



GOVERNOR'S OFFICE OF MANAGEMENT AND BUDGET Fiscal Year 2018 Revenue Volatility Report

EXECUTIVE SUMMARY

Understanding and correctly interpreting long-term tax revenue trends is a valuable and useful tool for properly managing the state's budget during the inevitable ups-and-downs of the economic cycle. Policymakers should contemplate revenue volatility when setting Utah's tax policy.

Volatility of Major Revenue Sources

The State of Utah's two major revenue sources are the individual income tax and the state sales and use tax. The individual income tax (\$3.61 billion in FY 2017), the primary revenue source for the Education Fund (\$3.98 billion), tends to be more volatile than the sales and use tax (\$2.44 billion, including \$585 million in earmarks), the primary revenue source for the General Fund (\$2.34 billion). Of the state's other tax revenue sources, corporate taxes and the severance tax tend to be more volatile, while excise taxes on gasoline, cigarettes and tobacco, multichannel audio and video services, and insurance premiums are more stable.

Rainy Day Funds

Budget reserve accounts (or "rainy day funds") exist to provide flexibility in dealing with a revenue decline. As of FY 2017 year-end transfers, the combined balances of the three main budget reserve accounts (General Fund Budget Reserve, Education Fund Budget Reserve, and Medicaid Growth Reduction and Stabilization) is \$552 million. These amounts correspond to 8.6% of *total* General Fund and Education Fund appropriations for FY 2017 and 8.9% of *ongoing* General Fund and Education Fund appropriations for FY 2017. In addition, funds are set aside for natural disasters through the Disaster Recovery and Wildland Fire Suppression Funds (\$18 million), which also receive year-end surplus transfers like other budget reserve accounts.

Tools for Managing the State Budget

The state has many tools for managing the budget, not just the rainy day funds. These tools include the structure of the revenue system itself, the revenue estimating process, the revenue monitoring process, one-time solutions including not only standard and natural disaster rainy day funds (\$570 million), but also other accounts such as the Permanent State Endowment Fund (\$196 million, note that high vote threshold suggests use only in extreme situations), nonlapsing balances (\$421 million at FY 2017 year-end, some used by Legislature for FY 2018 budget), restricted fund balances, and deferrals, and ongoing "working rainy day funds" through the capital budgeting process, budget stress testing analyses conducted by the Governor's Office of Management and Budget, Legislative Fiscal Analyst Office and Utah State Tax Commission, and budget reprioritization. Balances in Utah's primary budget reserve accounts should be evaluated in the context of the state's entire fiscal toolkit and the major findings of the most recent stress testing analysis.

It is GOMB's position that the current automatic year-end surplus transfer caps of 11% of Education Fund appropriations and 9% of General Fund appropriations are sufficient for the automatic transfer process, especially in light of increasing balances in the Medicaid Growth Reduction and Budget Stabilization Account. Because these automatic transfer caps are percentage-based, the dollar amount of these automatic transfer caps increase over time as appropriations increase, meaning the budget reserve accounts will continue to grow over time as year-end surpluses occur. These recommendations are informed by the findings in this report that the state's aggregate revenue sources have become less volatile over the past three years, as well as the results of the most recent budget stress testing analysis that suggests Utah is fiscally well-positioned to weather a typical recession. Because amassing funds in budget reserves has real opportunity costs, to the extent policymakers desire to increase budget reserve account levels above

these existing statutory percentages, GOMB recommends that these excess deposits be appropriated as part of the annual budget process rather than by automatic year-end surplus transfer or other formula-driven budgeting processes. GOMB also notes that the practice of earmarking revenues reduces year-end deposits of surplus revenue to budget reserve accounts, as those funds bypass the normal year-end transfer.

BACKGROUND

Statutory Requirement

Statute (UCA Section 63J-1-205) requires the Legislative Fiscal Analyst and the Governor's Office and Management and Budget to (a) prepare a revenue volatility report every three years meeting certain conditions, (b) identify the balances in two of the state's rainy day funds, and (c) make recommendations on automatic transfers to the state's budget reserve accounts. Understanding fluctuations in the state's major revenue sources and the causes of revenue variability can benefit policymakers as they make budget and tax decisions.

