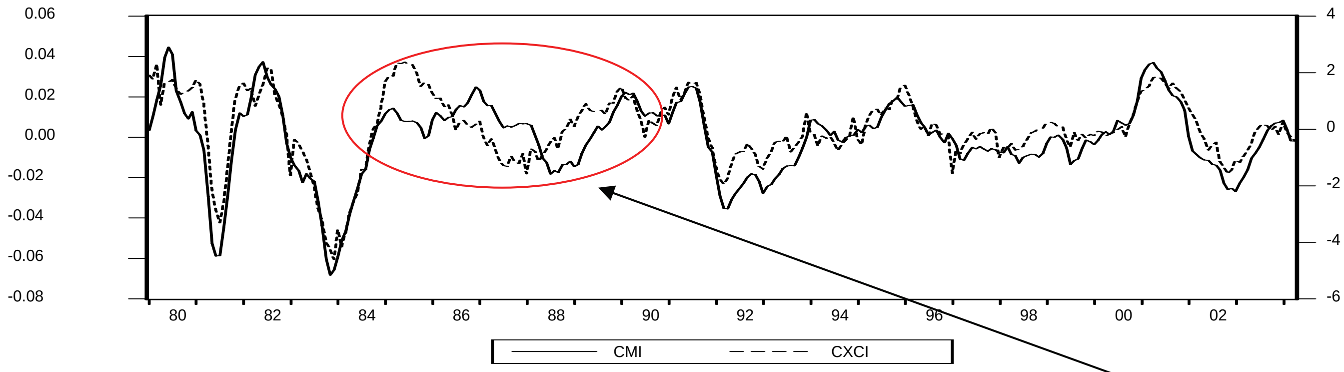
Cyclical Part of Midwest States' Coincident Indexes



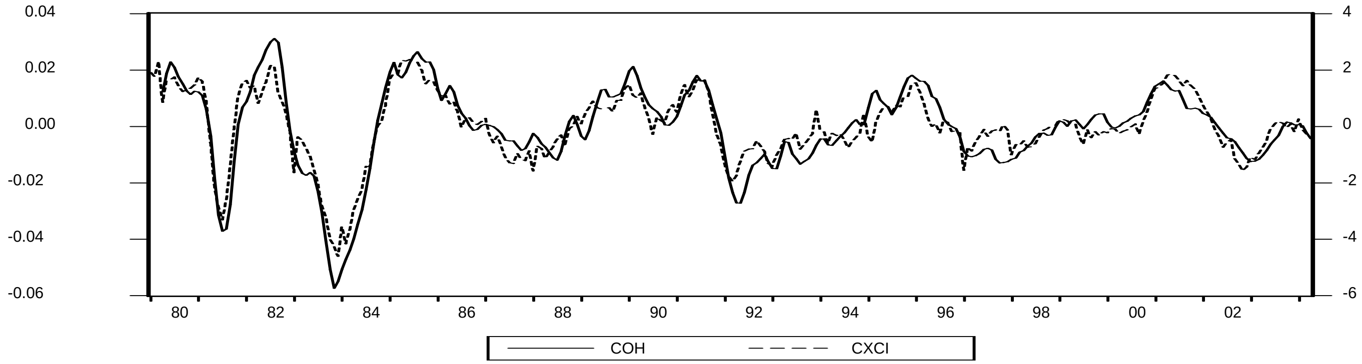
Illinois: lags national cycle 3-4 months; different behavior in middle expansion/contraction



