Financing Government: Revenue Variability and the Role of Rainy-Day Funds

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The term "financing government" can take on a variety of interpretations regarding the services that government *should* provide and how it *should* raise revenue. Further, given that raising revenue is a basic function of government, people's perception of taxes plays a major role in shaping their political values. What is taxed, how much, and who is affected has been a central part of public policy debates since colonial times.

The 2001 recession, which followed the longest period of continuous growth in U.S. history, refocused attention on these important issues. In North Carolina in 2002, Governor Mike Easley created the Commission to Modernize State Finances. He charged it with ensuring that "the state's revenue system [is] more stable, fair and sufficient over the long term."[1] The commission recommended specific reforms in many sources of tax revenue, including the sales, use, individual income, and corporate income taxes.

The prospect of financing government requires dealing with both the long- and the short-term changes in economic activity. Understanding how different revenue sources react to the economy and what potential trade-offs may exist is beneficial.

The goal of this article is not to address how the government should raise revenue nor to advocate for or against any particular tax reforms. Rather, it is to deepen readers' understanding of the issues involved in the long-term sufficiency (or sustainability) of different revenue sources for state governments, the short-run stability (or variability) of revenue, and associated strategies that may be used to lessen the sting of recessions. Specifically the article discusses the composition of

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Table 1. **State Government Revenue Sources, Fiscal Year 2002–2003**

Source	All 50 States		North Carolina	
	Amount (in millions)	% of Total	Amount (in millions)	% of Total
Tax revenue	$548,991	42	$15,849	53
Federal aid	361,617	28	10,279	34
Current charges	106,357	8	2,560	9
Utility and liquor store revenue	17,036	1	0	< 1
Insurance trust revenue	166,274	13	– 128	< 1
Miscellaneous revenue	95,384	7	1,484	5
Total revenue	**$1,295,659**	**100**	**$30,043**	**100**

Source: U.S. Census Bureau, State Government Finance, available at www.census.gov/govs/www/state.html. Current charges include a wide array of charges for such activities as the sale of milk and school lunches; student or parent payments for transportation and tuition; revenue from athletic contests; fees of state schools for the blind, deaf, and handicapped; fees and tuition from state vocational-technical schools; fees related to public hospitals; reimbursements for street construction and repairs; fees from toll roads, bridges, ferries, and tunnels; state parks and recreation fees; and fees from sanitation and solid waste management.

Note: These data may not coincide with a given state's definitions of the categories listed in the table. The categories reflect the definitions of the Census Bureau and are designed to be compatible over time and across states.

Table 2. **Shares of State Government Revenue Contributed by Taxes, Fiscal Year 2002–2003**

Tax	All 50 States		North Carolina	
	Share of Total Revenue (%)	Share of Tax Revenue (%)	Share of Total Revenue (%)	Share of Tax Revenue (%)
Property	0.81	1.91	0.00	0.00
Individual income	14.04	33.14	23.60	44.73
Corporation net income	2.19	5.17	2.99	5.67
Estate and gift	0.52	1.22	0.44	0.83
Other	0.91	2.16	0.13	0.25
Sales and gross receipts	21.13	49.88	22.47	42.60
General sales	14.25	33.62	13.33	25.27
Selective sales	6.89	16.25	9.14	17.33
Alcoholic beverages	0.34	0.80	0.66	1.26
Amusements	0.35	0.82	0.04	0.07
Insurance premiums	0.97	2.28	1.39	2.63
Motor fuels	2.49	5.88	3.85	7.30
Public utilities	0.81	1.92	1.07	2.03
Tobacco products	0.89	2.09	0.14	0.27
Other	1.02	2.40	1.99	3.78
Licenses	2.77	6.53	3.12	5.91
Alcoholic beverages	0.03	0.06	0.04	0.08
Amusements	0.02	0.04	0.00	0.00
Corporation	0.47	1.12	1.04	1.97
Hunting and fishing	0.09	0.21	0.05	0.09
Motor vehicle	1.24	2.92	1.39	2.63
Motor vehicle operators	0.13	0.31	0.24	0.45
Public utility	0.03	0.07	0.00	0.00
Occupation and business	0.72	1.70	0.36	0.68
Other	0.04	0.10	0.01	0.02

Source: U.S. Census Bureau, State Government Tax Collections, available at www.census.gov/govs/www/statetax.html.

North Carolina's revenue, examines the long- and short-run elasticities of various revenue sources, and addresses the role of rainy-day funds and savings in mitigating recessions.

