

Revenue Cyclicity and State Policy Options

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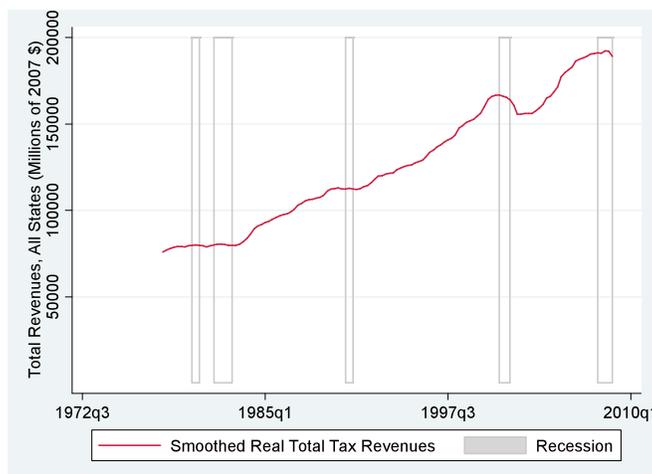
What do We Find?

- State government revenue has grown far more sensitive to economic conditions during the past decade
- This change is concentrated in the state income tax
- Much of the change can be attributed to changes in underlying income trends

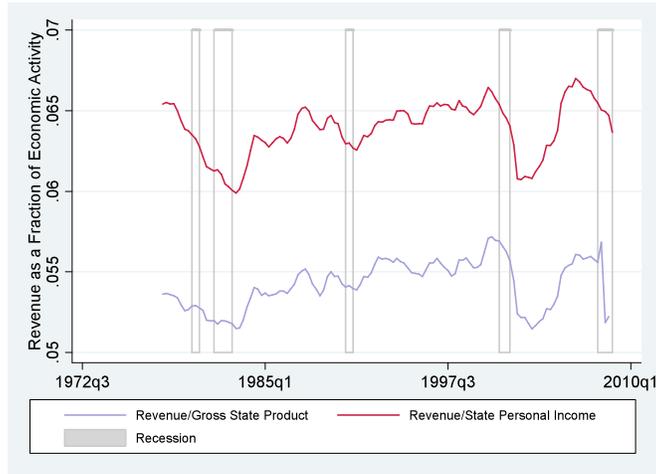
What Does Tax Revenue Performance Look Like Over the Business Cycle – Has this Changed?

- Motivation
 - 2001 Recession as a watershed event – a mild business cycle contraction led to a major crisis in state government finances.
 - Why? What changed?
 - What does this imply for the more severe recession that we are experiencing.
 - Is this a trend break or will we revert to previous pattern?
- Data
 - Quarterly Summary of State and Local Government Tax Revenue
 - Collected (more or less) continuously since 1962
 - Released in a timely fashion (90 days after the quarter ends)
 - Quarterly frequency a big plus

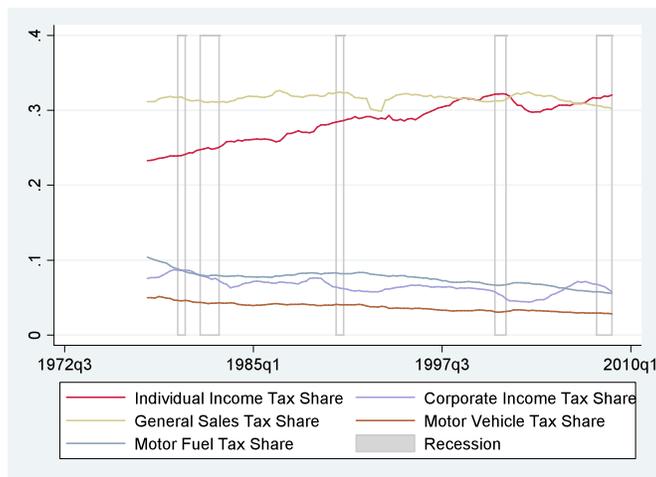
Total Quarterly State Tax Revenues (Smoothed)



