Changes in Consumer Behavior during the Great Recession
– a Spatio-Temporal Analysis Using Retail Data

Xin Zhao, Ph.D.
Institute for Spatial Economic Analysis
The Great Recession

- Housing bubble
- Asset market collapse
- GDP / Industries shrinking (construction, real estate)
- Job losses → less money to buy
California:

- Two Recessions originated here within a decade
- Two different sectors
- Different responses in retail?
How Do Recessions Affect Retail?

- Geographic differentiation
  - Cities / Periphery
  - Coast / Inland

- Sectoral choices: what to consume, what to give up?

- Drivers? Employment, income, wealth, education?
Plan: Exploit CA Retail Data

- CA Board of Equalization publishes retail data by county, quarter, and retail sector

- Data from Q1 2000, to Q2 2012

- Benefit: Covers two very different types of recessions: dot-com bubble and housing bubble
Methods

• Geographic Differentiation: Animate year over year changes in retail sales

• Sectoral Choices: Plot changes in retail sales of specific retail sectors over time for California, Silicon Valley and San Bernardino by sector

• Future work: regress sales on employment, income and other potentially explanatory variables
Retail and Food Services
(California, San Bernardino, Santa Clara)
CA Retail

- CA Retail mirrors employment
- Centers slightly more volatile than periphery
- Not a question of coastal / inland
• For the following plots, only data for 36 large counties available, therefore do not represent total retail

• However, large counties represent almost all of total retail in CA; on average less than 3% of the retail in CA happens in small counties

• All data displayed is real (inflation-corrected) relative sales; First Quarter 2000 = 1
Almost all Post-War Recession Were Preceded by an Oil Price Increase
New Cars, Used Cars, Maintenance
Apparel: Men’s, Women’s, Family, Shoes
Recession Proof Retail:

- Used Goods
- Sports
- Liquor
What to Give up First?
Future Research

• Regression Analysis

• Candidate explanatory variables: employment, income, income distribution, wealth, housing values

• Preliminary results (cross section): employment highest explanatory power in poorer areas
Summary

• Spatio-temporal analysis shows:
  ▪ Strong relationship between employment and retail
  ▪ Retail more volatile than employment
  ▪ Stark sectoral variation

• Two California recessions provide natural experiment to study dependence in detail

• Many options for future research
Thank You!

Contact: xin_zhao@redlands.edu
Visit: http://isea.redlands.edu