Economic Activity and Trends in Tax Revenue

Economic activity in the United States and North Carolina tends to grow over time, but the growth is not steady and predictable. Short-term disruptions in economic activity (which are called "business cycles") occasionally push the amount of economic activity temporarily above its average rate of growth (creating a boom) or temporarily below its average rate of growth (causing a recession). These effects are important from the standpoint of financing government because sources of revenue are connected to both the average rate of growth and the business-cycle swings in the state's economy.

To complicate matters, two revenue sources may react quite differently to changes in the state's economy over the long or short term. Also, a single revenue source, such as the corporate income tax, may react differently to short- and long-term changes in the state's economy.

Thus the prospect of financing government requires dealing with both the long- and the short-term changes in economic activity. Understanding how different revenue sources react to the economy and what potential trade-offs may exist is beneficial.

Current Sources of Revenue for State Governments

All states derive the majority of their revenue from two sources: federal government aid and "own-source" taxes—that is, their own tax bases (see Table 1). Thus the degree to which tax reform will enhance a state's ability to mitigate long- and short-term financial problems will depend, in part, on the importance of different sources of revenue in the budget process. For example, a small change in a source that constitutes 30 percent of total revenue could have a much more noticeable effect on the budget than a major reform in a source that generates only 4 percent of total revenue.

North Carolina relies more on federal aid and tax revenue than the typical state does, with 34 and 53 percent, respectively, coming from these sources, for a total of 87 percent. For the typical state, federal aid and tax revenue account for 28 and 42 percent, respectively, for a total of 70 percent.

Further, the typical state, at least in 2003, relied less on own-source tax revenue than North Carolina did (42 percent compared with 53 percent) and more on insurance trust revenue (13 percent compared with less than 1 percent). The latter is revenue generated from public employee retirement contributions, workers' compensation contributions, and investments related to these contributions. North Carolina's insurance trust revenue, as defined by the U.S. Census Bureau, accounted for an average of 14 percent of revenue from 1999 through 2002. (The decline to less than 1 percent in 2003 was not due to any major differences between North Carolina and other states. It simply reflected one-time investment losses in that particular year.)

Because own-source tax revenue represents more than half of North Carolina's revenue, it is valuable to examine the specific sources of tax revenue and their relative importance (see Table 2). The most important sources of tax revenue are general sales taxes and individual income taxes. For the typical state, general sales and individual income taxes account for 66.76 percent of tax revenue and 28.29 percent of total revenue. North Carolina is slightly more dependent on these two revenue sources, with 70.00 percent of tax revenue and 36.93 percent of total revenue coming from them in 2003.

The broader category of sales and gross receipts (which includes general sales tax revenue and revenue from selective sales taxes on particular items, such as motor fuels, tobacco products, and alcoholic beverages) contributes 49.88 percent of the typical state's tax revenue and 42.60 percent of North Carolina's tax revenue. The most important selective sales tax is motor fuels, which is 5.88 percent of total tax revenue for the typical state and 7.30 percent of tax revenue for North Carolina.

In the remaining major tax categories, North Carolina mimics the behavior of the average state quite closely. The two largest categories, licenses and corporate income taxes, account for 6.53 and 5.17 percent, respectively, of tax revenue for all states and 5.91 and 5.67 percent of North Carolina's tax revenue.

There are some notable differences between North Carolina and the typical state. For instance, individual income and sales and receipts taxes account for 46.07 percent of total revenue and 87.33 percent of tax revenue in North Carolina, compared with 35.17 percent and 83.02 percent for the typical state. This is an important distinction, for North Carolina depends more on tax revenue than the average state (see Table 1). The state's revenue stream is much less diversified than it would appear to be from analyzing tax revenue. North Carolina has opted to rely much more heavily on the individual income tax than most states do, but because more than half of total revenue for the state comes from own-source taxes, individual income and sales and gross receipt taxes each account for more than 20 percent of the state's total revenue. Thus any tax reforms that target individual income and sales and receipt taxes could have a substantial impact on the state's budget.

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Reforms to other tax revenue sources, such as corporate income, estates and gifts, and licenses, may be desirable or undesirable for a number of reasons. However, such changes will likely have a negligible impact on the state's ability to generate revenue and provide services.