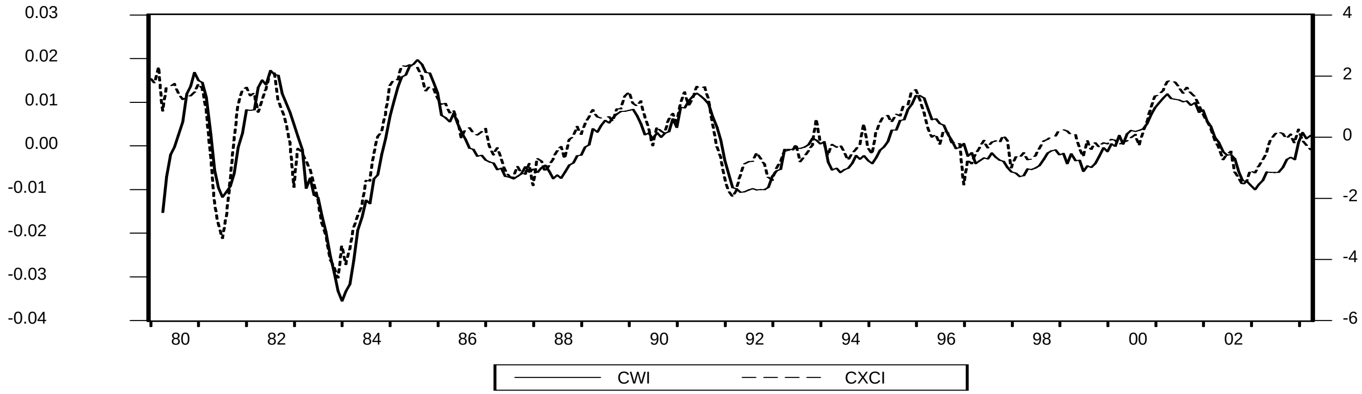
Indiana: Coincides with national cycle



Michigan: moves with nation but different pattern in late 1980s cycle

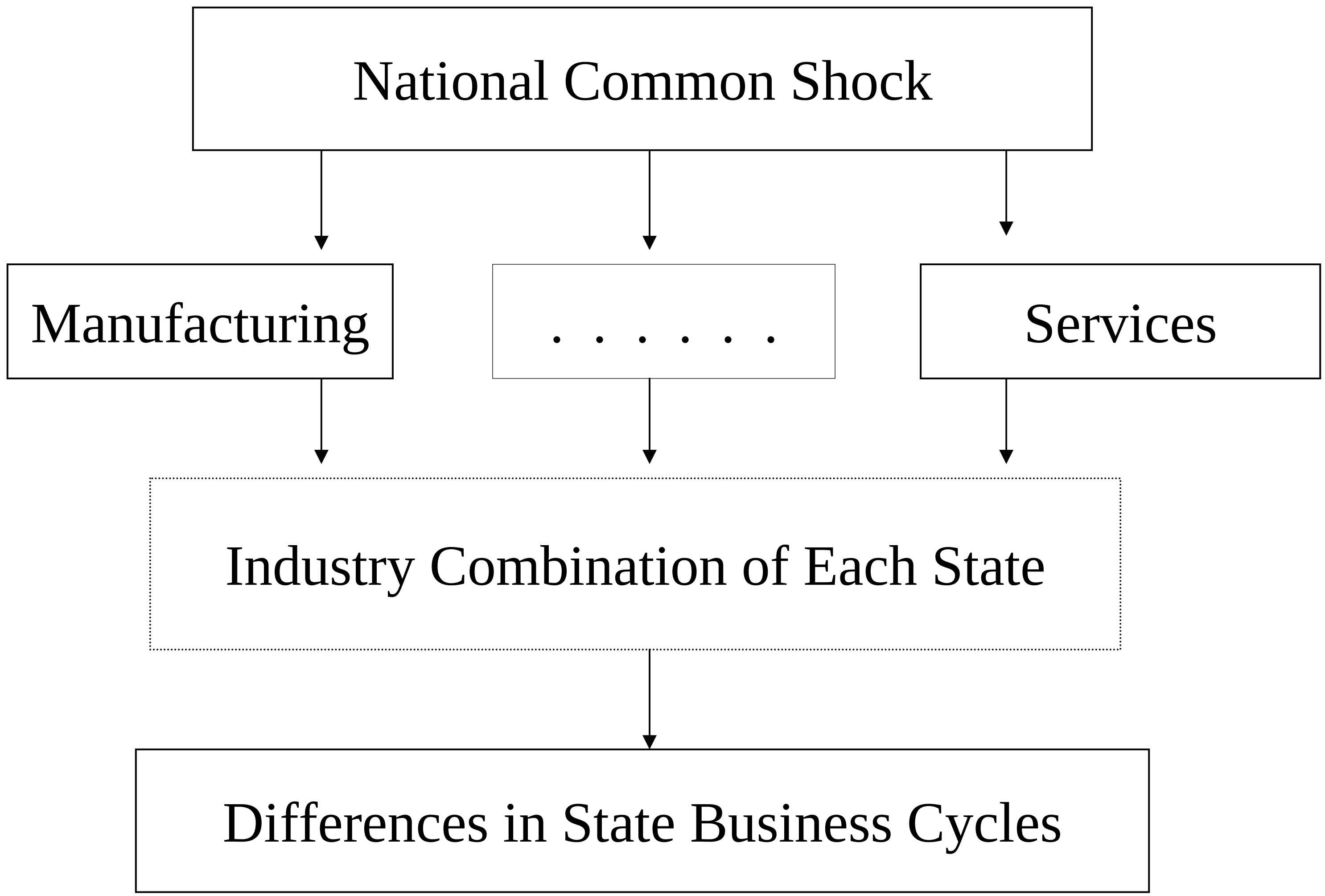


Ohio: coincides with nation



Wisconsin: coincides with nation

Why does this happen?



Industry Mix Effects

- Manufacturing sector reacts promptly to the national shock while services sector responds after a few months
- Hence, manufacturing-oriented state moves first and relatively service-oriented state follows
- Table shows Illinois structure more similar to US than Rest of Midwest
- Reinforces finding of IEO-2003-4 that major difference between Illinois and US is in growth rates not industrial composition

Industry Mix Effects

- May also be a sequencing effect – value chain of production – as raw materials successively transformed into finished product