Since the last revenue volatility report in 2014, the Legislature increased the automatic year-end surplus transfer caps for the Education Fund Budget Reserve Account from 9% to 11% of Education Fund appropriations and for the General Fund Budget Reserve Account from 8% to 9% of General Fund appropriations.

Recommendation

The Governor's Office of Management and Budget recommends that the current automatic year-end surplus transfer caps of 11% of Education Fund appropriations and 9% of General Fund appropriations be held constant. Because these automatic transfer caps are percentage-based, the dollar amount of these automatic transfer caps increase over time as appropriations increase, meaning the budget reserve accounts will continue to grow over time as year-end surpluses occur. These recommendations are informed by the findings in this report that the state's aggregate revenue sources have become less volatile over the past three years, as well as the results of the most recent budget stress testing analysis that suggests Utah is fiscally well-positioned to weather a typical recession.

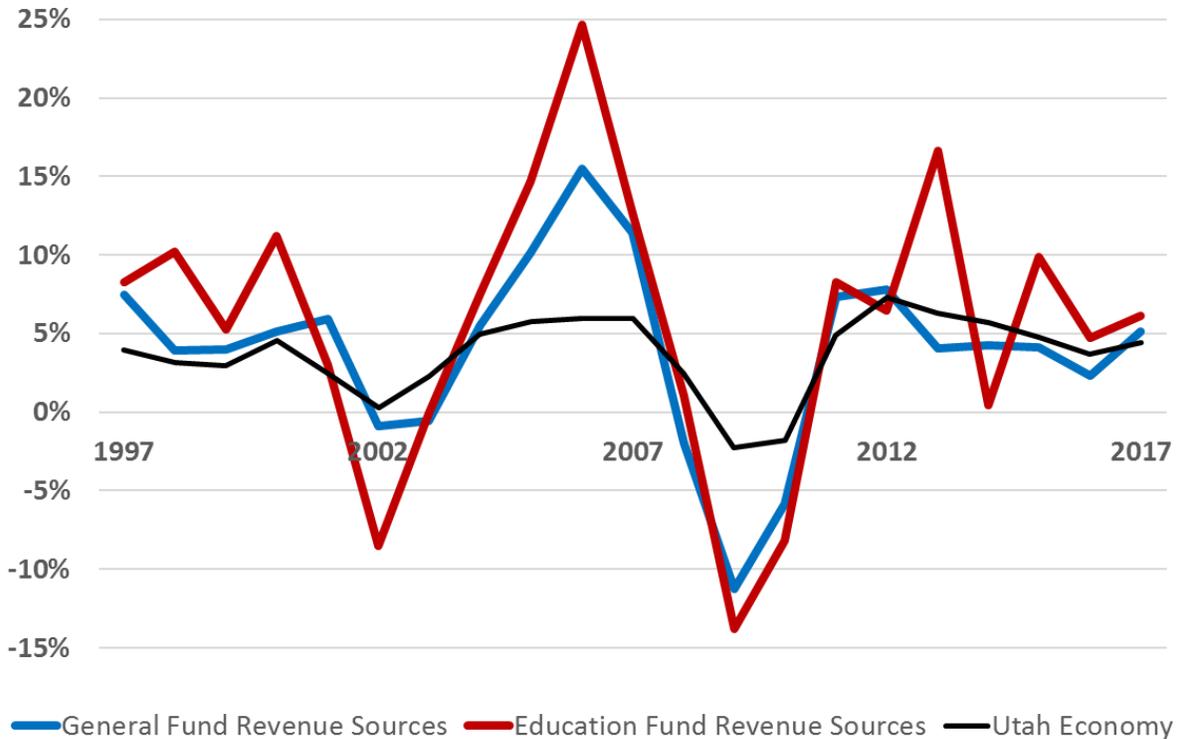
Because there are real opportunity costs of amassing funds in budget reserves, to the extent policymakers desire to increase budget reserve account levels above these existing statutory percentages, GOMB recommends that these excess deposits be appropriated as part of the annual budget process rather than by automatic year-end surplus transfer.

