



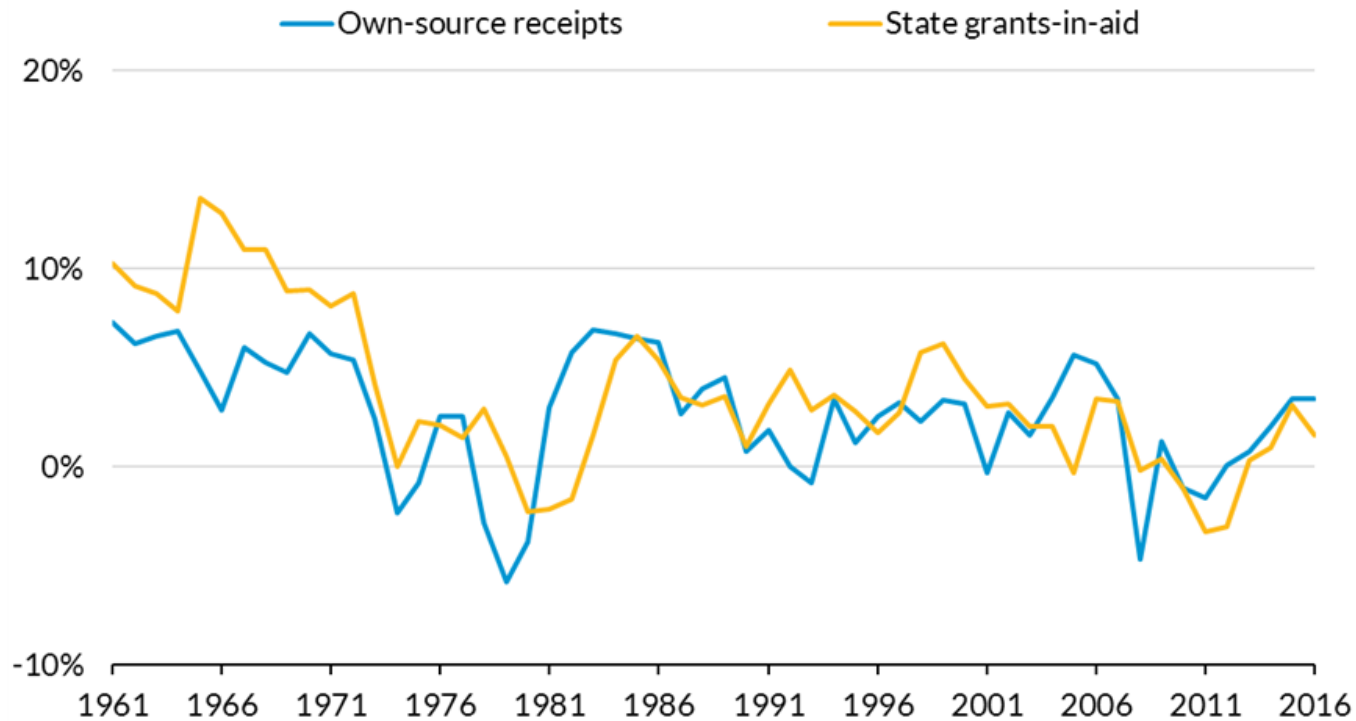
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Predicting Municipal Fiscal Distress: Aspiration or Reality?

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Local governments were hit hard in Great Recession