- States with establishments producing close-to-final product likely to move together with nation
- Hence: expect Michigan and Ohio to move with nation because of large number of auto assembly operations
- Illinois and Wisconsin move with some delay since they are primarily intermediate suppliers

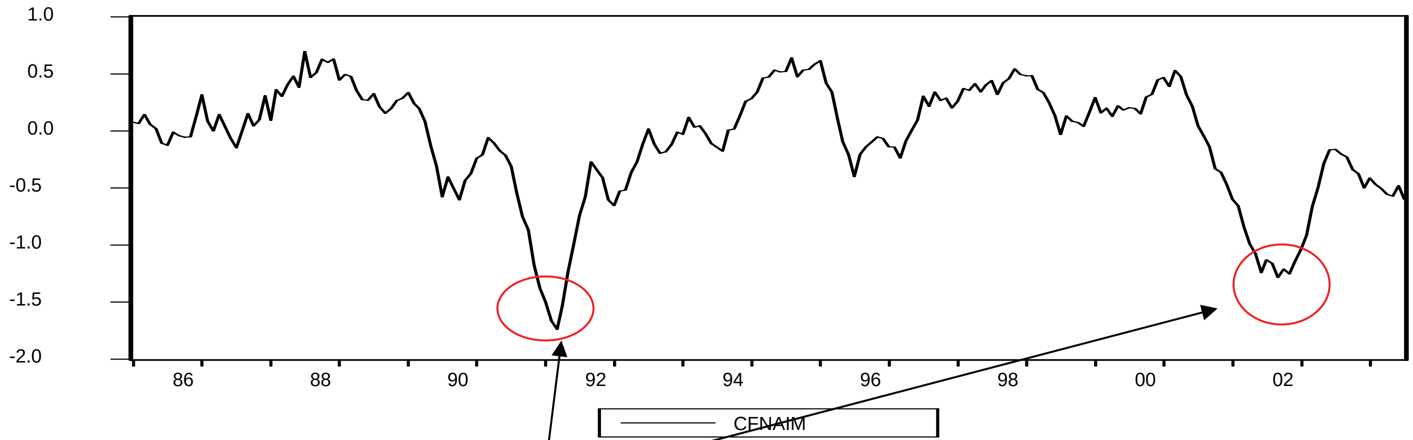
Ratio of Industry Production to GSP
(Base Year: 2000)

Industry	Illinois	Indiana	Michigan	Ohio	Wisconsin	U.S.
Agriculture, forest., fish	0.89	1.16	0.89	0.93	1.64	1.36
Construction	4.77	5.12	5.11	4.51	4.86	4.66
Manufacturing	15.71	30.65	26.27	23.99	25.38	15.37
TPU	8.82	7.51	6.56	7.27	7.17	8.18
Wholesale Trade	7.92	5.96	7.24	7.11	6.47	7.04
Retail Trade	8.06	9.04	9.23	9.71	9.35	8.97
FIRE	20.73	13.23	14.27	16.36	15.81	19.99
Services	23.04	17.04	19.93	18.76	18.21	21.40