This report (a) highlights the volatility existing in the state's major revenue sources, (b) examines the causes of the volatility, (c) examines the state's budget management tools, and (d) explains the recommendation to maintain automatic year-end surplus transfers at the current percentages of appropriations.

VOLATILITY IN MAJOR REVENUE SOURCES

The individual income tax and state sales and use tax ("sales tax") are the largest state revenue sources. The individual income tax is more volatile than the sales tax. Because of this, the Education Fund, which receives individual income tax revenues, is more volatile than the General Fund, which receives sales tax revenues. Figure 1 below illustrates year-over-year change in General Fund revenue sources, Education Fund revenue sources, and the Utah economy as measured by the Federal Reserve's coincident index for Utah.

FIGURE 1
Year-Over Change in General and Education Fund Revenue Sources



As shown in Figure 1, volatility within Utah’s General Fund and Education Fund revenue sources is significantly correlated with the state’s economic performance and the business cycle. To evaluate the volatility of these funding sources over the most recent three-year period (corresponding to the three-year cycle of this report), Figures 2 and 3 overlay the average year-over growth rates and standard deviation within each series, and Figures 4 and 5 depict the absolute percentage error and three-year mean absolute percentage error (MAPE) associated with a one-lag linear regression model. The rationale behind the selection of a single-year lag model to explain volatility follows a basic logic used to answer the question “How well does the previous period predict or explain the following period?”