Figure 1: Year-over-Year Change in Major Local Government Receipts

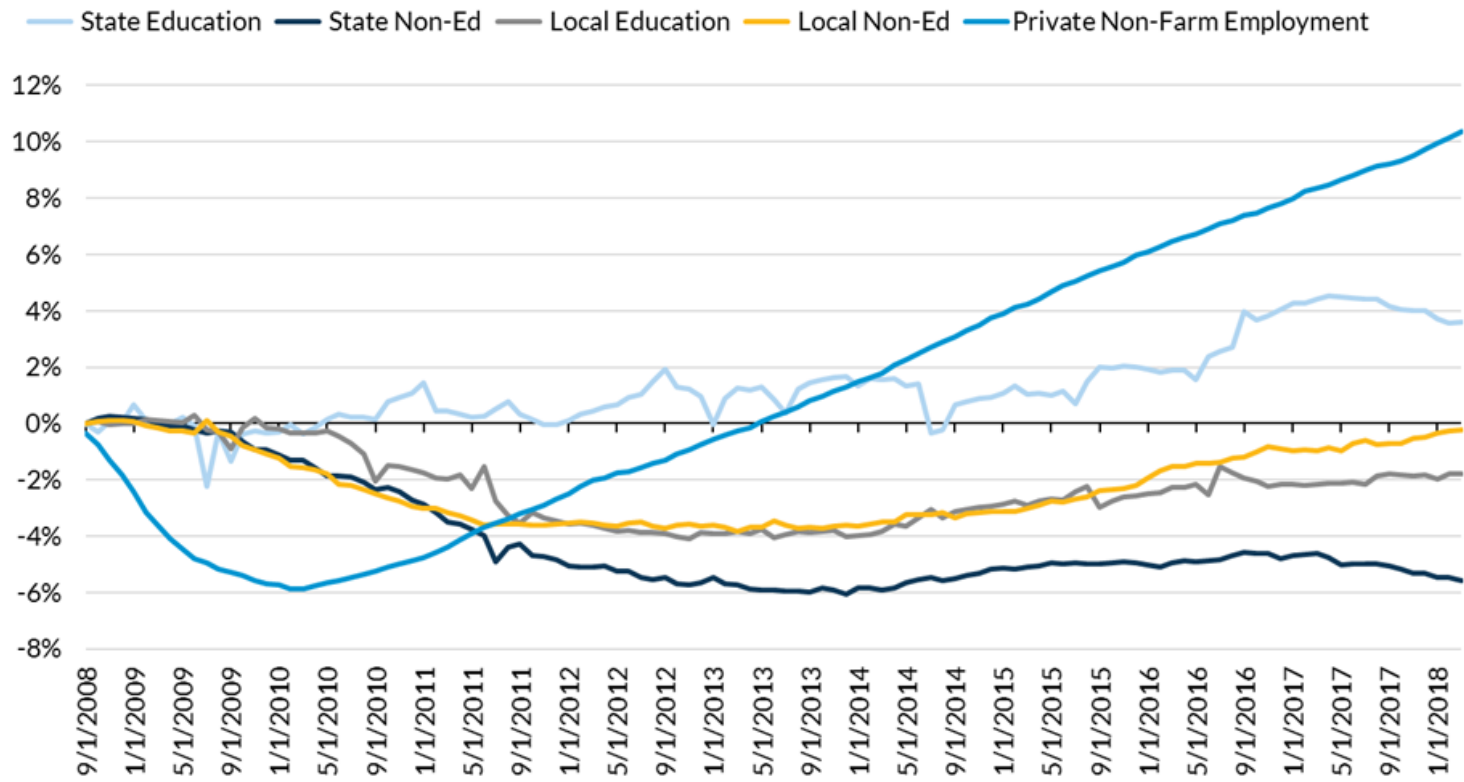


Source: NIPA Table 3.21, converted to real 2016 \$.

Resulting in job losses unlike prior downturns

Figure 2: State and Local Government Employment

Cumulative monthly job loss (%) by sector (Indexed to August 2008)



Source: US Bureau of Labor Statistics, Current Employment Statistics.

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What if ... an Early Warning System?



AP Photo/Rich Pedroncelli



AP Photo/Ben Margot, File



AP Photo/Reed Saxon, File

Complicated by the sheer number and variety of local governments



*Special districts include water districts, fire districts, mosquito abatement districts, and more.

And good data are hard to find

The US Census Bureau collects the most **timely, comprehensive, accurate** data over time. But...

3.12 Special Topics: Statistical Nature of Data

Although the original sources for finance statistics are accounting records of governments, the data derived from them are purely statistical in nature. Consequently, the Census Bureau statistics on government finance cannot be used as financial statements, or to measure a government's fiscal condition.