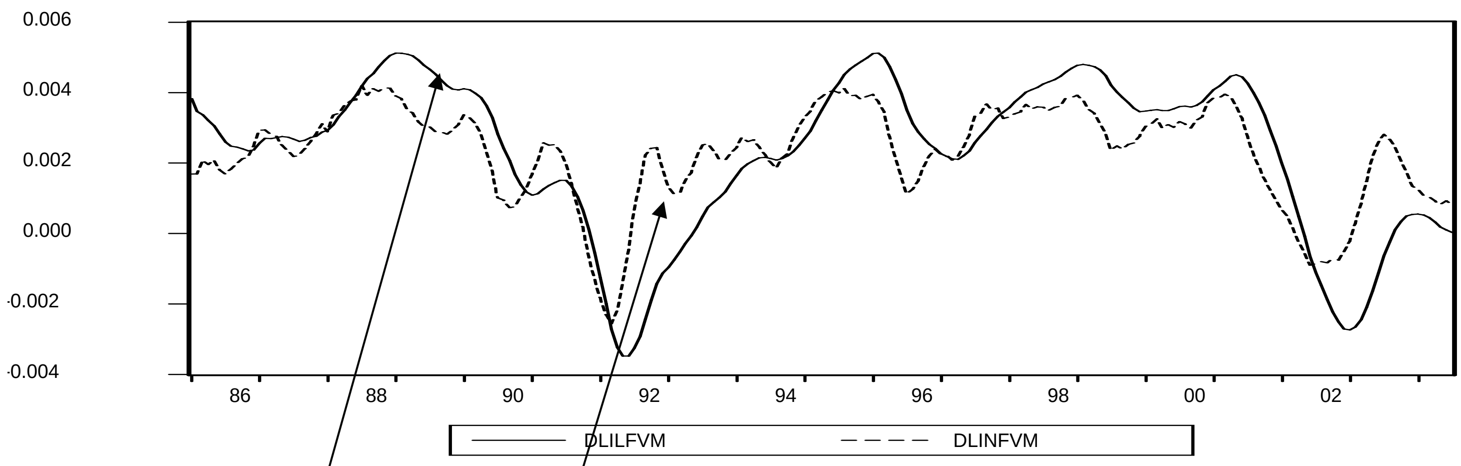
Illinois **manufacturing** share of Gross State Product much smaller than Rest of Midwest.