FIGURE 2
Central Tendency of General Fund Revenue Sources Year-Over Growth

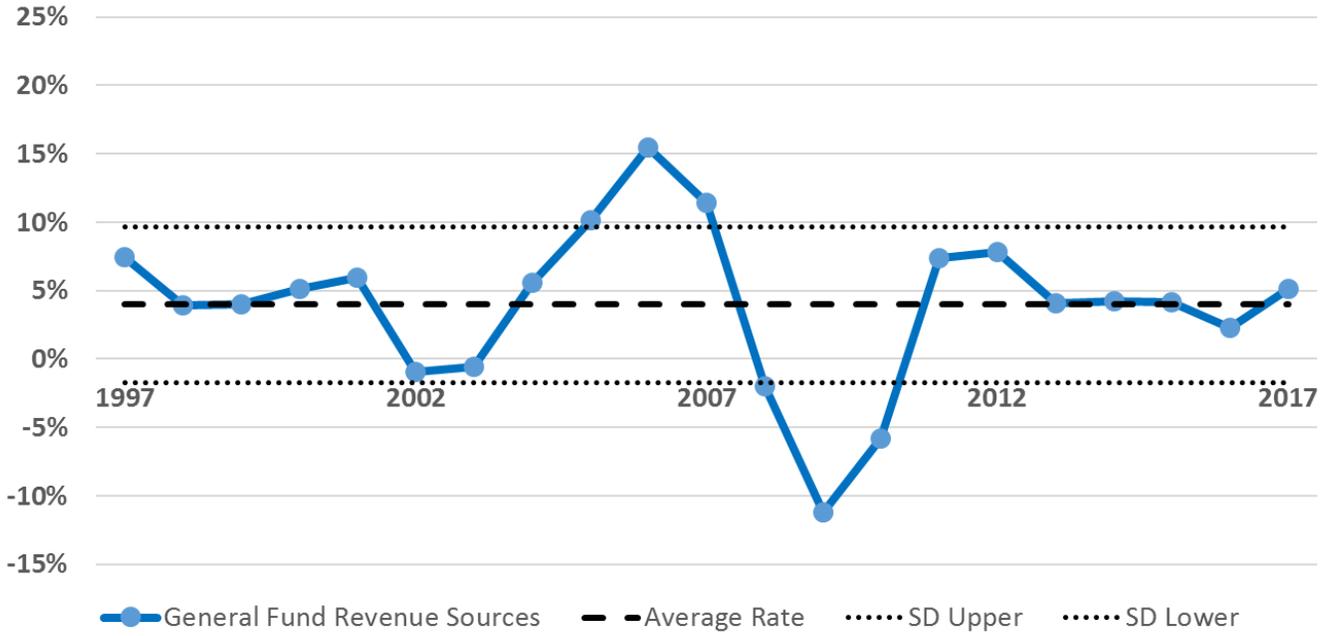


FIGURE 3
Central Tendency of Education Fund Revenue Sources Year-Over Growth

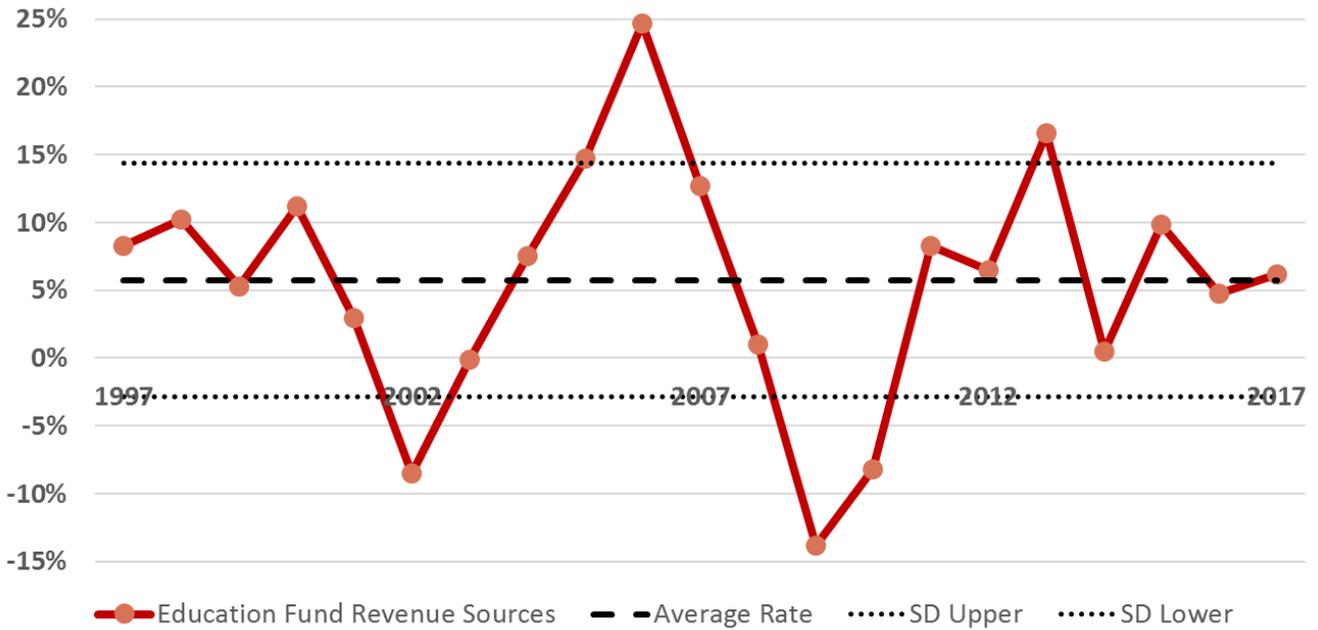


FIGURE 4
General Fund Revenue Sources Model Error and 3-Year Interval Model Error

