“Dirty” Revenue Forecasting

Dr. Sarah E. Larson
Assistant Professor
University of Central Florida
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Outline

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  • Testing and Implementing
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Background Revenue Forecasts

• “It is hard to make predictions, especially about the future.” (Yogi Berra)

• The revenue forecast predicts the revenue baseline, i.e. the forecast about what revenue will be accumulated in the budget period under current law and administrative practices. It is driven by forecasts of economic, demographic, administrative, and other structural conditions within the environment in which the taxes will be collected. A key assumption is no change in tax policy or administration.
How do states forecast revenues?

Three different general methods:

• Legislative and executive branches prepare independent forecasts.

• Forecast is prepared by a state executive agency, such as the state budget agency, the department of revenue, the comptroller’s office.

• Consensus forecasting involving representatives from both legislative and executive branches.
Traditional Methods

- Extrapolation or projection
- Deterministic Models
- Multiple Regression Equations
- Econometric Equation Systems
- Microsimulation from taxpayer data files
Can’t forget Politics

- Risk aversion
- Boosting or constraining of expenditures
- State political culture
- Election cycle
General Guidelines for Revenue Forecasts

• Understanding the tax, both administration and collection
• Transparency
• Approach depends on type of forecast
• Forecast each revenue source separately
• Transparency
“There is one fact about your baseline forecast: you will be wrong. Expect it and get used to it” (Mikesell 2017).
Idea of Dirty Forecasting

• Traditional forecasts rely on leading indicators, which tell us about the future

• Dirty forecasts…
  • Provide indicators for behavior that have not yet flowed into the rest of the environment
  • Incorporate coincident indicators that tell us about the behavior of people in the here and now
  • The belief is that people’s behavior today impacts the results of tomorrow
  • The theoretical link between the indicator and the predicted measure is often murky, but exhibits a high degree of face validity (McDonald III, 2013)
Cardboard Box Indicator

• Alan Greenspan closely monitored the production of cardboard boxes

• Most things we use are placed into a cardboard box at some point
  • How we use boxes in the United States is uniquely different than most other countries
  • As demand for boxes increased, Greenspan assumed that there was the more demand for the products being shipped
“Dirty” Economic Indicators

• Skirt length/Hemlines
  • The length of hemlines in new fashion directly relates to consumer confidence in economic position (Docherty & Hann 1994)

• Lipstick Indicator
  • People indulge in less-expensive luxury items when nervous about their future (Hill, Rodeheffer, Griskevicius, Durante, and White 2012)

• Super Bowl
  • Win by an original AFC team leads to an decline in the stock market

• Sports Illustrated Swimsuit Cover
  • If the cover model is American then the S&P outperforms historic rate
Dirty Indicators in Government

• Precursor nature…
  • Allows for changes in a budget or revenue estimate before problems become visible
  • Leads to improved efficiency in the financial process
• Allows for a forecast that better captures what is likely to happen
  • Tailors the forecast to the community
  • Reduces error of best guess approach
• Transformation of financial management practices from responsive to dynamic
Finding A Dirty Indicator

• Dirty indicators are about behavior
   • Traditional indicators are about performance measures
   • Dirty indicators pick up the unique aspects of the local community

• First Steps….
   • Start with the unifying features of the community
   • Move on to the features or aspects that define the individuals in the community

• Examples:
   • Garage Sells/Community Fundraisers
   • Restaurant Choice
   • Season vs. Individual Game Ticket Sales
   • Car and Home Sales – Informal vs. Formal
Testing and Incorporating

• Testing for Existence
  • Pearson’s Correlation
    • Establishes the existence of the relationship, but not the size or direction
  • Granger Causality Test
    • Establishes the size of the size and direction of the relationship
    • Clarifies the reciprocal nature of the dirty indicator

• Incorporating into Forecast
  • Use an SIC or AIC to determine proper lag
  • As an additional variable within forecast model
    • Multistep Ahead Forecasting
  • As a standalone predictor
    • Applied use of the Granger Causality results
Limitations

• Indicators vary municipality to municipality so data collection can be extremely costly
• Implementation can be time consuming
• Tradition can suggest continuing to use the same method
• Effects upon obtaining consensus
Future of Revenue Forecasting

• GFOA now encourages the use of dirty indicators in addition to traditional practices
• Wide spread implementation?
• Dirty indicators provide more accurate forecasts than traditional methods, but are accurate forecasts desired?
• Use of increased technology?
Questions

Sarah.Larson@ucf.edu