Illinois share of **FIRE** and **Services** much higher

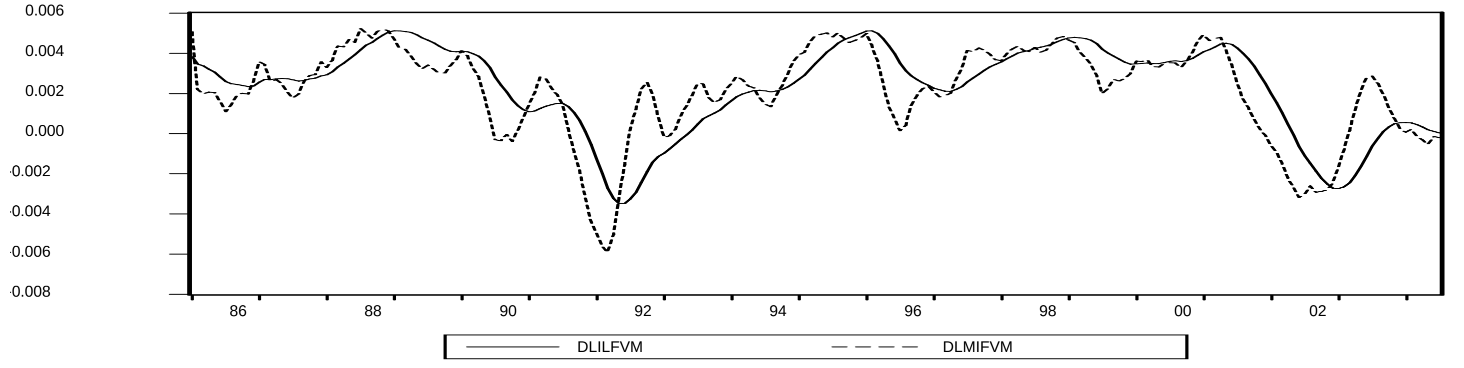
Dynamic Simulation with VAR Model



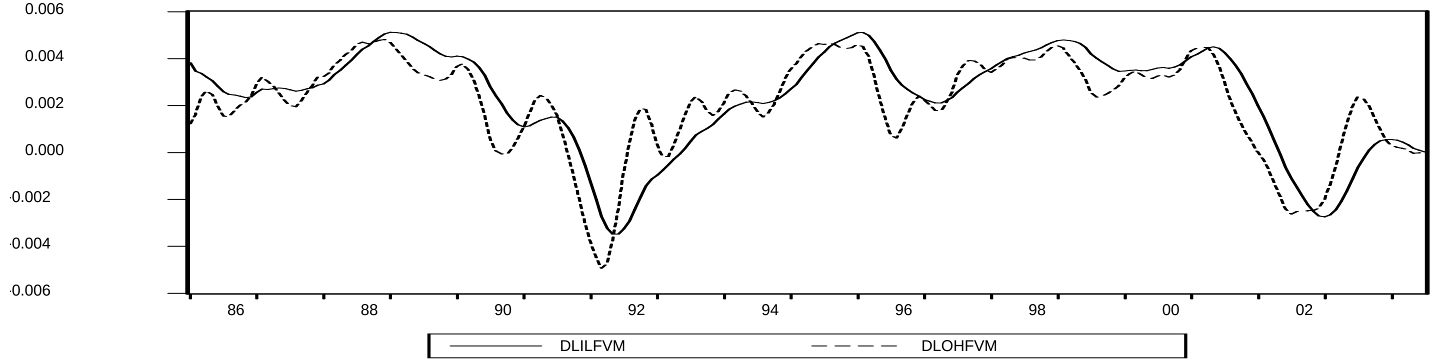
Recessions caused by national shock



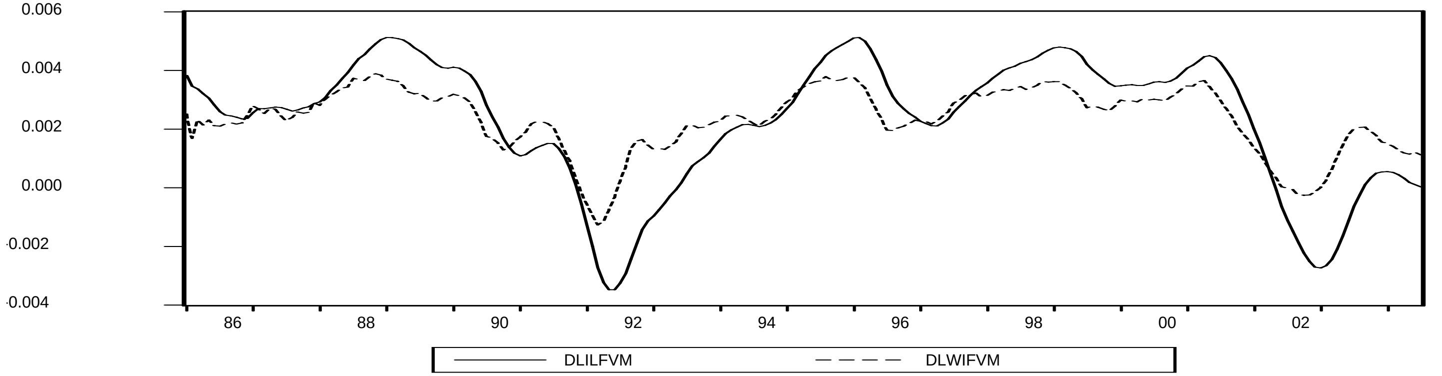
Illinois lags Indiana 3-4 months in response to national shock



Illinois lags Michigan 4-5 months



Illinois lags Ohio 3-4 months



Illinois lags Wisconsin 2-3 months

Illinois - solid line: other state - dotted line

Interpretation

- Illinois response lags other states
- If we decompose into sector effects, find that Illinois does affect other Midwest states
- Need to explore transmission effects of cycles on a state-sector basis – for example
  - How changes in auto production in Michigan affect fabricated metals production in Illinois and steel production in Indiana

Implications

- Patterns of response very complicated – need more detailed analysis
- Divergence of the regional business cycle from the national one does not necessarily mean that there is a region-specific shock – may reflect different stages in chain of production linkages
- Attention should be directed to tracing the national shock and the corresponding changes in the region's industry composition