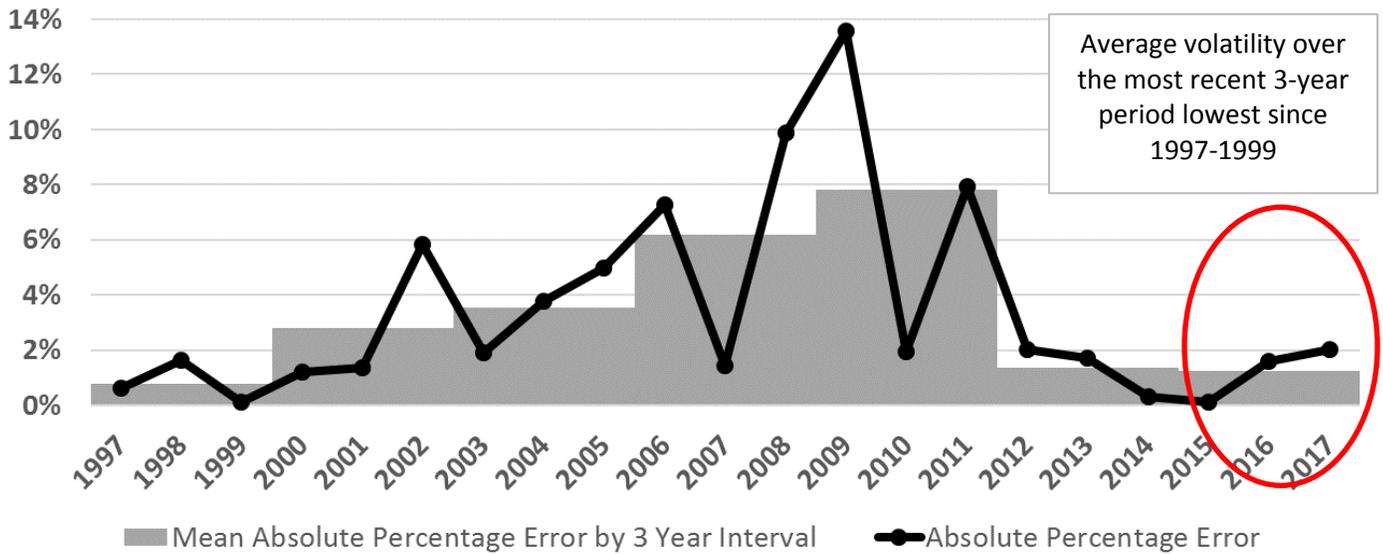
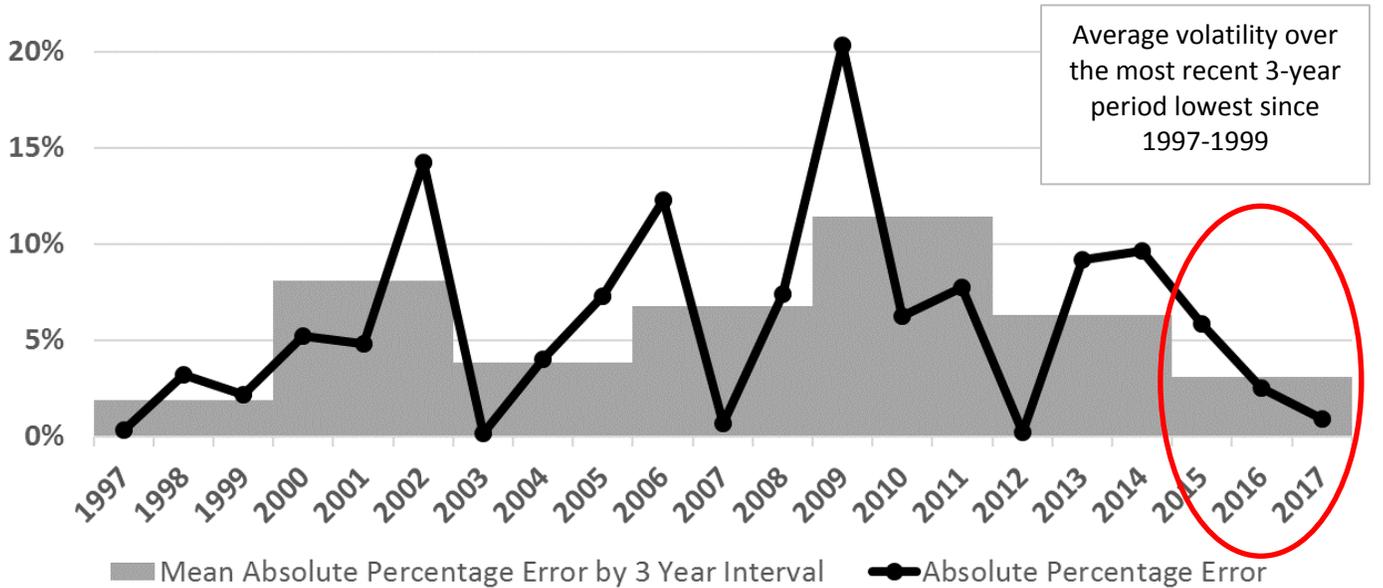


