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states had revenue volatility higher than 8.5 percent between 2006 and 2015.

Revenue Volatility

How States Manage Uncertainty

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November 2017

Fluctuations in state revenue, especially unexpected ones, can compromise state services and contribute to overall fiscal instability. Although the business cycle is partially responsible for swings in revenue collections, state tax and budget policies also contribute to volatility.[1]

What Causes Revenue Volatility?

Rising volatility in state tax collections has made it difficult for some states to accurately forecast revenues.

Research from 2014 found that revenues from the corporate and personal income tax, which are tightly linked to stock market performance, have become more volatile since 2001.

In general, the corporate income tax tends to be the most volatile source of tax revenue; the personal income tax, which includes the highly unpredictable capital gains tax, is a close second. Research on revenue volatility points to the following underlying causes:

- **Taxes are becoming more sensitive** to business cycle fluctuations.
- **Dipping energy prices** have also created problematic fluctuations for resource-dependent states such as Oklahoma and Montana. In general, taxes based on natural resource extraction are highly volatile.
- **States are more dependent** on volatile revenue sources. From 1977 to 2014, the personal income tax grew from 25 to 36 percent of total state tax revenues while revenues from the more-stable sales tax declined from 52 to 47 percent of that total.

In its fiscal stress test for states, Moody's Investors Service defines fiscal stress as a combination of high revenue volatility, few available reserve funds, and limited fiscal flexibility due to fiscal institutions (e.g., supermajority voting requirements) or high fixed costs (e.g., pensions).

Reducing Revenue Volatility through Policy

What steps can states take to reduce revenue volatility? One 2011 study concluded that it will be difficult to reduce revenue forecasting errors simply by shifting the revenue mix to less-volatile revenue sources. The following actions can help:

- **Invest volatile revenue sources,** such as capital gains revenues, into budget stabilization funds (BSFs). Policymakers can tie BSF deposit rules to the level of state revenue volatility.

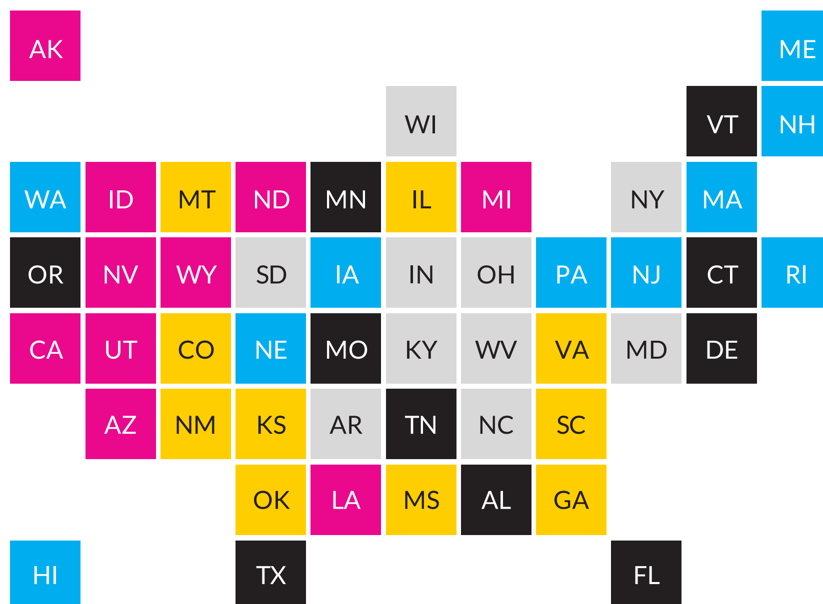
  Institutions such as BSFs help states both save for a rainy day and avoid inefficient budget decisions, such as cutting school teachers every

time revenue dips only to rehire them back again shortly thereafter, allowing infrastructure to crumble, or increasing taxes sharply during times of economic stress. BSFs have been found to create a net increase in state savings, but BSFs with strict deposit and withdrawal rules mitigate business cycle volatility more effectively than funds with weak rules.

- **States can increase tax rates** during recessions to counter the steep revenue drop-off from the business cycle fluctuations. However, these increases may be politically tough to pass if residents are suffering.
- **States can pair a robust BSF** with a strict balanced budget requirement, which according to a 1996 study can help produce higher surpluses to invest into the savings account.
- **The federal government can adjust grant formulas** to provide help during recessions.

State General Revenue Volatility

Standard deviation of annual percent change in revenues, 2006–15



MEASURING STATE REVENUE VOLATILITY

States with the most volatile revenues include Alaska (which is highly dependent on severance taxes from oil, gas, and minerals) and California (which derives significant revenue from its personal income tax, which is very volatile because California residents earn significant income from capital gains and stock options). States with low revenue volatility include South Dakota and Kentucky, both of which depend more heavily on sales tax streams.

[1] For more information, see Megan Randall and Kim Rueben, *Sustainable Budgeting in the States: Evidence on State Budget Institutions and Practice* (Washington, DC: Urban Institute, 2017).

Source: Authors' analysis with data from National Association of State Budget Officers, *Fall Fiscal Survey of the States*, 2005–2016.

Note: Volatility is defined as the standard deviation of the annual percent change in revenues between 2006 and 2015 (from Donald J. Boyd and Lucy Dadayan, *State Tax Revenue Forecasting Accuracy: Technical Report* [Albany, NY: Nelson A. Rockefeller Institute of Government and Pew Center on the States]). Data exclude the District of Columbia and include only general fund revenues.

The nonprofit Urban Institute is dedicated to elevating the debate on social and economic policy. This fact sheet was funded by the Laura and John Arnold Foundation. The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Copyright © November 2017. Urban Institute. Permission is granted for reproduction of this file, with attribution to the Urban Institute. We would like to express our gratitude to Yifan Zhang for her input in the development of this fact sheet.