Source: US Bureau of the Census Government Finance and Employment Classification Manual (2006)

Many possible benchmarks

| Category | Concept | Source | Method | Indicators |
|-----------------|---|--|--|--|
| Economic | | | | |
| | Index of Center City Hardship | Nathan and Adams (1976) | Urban to suburban ratios, weighted | Unemployment, dependency of population, education, income, crowded housing, poverty |
| | Indices of Social, Economic and Fiscal Need | CBO (1978) | Composite scores from point-in-time indicators and outside indices | <p>Social Need: Nathan and Adams index, plus unemployment and per capita income</p> <p>Economic: 6 indicators</p> <p>Fiscal effort: tax effort, property tax base, and two comprehensive measures developed by HUD</p> |
| | Fiscal Capacity | ACIR (1971) | Representative Revenue System | Revenues collected divided by revenue capacity |
| | | ACIR (1977) | Fiscal Pressure | Tax effort divided by change in tax effort |
| | Need-capacity Gap | Ladd and Yinger (1989), Ratcliffe, Riddle & Yinger (1990), Reschovsky (1993) | Revenue-raising capacity minus standardized expenditure need, expressed as a % of capacity | <p>Standardized expenditure need from costing functions, regressions, and environmental cost factors</p> <p>Revenue capacity is revenue that can be raised by applying a uniform tax burden, as a % of resident income</p> |

Alternatives, cont'd

| Fiscal & Financial | | | |
|-----------------------------|----------------------------|--|---|
| Urban Fiscal Strain | Treasury (1978) | Average change in weighted variables; combined with other indices | Population, per capita income, own-source revenue burden, long-term debt per capita, property value (full market) |
| Fiscal stress warning signs | ACIR (1973) | Based on qualitative evaluation of cities' financial status | One-year operations, continuous operations, working capital, short-term operating loan balance, property tax delinquency, property valuation |
| Fiscal strain | Clarke and Ferguson (1983) | Measure based on fiscal outputs divided by population indicators. Produces twenty separate indicators. | Fiscal outputs include general expenditures, own revenues, common functions, and debt. Population factors include median family income, population change, and city wealth index |
| Financial Condition Ratios | Aronson & King (1978) | Focus on debt-service combined a rising ratio of debt service to income | Seven ratios, focused on debt, debt service and income |
| | Brown (1993) | 10-Point Scale | Total revenues/population, own-source General Fund (GF) Revenues /GF revenue, GF sources from other funds/Total GF sources, OpEx/Total expenditures Total revenue/total expenditures, Unreserved GF Balance/GF revenues GF cash and investments/GF liabilities, GF liabilities/GF |