FIGURE 5
Education Fund Revenue Sources Model Error and 3-Year Interval Model Error



As seen in Figures 2 and 3, recent growth in General Fund and Education Fund revenue sources generally approximate long-run averages (i.e. 4.0% average growth in General Fund sources and 5.7% in Education Fund sources), with FY 2015 through FY 2017 growth rates well within a single standard deviation of the respective means. Figures 4 and 5 demonstrate that General and Education Fund revenue sources are

becoming more predictable as modeled using the previous years' experience, with the three-year window of FY 2015 to FY 2017 posting the lowest levels of average volatility since the FY 1997 to FY 1999 period.

While the volatilities of revenue streams supporting the General Fund and Education Fund are decreasing in aggregate, volatility behavior within individual collection sources is more variant. This is to be expected and is not necessarily something that can, or should, be avoided. However, it should be recognized that state policy choices surrounding tax collections (the imposition of new taxes, changing tax rates or adjusting the tax base) or the allocation of current collections (earmarking) can have an effect on revenue stability and availability. These concepts are further examined by General Fund and Education Fund sources below.

General Fund Revenues

Economic sources of volatility in General Fund revenues include factors such as population growth, inflation, credit markets, oil and natural gas production, metal prices, insurance prices, alcohol and tobacco product purchases, changing technologies and other sources of state and national economic instability. The impact of economic factors such as these are most notable in unrestricted sales tax collections in the run-up to, and during, the years that span the Great Recession (Figure 6). Conversely, Figure 7 illustrates the proliferation of earmarking policies on General Fund revenues, which introduces additional volatility associated with policy changes.

