

Appendix

Following Sobel and Holcombe (1996)ⁱ and Holcombe and Sobel (1997)ⁱⁱ, the responsiveness of revenues to changes in the tax base is measured by estimating a regression of the form:

$$\% \Delta R_t = \alpha + \beta \% \Delta Y_t + \varepsilon_t$$

The coefficient β can be interpreted as the “short-run elasticity” of tax revenues. In the above equation $\% \Delta R_t$ is the percentage change in tax revenue between time periods $t - 1$ and t and $\% \Delta Y_t$ is the percentage change in a measure of economic activity during the same time period. The interpretation of the coefficient is straightforward. If $\beta = 0.5$ then for a 1 percentage point change in state economic activity, revenue can be expected to change by 0.5%. The only drawback of this specification is that it implies that the coefficient captures both changes in economic activity and discretionary changes in state tax policy. For this reason, it is preferable to use some measure of the underlying tax base (e.g., personal taxable income, corporate taxable income, retail sales) rather than tax revenue in the estimation process.

In order to estimate by how much income tax revenues are expected to fall in Illinois, we use adjusted gross income from the Internal Revenue Service for the period of 2002-2017. As a robustness check, we repeat the exercise using net income from Illinois Department of Revenue data for the 2007-2017 periods. The results remain relatively similar regardless of the dataset or the time period chosen for the estimation. The “short-run elasticity” ranges from 2.5 and 2.7.

ⁱ Sobel, R. S., & Holcombe, R. G. “[The impact of state rainy day funds in easing state fiscal crises during the 1990–1991 recession.](#)” *Public Budgeting & Finance*, (1996), 16(3), 28-48.

ⁱⁱ Holcombe, R. G., & Sobel, R. S. *Growth and variability in state tax revenue: an anatomy of state fiscal crises.* (1997) (No. 189). Greenwood Publishing Group.