Revenue Variability

"Revenue variability" is a general term that relates to how different sources of revenue react to changes in economic activity. There is a subtle but important aspect of revenue variability that can best be illustrated with a simple example. The revenue generated from a general sales tax depends on (1) the sales tax rate and (2) the tax base. Policy makers frequently change sales tax rates (especially during downturns), so examining how sales tax *revenue* changes over time is not particularly insightful. A rate increase will "bump" revenue beyond where it would have been in the absence of the rate change. However, examining how a *tax base* changes with the state's economic activity reveals how revenue from a given tax would fluctuate if the tax rate remained constant. The tax base is nothing more than the sales of goods and services that are taxed. In North Carolina the sale of nonprescription drugs is subject to the state sales tax, so these items are part of the tax base. In contrast, more than ten states exempt nonprescription drugs from their sales tax bases.

Thus the analysis of revenue variability is really an analysis of tax base variability. Tax bases, which are specific elements of state-level economic activity, such as retail sales or earned income, change as the level of economic activity in a state changes. Most tax bases are "procyclical," which means that they tend to grow as the state's economy grows and contract as the state's economy contracts.

The variability of specific revenue sources can be assessed by estimating their "elasticity," which is a measure of the responsiveness of a given tax base to overall economic activity, expressed in percentage terms. For example, if the elasticity of a given tax base equals 2, for every 1 percentage point increase (or decrease) in a state's economic activity, this tax base will expand (or contract) by 2 percent.

In general, tax base elasticities may be positive, negative, or zero. A positive elasticity means that the tax base is procyclical. A negative elasticity means that the tax base is "countercyclical" (it contracts when overall economic activity expands and expands when economic activity contracts). A zero elasticity implies that the tax base remains con-

Table 3. **Long- and Short-Run Elasticities of Major State Tax Bases**

Tax Base	Long-Run Elasticity	Short-Run Elasticity
Individual income tax	1.215	1.164
Corporate income tax	0.670	3.369
Retail sales	0.660	1.039
Non-food retail sales	0.701	1.377
Motor fuels usage	0.996	0.729

Source: Condensed from Randall G. Holcombe & Russell S. Sobel, Growth and Variability in State Tax Revenue: An Anatomy of State Fiscal Crises tbl. 5.3 (Westport, Conn.: Greenwood Press, 1997). Reprinted by permission.

Note: Figures are estimated using data for all 50 states.

Table 4. **Long- and Short-Run Elasticities of Major North Carolina Revenue Sources and Tax Bases**

Revenue Source or Tax Base	Long-Run Elasticity	Short-Run Elasticity
Total general fund revenue	0.945	0.665
Total tax revenue	1.063	1.223
Individual income	1.023	1.313
Retail sales (excluding food)	0.788	1.436
Retail sales (including food)	0.713	1.407

Source: From Randall G. Holcombe & Russell S. Sobel, Growth and Variability in State Tax Revenue: An Anatomy of State Fiscal Crises tbls. 6.2, 6.4, 7.1, 7.3, 7.4 (Westport, Conn.: Greenwood Press, 1997).

Note: General fund revenue = intergovernmental revenue (primarily federal aid) + tax revenue + current charges + miscellaneous revenue. Tax revenue = general sales taxes + selective sales taxes + license taxes + individual income tax + corporate income tax + all other taxes.

stant as the overall level of economic activity changes.

A useful feature of assessing revenue options via elasticities is that it is possible to estimate both a long- and a short-run elasticity for a given tax base. The long-run elasticity estimates how the tax base changes relative to a change in overall economic activity over a long period. This indicator provides insights into the long-term sustainability of a given tax. On the other hand, the short-run elasticity measures how the same tax base changes relative to a change in economic activity over a short period, such as one year. This indicator yields information about the role of different taxes in year-to-year revenue swings that are associated with business cycles, and recessions in particular.

A Closer Look at North Carolina

A recent study estimated the long- and short-run elasticities for each major state tax base (individual income, corporate income, retail sales, nonfood retail sales, and motor fuel usage) using combined data for the fifty states and state-level data (see Table 3 for all states, Table 4 for North Carolina). The estimates reflect how the specific tax bases (as opposed to revenue collections) vary with the U.S. economy.