Tax Revenue as a Fraction of Economic Activity



Tax Revenue Shares



Revenue Responsiveness to Economic Conditions

- We look at this question in two ways
- Begin by looking at aggregate revenues – revenues for the nation as a whole
 - One time series
- We then turn to analysis using data on each of the 50 states separately
 - Fifty time series

Revenue Responsiveness to Economic Conditions: Aggregate Revenues

- Define the business cycle using the coincident index of released by the Federal Reserve Bank of Philadelphia
 - Nonfarm payroll employment
 - Average hours worked in manufacturing
 - Unemployment rate
 - Wage and salary disbursements
 - Trend for each state's index is set to the trend of its GDP.
- National Coincident Index
- Separate index for each of the fifty states
- Trend break test only works for individual income tax

Revenue Responsiveness to Economic Conditions: Aggregate Revenues

- Pre-2000
 - 1 pp Change in Coincident Indicator (i.e. jumps from 3% to 4%)
 - 0.603 pp growth in total state and local government revenues
 - 0.869 pp growth in total state government revenues
 - 0.207 pp growth in total local government revenues
 - 0.111 pp growth in state and local property tax revenues
 - 1.085 pp growth in state and local sales tax revenues
 - 0.635 pp growth in state and local individual income tax revenues
 - 2.433 pp growth in state and local corporate income tax revenues

Revenue Responsiveness to Economic Conditions: Aggregate Revenues

- The Pre-2000 landscape
 - Revenues are procyclical on the state level although not so much so on the local level.
 - Property tax revenues pretty flat
 - This makes sense
 - Corporate income taxes have the strongest cyclical responsiveness (by a long shot)
 - Sales tax is slightly more responsive than the income tax to business cycle conditions (although using statistical tests, we cannot reject that they are the same)

Revenue Responsiveness to Economic Conditions: Aggregate Revenues

- 2000 and after
 - 1 pp Change in Coincident Indicator (i.e. jumps from 3% to 4%)
 - 0.757 (0.603) pp growth in total state and local government revenues
 - 1.245 (0.869) pp growth in total state government revenues
 - 0.132 (0.207) pp growth in total local government revenues
 - -0.253 (0.110) pp growth in state and local property tax revenues
 - 0.445 (1.085) pp growth in state and local sales tax revenues
 - 2.462 (0.635) pp growth in state and local individual income tax revenues
 - 2.232 (2.433) pp growth in state and local corporate income tax revenues

Revenue Responsiveness to Economic Conditions: Aggregate Revenues

- 2000 and After Landscape
 - Overall state government revenues have grown more cyclically sensitive
 - Due to massive increase in the sensitivity of the individual income tax
 - Local governments look modestly countercyclical
 - (Can't reject independent of the business cycle)
 - This can largely be attributed to the continuing housing boom during the 2001 recession

Some thoughts

- If we want to understand the increasing sensitivity of the state and local sector to the business cycle
 - We want to look at states
 - We want to look at the personal income tax
- Not so much a long term switch from a stable source (sales) to a volatile source (income)
- Instead a change within the income tax where revenues have become more sensitive to economic conditions

What about the Federal Government?

- Pre-2000
 - 1 pp Change in Coincident Indicator (i.e. jumps from 3% to 4%)
 - 1.178 pp increase in personal income tax receipts
- 2000 and after
 - 1 pp Change in Coincident Indicator (i.e. jumps from 3% to 4%)
 - 3.272 pp increase in personal income tax receipts

Revenue Responsiveness to Economic Conditions: State Level Data

- Why do we want to look at state level data?
 - More variation to exploit
 - Differences in business cycle timing and intensity
 - We can look at different groups of states

Revenue Responsiveness to Economic Conditions: State Level Data

- Similar picture to the aggregate data
 - Increase in sensitivity lead by large change in the income tax
 - Prior to 2000, the sales and income taxes were not very different.
 - Difference because the aggregate data gives more weight to bigger states (larger impact on aggregates) while with state level data, each state is treated equally