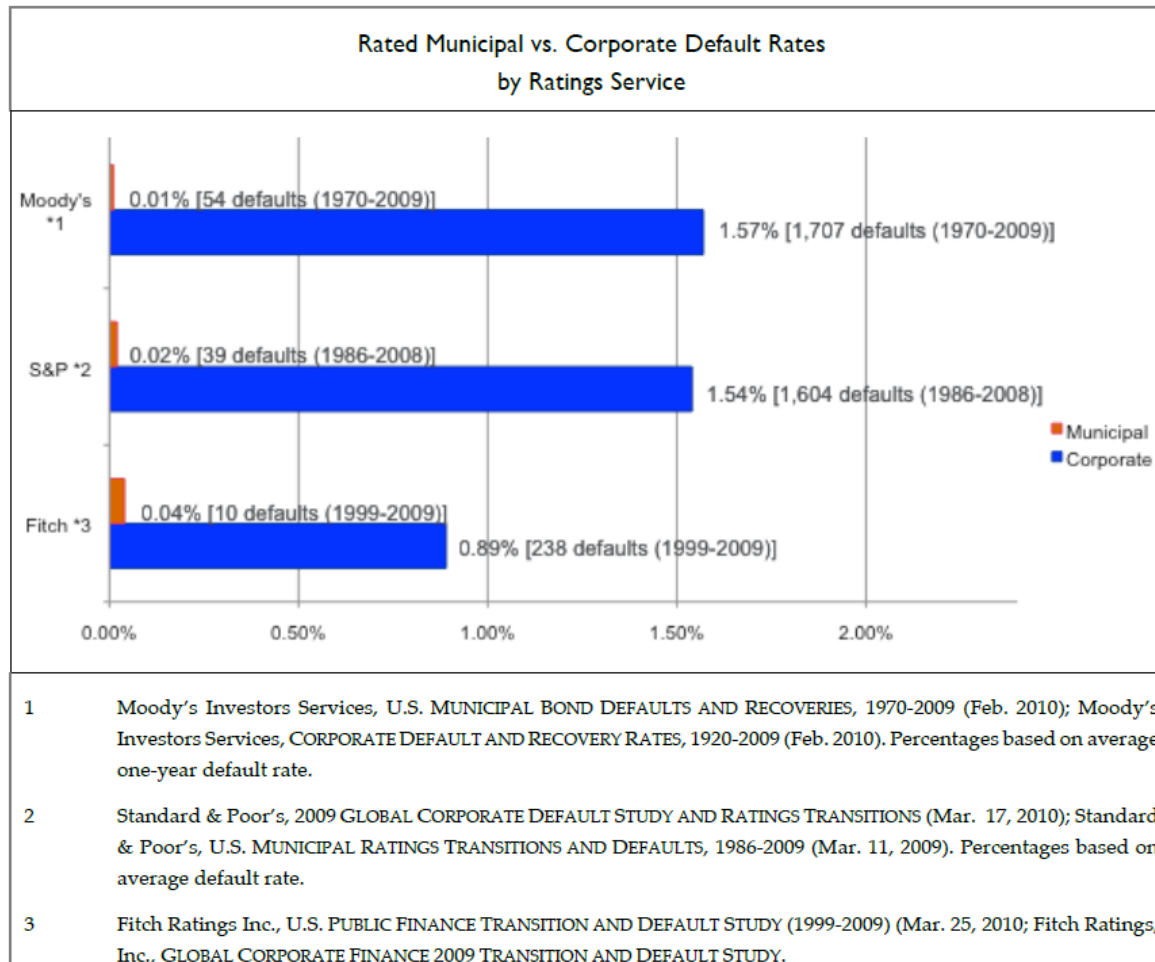
Yet more alternatives

| Comprehensive | | | |
|---------------------------------------|--|---|--|
| Fiscal Trend Monitoring System (FTMS) | International City/County Managers (ICAMA, 1980) | 36 individual indicators across 7 categories, measure them each individually over time. | 7 categories: Revenue, expenditure, operating position, debt, unfunded liability, capital plant, and community needs and resources |
| | Groves and Valente (1994) | | |
| | Nolleberger (2003) | | |
| | Groves, Godsey, and Shulman (1981) | ICMA FTMS | Ask city representatives in 50 cities to use and give feedback on ICMA FTMS. |
| | Hendrick (2004) | Three-dimensional fiscal health measurement. | Revenue wealth and spending need indicators obtained through regression analysis, similar to Ladd and Yinger. |
| | | Spending needs and revenue wealth, balance with the environment, and fiscal slack | Fiscal balance is revenue/wealth and spending/need Fiscal slack is % unreserved fund balance, % capital expenditures, % enterprise income, and % debt service |

Financial indicators

| Financial Condition Ratio | Formula |
|----------------------------------|--|
| <i>Liquidity</i> | |
| Current ratio | Current assets/current liabilities |
| Working capital | Current assets – current liabilities |
| Quick ratio | (Cash + marketable securities + accounts receivable)/current liabilities |
| Net position ratio | Total net position/expenses |
| Current liabilities | Current liabilities/total revenues |
| <i>Solvency</i> | |
| Debt-to-asset ratio | Total liabilities/total assets |
| Operating position | Total revenues/total expenditures |
| Profit margin ratio | Surplus (or deficit)/revenue |
| Return-on-assets ratio | Surplus (or deficit)/total assets |
| Continuing services ratio | Unrestricted net assets/total expenses |
| Fund balance ratio | Unrestricted general fund balance/general fund expenditures |
| Operating deficit ratio | General fund surplus or deficit/net operating expenditures |
| Operating expenses | Operating expenditures/total expenditures |
| <i>Sustainability</i> | |
| Net worth ratio | Restricted and unrestricted net assets/total expenses |
| Sustainability ratios | Total revenues, tax revenues, or expenditures/population |
| Debt service ratios | Debt service expenditure/total revenues or expenditures |
| Long-term debt per capita | Long-term debt outstanding/population |
| Pension underfunding | Unfunded pension liability/population |
| <i>Diversification</i> | |
| Common size ratio | Line item amount/total amount (e.g., cash to total assets) |
| <i>Capacity</i> | |
| Debt-to-assessment ratio | Debt/assessment |
| Effective tax rate | Taxes (or own-source revenues)/taxable assessment |
| <i>Risk</i> | |
| Tax leverage factor | Total operating expenditures/property tax revenue |
| Risk exposure factor | (Investment revenue + intergovernmental revenue + transfers in)/property tax revenue |
| Transfer dependency | Transfers/total revenues |
| Charge-to-expense ratio | Charges for services/total expenses |