All the elasticities are positive, so these tax bases are procyclical from the perspective of changes in economic activity. Among the long-run elasticities, those of the corporate income tax base and the retail sales tax base (both with and without food) are noticeably less than 1. This observation is important for two reasons. First, the positive elasticity implies that the tax base for these revenue sources will grow over time as the U.S. economy grows, so revenue from these taxes will increase over time even when tax rates are unchanged. However, because the elasticities are less than 1, the increased revenue (resulting from growth of the tax base) will not keep pace with growth in the economy. If the growth in spending matches the long-run growth in the economy (or exceeds it), then regularly increasing the tax rates associated with these revenue sources will be necessary to maintain a balanced budget because revenue from them tends to expand at a slower rate than the state's economy. In contrast, the motor fuel usage and individual income tax bases grow as fast as, or slightly faster than, the economy. A long-run elasticity of 1 or greater means that revenue from these sources will increase at roughly the same pace as the economy (or slightly faster) without additional changes in tax rates.

Table 5. **Short-Run Elasticities for Different Income Brackets**

Income Range	Short-Run Elasticity
$0–4,999	0.14
$5,000–$9,999	0.22
$10,000–$14,999	0.32
$15,000–$24,999	0.43
$25,000–$34,999	0.67
$35,000–$49,999	1.08
$50,000–$74,999	1.49
$75,000–$99,999	1.84
$100,000 and up	4.21

Source: Adapted from Richard F. Dye & Therese J. McGuire, *Block Grants and the Sensitivity of State Revenues to Recession*, in Proceedings of the Ninetieth Annual Conference on Taxation, 1997 tbl. 2 (Washington, D.C.: Nat'l Tax Ass'n, 1998).

The short-run elasticities yield a slightly different perspective. With the exception of the elasticity of motor fuel usage, all the elasticities are at least as volatile as, if not more volatile than, the economy as a whole. The short-run elasticity is arguably most relevant for recessions, when economic activity contracts. If economic activity contracts by 2 percent, revenue from sales taxes and individual income taxes will decline by 2 percent (or slightly more) without a change in the tax rates. If food is not part of the sales tax base, then the short-run elasticity of sales tax revenue increases by roughly 20 percent, which means that sales tax revenue will decline even more during a downturn if the tax rate is held constant.

The most volatile revenue source in the short run is the corporate income tax base, which is more than 3 times as volatile as the economy. Thus, a 2 percent increase (or decrease) in economic activity will lead to a 6 percent increase (or

decrease) in corporate income tax revenue. From the perspective of maintaining pre-recession government services during downturns, revenue sources with short-run elasticities closer to 0 will generate revenues closer to prerecession levels.

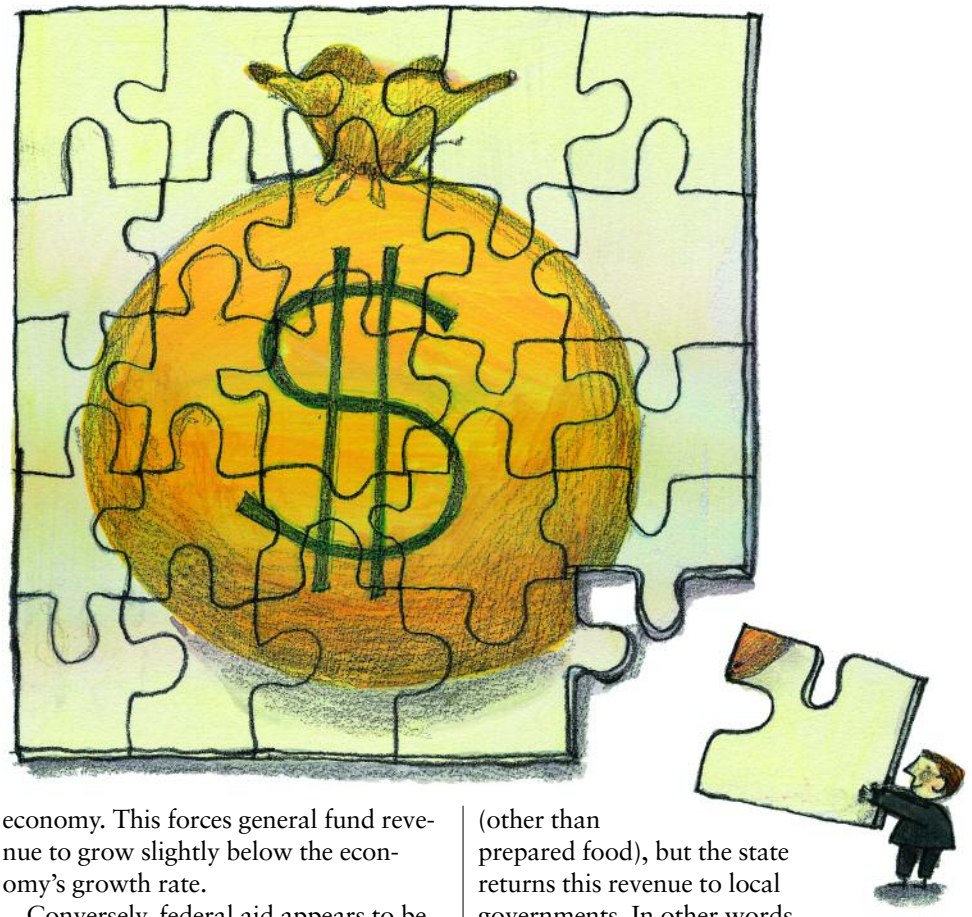
Several general conclusions may be drawn from the estimates just examined. First, shifting reliance toward the individual income tax and away from other revenue sources will enhance a state's ability to generate revenue over the long run. However, it will do little to reduce year-to-year revenue variability.