Explanations

Who we're taxing
When we're taxing
How we're taxing
What we're taxing

Who We're Taxing

- Increasing income dispersion combined with tax progressivity may have made us more reliable on the more volatile top end of the income distribution.
- Test this by dividing states into groups
- More Progressive versus less progressive states
- States with high and low income inequality (Gini)
 - States with lowest marginal tax rates $\leq 6\%$ in 2008
 - States with highest marginal tax rates $> 6\%$ in 2008
 - No significant effect, both groups experience increased volatility

When were taxing

- Look at income tax revenue growth during the four quarters of the calendar year
 - Jan-Mar 0.533 to 2.269
 - Apr-Jun 0.672 to 3.595
 - Jul-Sep 0.395 to 0.991
 - Oct-Dec 0.708 to 0.986
 - Biggest jump in April-June Quarter, followed by Jan-March Quarter, small increase in July-Sept Quarter, no increase in Oct-Dec quarter.
 - April surprises

How We're Taxing

- Has there been a change in the way policy responds to economic conditions?
- Did we used to increase income tax rates when times were bad to stabilize revenues?
- I think of this as the Florio Effect (after James Florio the Gov. of NJ 1990-1994)

Can We Learn Something from the Federal Experience?

- Federal tax sensitivity from 1.178 to 3.272
- We use the Congressional Budget Office's Estimates of the effects of the Bush tax cuts (EGTRA 2001 and JGTRA 2003) on personal income tax revenues.
 - Good estimates, 6 years out
- Adjusted revenues imply Federal tax sensitivity from 1.181 to 2.809
 - Not a perfect counterfactual

What We're Taxing

- What we're taxing
 - Capital Gains became a more important share of Adjusted Gross Income
 - Timing is right
- Derive three measures of state income by year based on data from the IRS Statistics of Income
 - Total Adjusted Gross Income by State
 - Wage and Salary Income by State (already incorporated into the coincident indicators?)
 - Capital gains, interest and dividend income by State

Controlling for Income

- Without income controls (per capita)
 - Pre-2000 0.494 pp Change
 - 2000 and after 1.601 pp
 - Increase of 1.107
- Controlling for investment income, allowing the effects of income on revenues to differ (could be due to changes in policy)
 - Pre 2000—0.481 pp
 - Post 2000—1.187 pp
- Controlling for all Other income
 - Pre 2000—0.532 pp
 - Post 2000—1.572 pp

Controlling for Income

- About half of the increase in the sensitivity of income tax revenue to the business cycle can be explained by the dynamics of income, particularly investment income.
- We also find that states have grown more sensitive to income dynamics this explains about 2/3 of the remaining gap in sensitivity.
 - May be due to policy, changes in income among specific groups etc...

Groups of States

- Smallest
 - MS MD NH IN OK ND HI IA KY MN DE MT WV ID
- Middle
 - MO NC OR IL VT ME SC NM PA AR MI GA AL MA
- Biggest
 - NY CO KS NE LA OH UT VA CA RI WI TN AZ CT NJ

Policy Options: A Menu

- Work to smooth revenues more aggressively
 - Raise tax rates during bad times (historic strategy)
 - The Federal Government gives and the states take away?
 - Sell off assets when times are bad (and perhaps buy assets when times are good?)
 - Buy high and sell low?
 - Need buyers to get financing when things are bad (Midway airport)
 - Change revenue structure towards something more stable either within income tax or to different taxes
 - Decreasing reliance on corporate income tax may partly be due to volatility
 - Corporate income tax is substantially more volatile than individual (about 2.5x)
- Work to smooth expenditures more aggressively (taking revenue cyclicity as given)
 - Rainy day funds. These may need to be larger than is politically feasible. Huge swings. (Appeals to neither side of political spectrum)
 - Is there a more creative way to do this? Capital gains / Business income driven fund?

Policy Options a Menu

- Run Deficits
 - Maybe the states should be more like the federal government rather than visa versa
- Accept that expenditures will need to be procyclical
 - Runs counter to the automatic stabilizing roll of government
 - Make hay while the sun shines
 - Buying things when they are most expensive. Helping people when they least need it.
- Ask the Federal Government for help when times are bad
 - 2001 recession and now.
 - Take money / push expenses on to localities
 - More of an option in 2001 than now