A problem with prediction: few defaults and bankruptcies



Source: Spiotto (2016)

A new data portal

GovRank recently collected nearly 100,000 government financial reports and manually extracted “top line” figures

| | Government Type | | | |
|----------------------------|-----------------|---------------|------------|---------------|
| | City | County | State | Total |
| 2009 | 7,856 | 2,551 | 50 | 10,457 |
| 2010 | 8,460 | 2,606 | 50 | 11,116 |
| 2011 | 9,171 | 2,632 | 50 | 11,853 |
| 2012 | 9,321 | 2,698 | 50 | 12,069 |
| 2013 | 9,066 | 2,613 | 50 | 11,729 |
| 2014 | 5,786 | 1,914 | 50 | 7,750 |
| Total 2009-2013 | 49,660 | 15,014 | 300 | 64,974 |
| Available 2009-2013 | 6,957 | 2,308 | 50 | 9,315 |

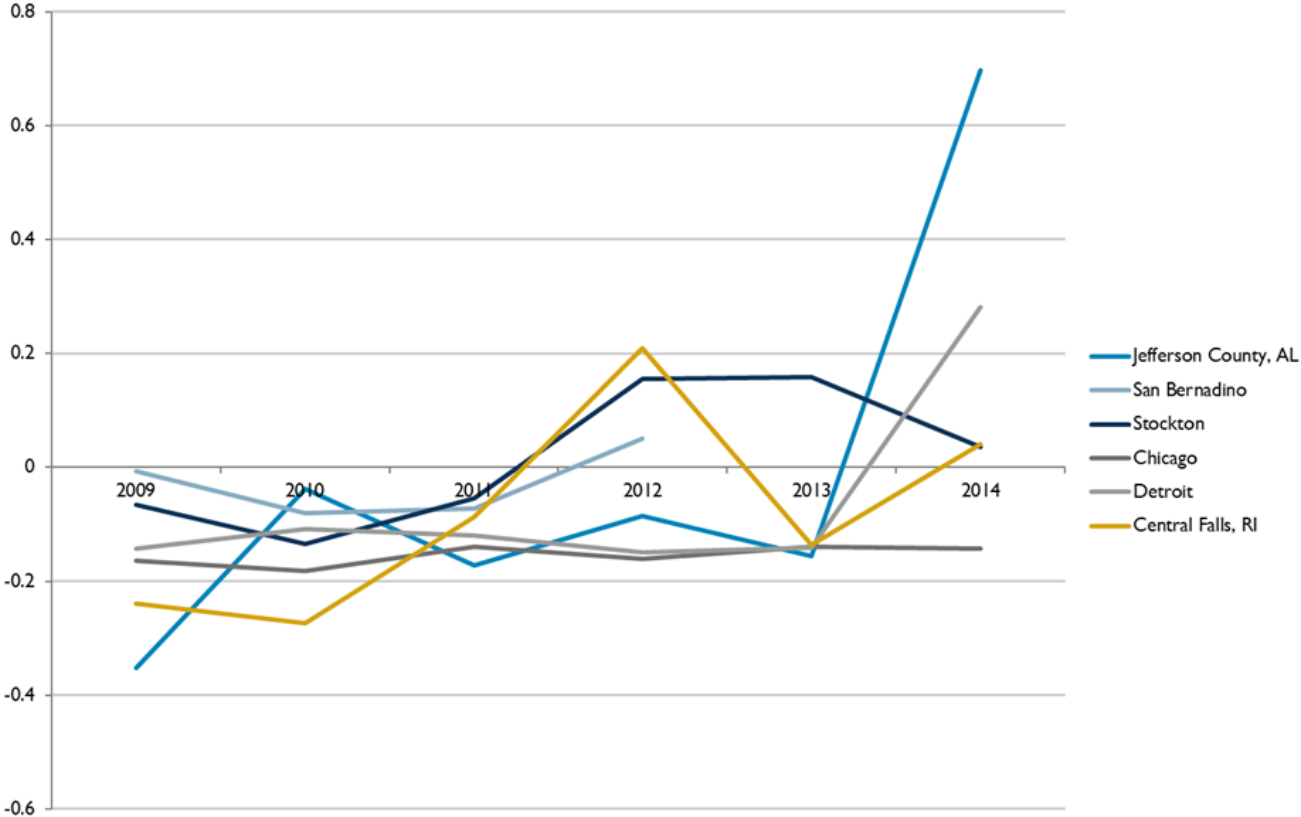
But few observations for larger cities consistently