Second, including food as part of the retail sales tax base will not improve a state's long-term revenue outlook. However, the short-run variability of revenue will be considerably lower if food is part of the base.

Finally, less reliance on corporate income taxes and more reliance on motor fuel taxes may help promote both long- and short-run stability.

Estimates of North Carolina's elasticities present a similar picture (see Table 4). Nearly 90 percent of North Carolina's tax revenue is derived from the retail sales and individual income tax bases, so these are the most relevant ones. Estimates of the elasticity of the state's total tax revenue and total general fund revenue also are presented to provide information regarding the overall variability of the state's revenue portfolio. "General fund revenue," which is roughly 90 percent of a state's total revenue, is defined as total revenue minus utility revenue, insurance trust revenue, and revenue from the sales and associated products of liquor stores owned and operated by state and local governments. Many experts consider it to be a better measure than total revenue of the revenue that is available for the provision of government services.

The long-run elasticities of North Carolina's general fund revenue and tax revenue, which are 0.945 and 1.063 respectively, show that overall tax revenue for the state tends to grow at the same pace as the state's economy but general fund revenue grows at a slightly slower rate. Because the bulk of the difference between general fund revenue and tax revenue is federal aid, it is safe to infer that growth in federal aid tends to be slightly less robust than the state's economy. This forces general fund revenue to grow slightly below the economy's growth rate.



Conversely, federal aid appears to be enhancing the year-to-year revenue fluctuations in the state. Because the short-run elasticity of general fund revenue is 0.665 and the short-run elasticity of tax revenue is 1.223 (and tax revenue is roughly half of all state revenue), non-tax components of revenue (of which federal aid is by far the largest) must be more stable in the short term to reduce the state's overall revenue variability.

Unlike the case for all states, North Carolina's sales tax revenue would not benefit from including food in the sales tax base. Although the typical state could expect a noticeable reduction in the short-term variability of revenue by including food in the sales tax base, the short-run elasticities of North Carolina's tax bases are virtually identical when food is included or excluded. Because the inclusion of food in the base does not substantially improve long-term sustainability (and may in fact reduce it), the state would gain little long- or short-term revenue stability over the business cycle if it added food to its sales tax base. Individual consumers in North Carolina pay a 2 percent sales tax on the purchase of most food (other than prepared food), but the state returns this revenue to local governments. In other words, food is part of the sales tax base for local governments in North Carolina but not part of the base for the state.[2]

The long- and short-run elasticities of North Carolina's individual income tax base are fairly close to the elasticities of this base for the fifty states combined. The income tax base expands at least at the same rate as the state's economy in the long run, but the base is more volatile than the economy over the short term. Much like the data from all states, this information implies that increasing reliance on individual income taxes would improve North Carolina's revenue sustainability over the long term but could reduce the state's ability to maintain government services during recessions.

Although the individual income tax base for both North Carolina and the typical state appears to be a sustainable revenue source over the long term, a study reported in 1998 found that the short-run elasticity of the individual income tax base affects individuals in different tax brackets differently (see Table 5).[3] Clearly, income variability rises with income level. Because states with more progressive income-tax

systems tax income in higher brackets more heavily, the more progressive the individual-income-tax system is, the more variable the revenue will be in the short run. Given that more progressive income-tax systems will tend to generate more revenue over the long term (because a progressive tax system is applied to the income tax base, which expands at the same rate as the economy), there appears to be a substantial trade-off between long- and short-term stability.

For instance, if North Carolina switched from a progressive income tax to a proportional (or flat) income tax, over the long term it would be reasonable to expect revenue collections to increase at roughly the same rate as the economy. In contrast, a progressive income tax would generate revenue over the long term at a faster rate than the economy. North Carolina's individual income tax is progressive because as a taxpayer's income increases, he or she pays a higher tax rate on that income. In 2004, for example, a single taxpayer in North Carolina paid 6.00 percent on each dollar of taxable income earned from $0 through $12,750; 7.00 percent, from $12,751 through $60,000; 7.75 percent, from $60,001 through $120,000; and 8.25 percent, above $120,000.

A proportional income tax, which is currently used in Illinois, Indiana, Michigan, and Pennsylvania, is different in that every dollar of taxable income is taxed at the same rate. The definitions of taxable income vary somewhat from state to state, but the 2004 proportional tax rates ranged from a low of 3.0 percent in Illinois to a high of 3.9 percent in Michigan.

The 1998 study cited earlier suggests that the average elasticity of 1.15 could potentially be reduced to 0.87 by using a proportional income tax. Once again, such a change may be desirable or undesirable for a variety of policy reasons.

The Role of Savings and Rainy-Day Funds

Although options exist for shifting reliance toward revenue sources that are more sustainable over the long term, the problems associated with short-term revenue variability may be more formidable. The only tax base that has historically grown at the same rate as the state's economy and exhibited less short-run variability is motor fuel usage. Every other source, regardless of its sustainability over the long term, is at least as variable as (if not more variable than) the state's economy in the short term. Moreover, relying on revenues from motor fuel usage to promote short-term stability in the future is suspect because of the growing fuel efficiency of automobiles (hybrid vehicles). Policy makers may wish to consider saving surplus funds in the general fund, or more formally in a rainy-day fund, during periods of growth, as part of an ongoing strategy to mitigate recessions.

Short-term revenue variability depends on the short-run variability of a state's economy, the short-run variability of the national economy, and the composition of the state's revenue portfolio. A study of the changes in aggregate state-level revenue since World War II found that several of these factors have worked in opposite directions on revenue variability over the past thirty years, so it is difficult to draw general conclusions.[4] For example, both the North Carolina and the U.S. economy have become more balanced since World War II and less dependent on sectors of the economy that tend to be more volatile, such as manufacturing. The trend away from a manufacturing-based economy to a knowledge- and service-based economy has been associated with less rapid but considerably more stable growth.

Thus, if state revenue portfolios maintain their current mix of taxes, it is reasonable to expect short-term volatility to diminish because of the increased stability in overall economic activity. Unfortunately, since World War II, the trend in state revenue portfolios has been noticeably away from revenue sources that are more stable in the short run, such as motor fuel usage, and toward revenue sources that are more volatile in the short run, such as individual income and retail sales. One consequence of this trend is that short-term revenue variability has become more sensitive to recessions than in the past.

In response to economic downturns, policy makers often reduce expenditures, increase taxes, or use a combination of the two to satisfy the requirement of a balanced budget. In North Carolina the law prohibits legislators from carrying a budget deficit into the next fiscal year. From a strictly economic perspective, such policies may harm, and at a minimum will not aid in, recovery efforts for the state's economy. Expenditure reductions and tax increases are contractionary policies that, in the short term, may contribute to the duration of a recession. Theoretically, there are several channels through which contractionary policies may extend downturns, but there is little empirical evidence at either the state or the national level about the potential magnitude of such effects.

The use of savings, in the form of a general fund surplus or a rainy-day fund balance, to offset revenue losses during downturns may be an appealing alternative to expenditure reductions and tax increases for several reasons. First, adequate savings can reduce the overall level of fiscal uncertainty that is associated with recessions. Second, modifying existing expenditure programs or tax structures involves considerable effort by policy makers, which may be partially avoided when sufficient reserve funds are available. Third, reducing tax increases or increasing expenditures during downturns is an expansionary policy. Such actions may aid a recovery. At a minimum they will not contribute to a longer recession.

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A state's ability to use savings to smooth out revenue or expenditure fluctuations during downturns depends on the amount of savings that it has built up during expansions. Given that all states routinely maintain surplus monies (or savings) in the general fund, this ability boils down to the sum of the rainy-day fund and the general fund balance.