Governments with Population $\geq 25,000$ Residents

| | City | County |
|--|--------------|--------------|
| 2009 | 1,407 | 1,438 |
| 2010 | 1,423 | 1,458 |
| 2011 | 1,436 | 1,459 |
| 2012 | 1,441 | 1,482 |
| 2013 | 1,436 | 1,459 |
| 2014 | 1,346 | 1,239 |
| Total number of observations 2009-2013 | 8,489 | 8,535 |
| Observations with data in all years 2009-2013 | 1,384 | 1,373 |

And not much variation over time

Figure 4: Profit Margin Ratios for Selected Cities



Source: Govrank.org, United States Common Sense

“Stickiness” in financial conditions suggests organizational factors may be at play

% of Cities with 2012 CoG pop >=25,000
N=1,217

| Profit margin ratio 2009 vs 2014: | | | |
|-----------------------------------|-------------|--------------------|---------|
| | | Profit margin 2014 | |
| | | Bottom 25 % | Top 25% |
| Profit margin 2009 | Bottom 25 % | 11.3% | 3.1% |
| | Top 25% | 3.7% | 11.3% |

| Debt-to-asset ratio 2009 vs 2014: | | | |
|-----------------------------------|-------------|--------------------|---------|
| | | Debt-to-asset 2014 | |
| | | Bottom 25 % | Top 25% |
| Debt-to-asset 2009 | Bottom 25 % | 18.1% | 0.4% |
| | Top 25% | 0.4% | 18.9% |

| Continuing services ratio 2009 vs 2014: | | | |
|---|-------------|--------------------------|---------|
| | | Continuing services 2014 | |
| | | Bottom 25 % | Top 25% |
| Continuing services 2009 | Bottom 25 % | 17.3% | 0.9% |
| | Top 25% | 0.4% | 17.2% |

| Net worth ratio 2009 vs 2014: | | | |
|-------------------------------|-------------|----------------|---------|
| | | Net worth 2014 | |
| | | Bottom 25 % | Top 25% |
| Net worth 2009 | Bottom 25 % | 16.9% | 0.4% |
| | Top 25% | 0.9% | 17.7% |

*Observations include cities with financial health indicators (profit margin ratio, debt-to-assets ratio, continuing services ratio, and net worth) for 2009 and 2014.

Or little variation in economic conditions

Recovery Index 1980 vs 2010:

Cities with populations of at least 100,000
in 1970, 1980, 1990, 2000, or 2010

N=269

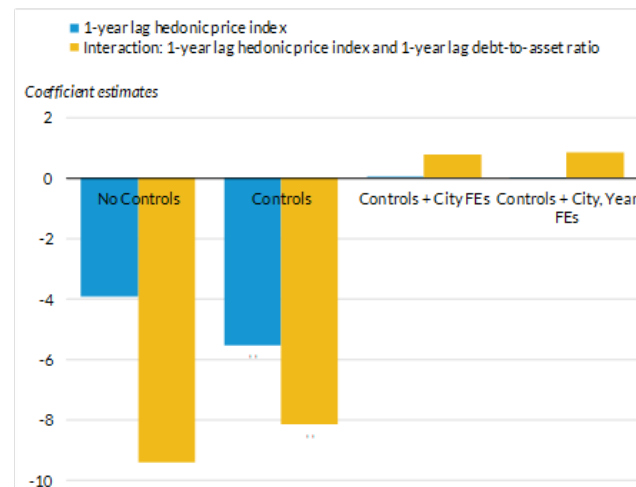
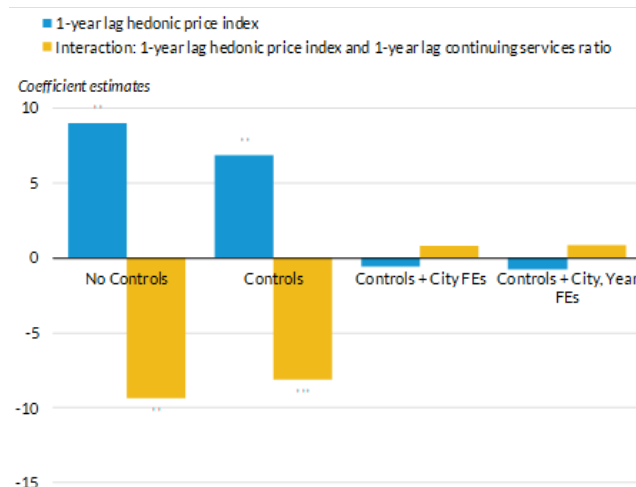
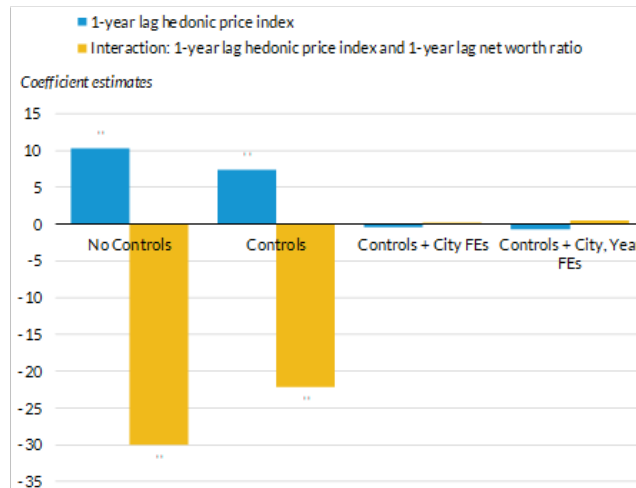
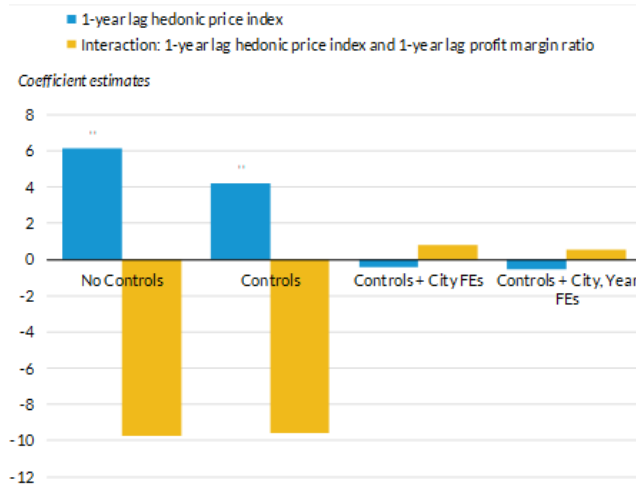
| Quartile | | Recovery Index 1980 | | | |
|--------------------------------|----------|---------------------|------|------|-------|
| | | 1 | 2 | 3 | 4 |
| Recovery Index 2010 | 1 | 14.5% | 7.1% | 2.2% | 1.5% |
| | 2 | 7.4% | 8.2% | 7.8% | 1.5% |
| | 3 | 1.9% | 8.2% | 8.6% | 6.3% |
| | 4 | 1.5% | 1.5% | 6.3% | 15.6% |

*The distress index in each year is an index that equally weights the z-scores for the percentage change in the number of employed people from 10 years prior (negated), the vacancy rate, the unemployment rate, and median family income (negated). Five cities with distress index values in 2010 but missing values in 1980 are excluded.

Source: Poethig et al (2018)

What we do: look at financial condition and housing crisis

Figure 5: Regressions for Own-Source General Revenues per Capita



Conclusions

- Predictive municipal fiscal health measures are elusive
- Simple tests may be best (~ walk across the room test)
- Are states prepared to act? What would that look like?

| What is it? | Who sets up? | Why? | What are powers? |
|-----------------------------|--|-------------------------|---|
| Receiver, manager, overseer | Typically state with local input | Stigma | Restructuring debt & labor contracts |
| State agency head | Local representation varies (e.g., Miami vs. DC) | Downgrades | Increasing taxes & fees |
| Financial control board | | Contagion | Offering state-backed loans, grants, bond guarantees or reinsurance |
| | | Public welfare | Providing technical assistance |
| | | Econ stability & growth | Dissolving a local government |

Source: Adapted from Pew Charitable Trusts, 2013.

- Per Bob Inman: Intergovernmental system, heal thyself



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Thank you