Several studies have examined how states use rainy-day funds. They found

that the greatest benefit comes from structuring such a fund properly.[5] Simply put, states that require deposits to the rainy-day fund during periods of growth and limit the use of such funds to recessions reap the largest benefits in terms of lower long-term borrowing costs, greater savings, and less volatile expenditures.

North Carolina's rainy-day fund, adopted in 1991, is formally known as the Savings Reserve Account. The law governing it requires that one-fourth of any unreserved balance at the end of the fiscal year be deposited into the fund, and allows monies to be withdrawn only by an act of the General Assembly. The fund is capped at 5 percent of the previous year's general fund expenditures.

In contrast, Michigan's rainy-day fund, known as the Countercyclical Budget and Economic Stabilization Fund, operates under very strict mathematical formulas regarding when monies may be deposited and withdrawn, and how much money may be involved in such transactions.

The differences between a rule-oriented rainy-day fund such as Michigan's and a less-rule-oriented rainy-day fund such as North Carolina's may seem minor. However, numerous studies have found that the fiscal benefits accruing to states with rule-oriented funds are substantial when compared with the benefits accruing to states with less-rule-oriented funds *and* states without such funds. For example, the studies have found that states with rule-oriented funds save more and face significantly lower long-term borrowing costs.[6] Further, during the 1990–91 recession, such states were able to reduce their reliance on expenditure reductions and tax increases by 17 percent.[7] Also, one study examined the cyclical variability of state expenditures since 1969 and found that rule-oriented funds provide considerable support in maintaining expenditures over the business cycle.[8]

Conclusion

Cyclical fluctuations in economic activity create difficult problems for state governments because the demand for public-sector services tends to be countercyclical, whereas revenue growth is procyclical. This article has briefly outlined, from both a long- and a short-term perspective, how different revenue sources react to changes in economic activity.

Although it is challenging to reduce the variability in revenue streams that results from business-cycle swings, research has identified a number of potential strategies to reduce cyclical variability. First, broadening tax bases will tend to have minimal effects on the long-term sustainability of a given revenue source but may result in smaller year-to-year swings.

Next, because more progressive individual-income-tax systems produce more volatile revenue streams in the short run but more rapid revenue growth in the long run, there appears to be a trade-off between long-run growth and short-term variability. A more progressive system will generate revenue growth in excess of the state's economic growth and a revenue stream that is more volatile than the state's economy, while a less progressive (or more proportional) system will generate less growth in the long run but more stable revenue in the short run.

Notes

1. State of North Carolina, Final Report: Governor's Commission to Modernize State Finances (Raleigh: the State, Dec. 2002), available at www.osbm.state.nc.us/files/pdf_files/final_rpt_gov_comm.pdf.
2. As of January 1, 2005, twenty-seven states excluded the sale of food from their general sales tax base, and seven included it as part of the base but taxed it at a lower rate.
3. Richard F. Dye & Therese J. McGuire, *Block Grants and the Sensitivity of State Revenues to Recession,* in Proceedings of the Ninetieth Annual Conference on Taxation, 1997, at 15 (Washington, D.C.: Nat'l Tax Ass'n, 1998).
4. Thomas A. Garrett & Gary A. Wagner, *State Government Finances: World War II to the Current Crisis*, 86 Federal Reserve Bank of St. Louis Review no. 2, at 9 (2004).
5. Russell S. Sobel & Randall G. Holcombe, *The Impact of State Rainy Day Funds in Easing State Fiscal Crises during the 1990–1991 Recession*, 16 Public Budgeting and Finance no. 3, at 28 (1996); Gary A. Wagner & Erick M. Elder, *The Role of Budget Stabilization Funds in Smoothing Government Expenditures over the Business Cycle,* 33 Public Finance Review 439 (2005); Gary A. Wagner, *Are State Budget Stabilization Funds Only the Illusion of Savings? Evidence from Stationary Panel Data,* 43 Quarterly Review of Economics and Finance 213 (2003); Gary A. Wagner, *The Bond Market and Fiscal Institutions: Have Budget Stabilization Funds Reduced State Borrowing Costs?* 57 National Tax Journal 785 (2004).
6. Sobel & Holcombe, *The Impact of State Rainy Day Funds;* Wagner, *The Bond Market and Fiscal Institutions.*
7. Sobel & Holcombe, *The Impact of State Rainy Day Funds.*
8. Wagner & Elder, *The Role of Budget Stabilization Funds.*