FIGURE 6
Central Tendency of Unrestricted Sales Tax Revenue Year-Over Growth

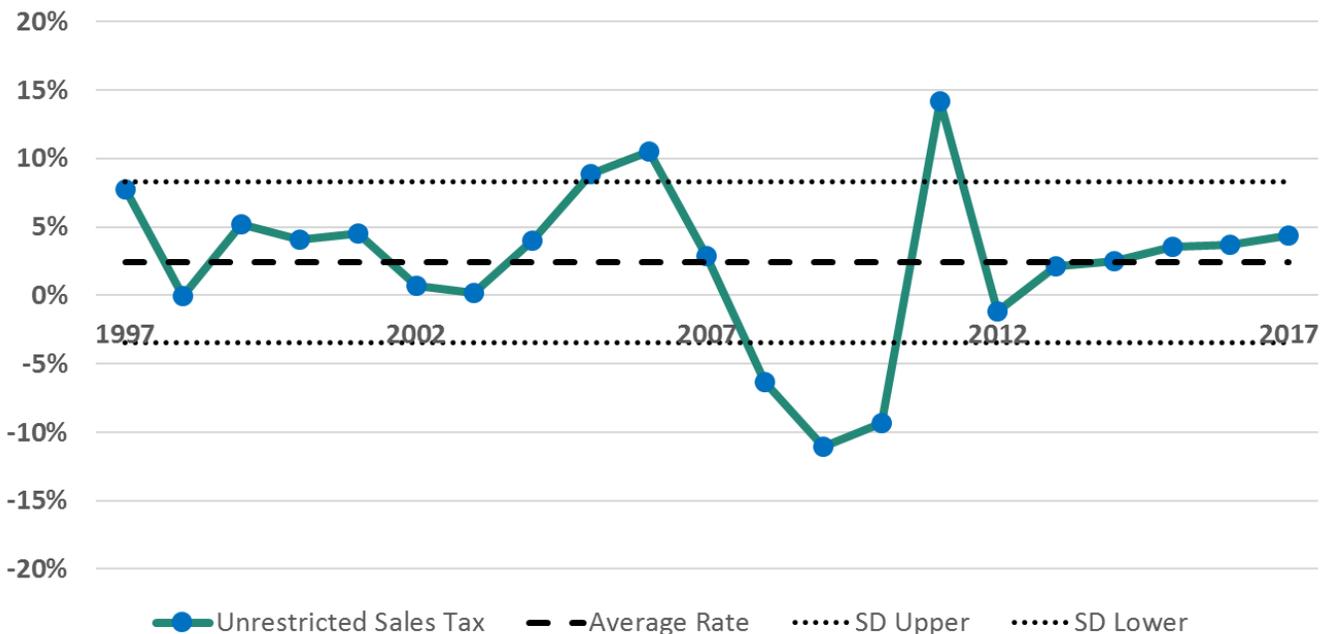
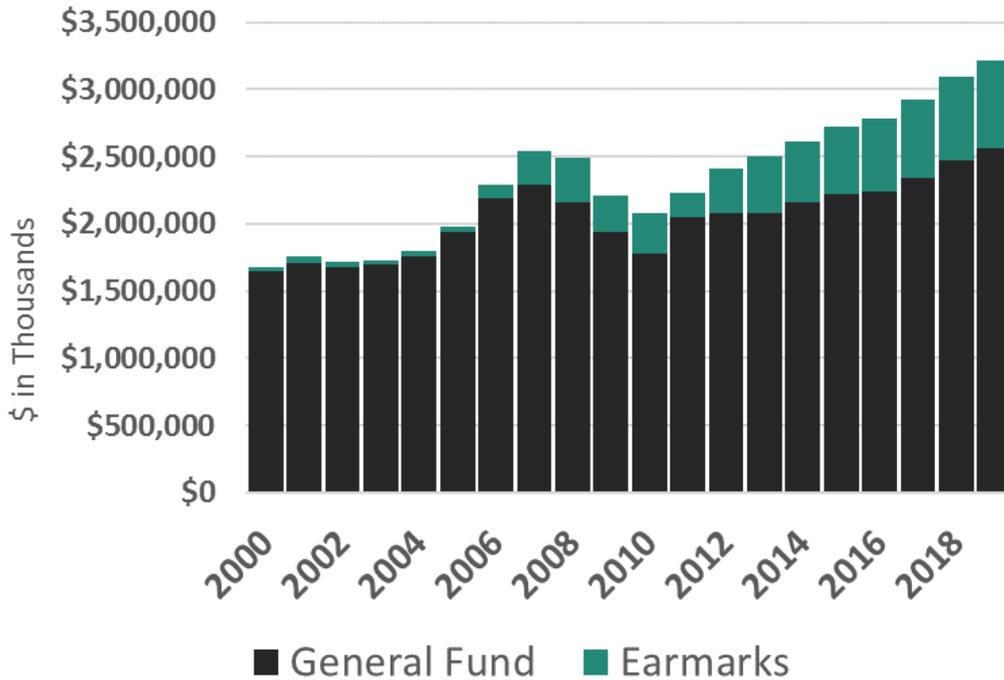


FIGURE 7
Sales Tax Earmarks and General Fund Levels



Figures 8 and 9 show additional examples of economic and policy-induced volatility on tax revenues from Cigarette, Tobacco and Beer, and Severance Taxes. Cigarette, Tobacco and Beer revenues are generally more stable, with the exception of a tax rate increase on cigarettes in 2010. Conversely, severance tax collections are particularly exposed to volatility from price changes in oil, gas and metal markets, along with policy-induced volatility with respect to General Fund deposits due to a constitutional change in 2015.

FIGURE 8
Central Tendency of Cigarette, Tobacco & Beer Tax Revenue Year-Over Growth

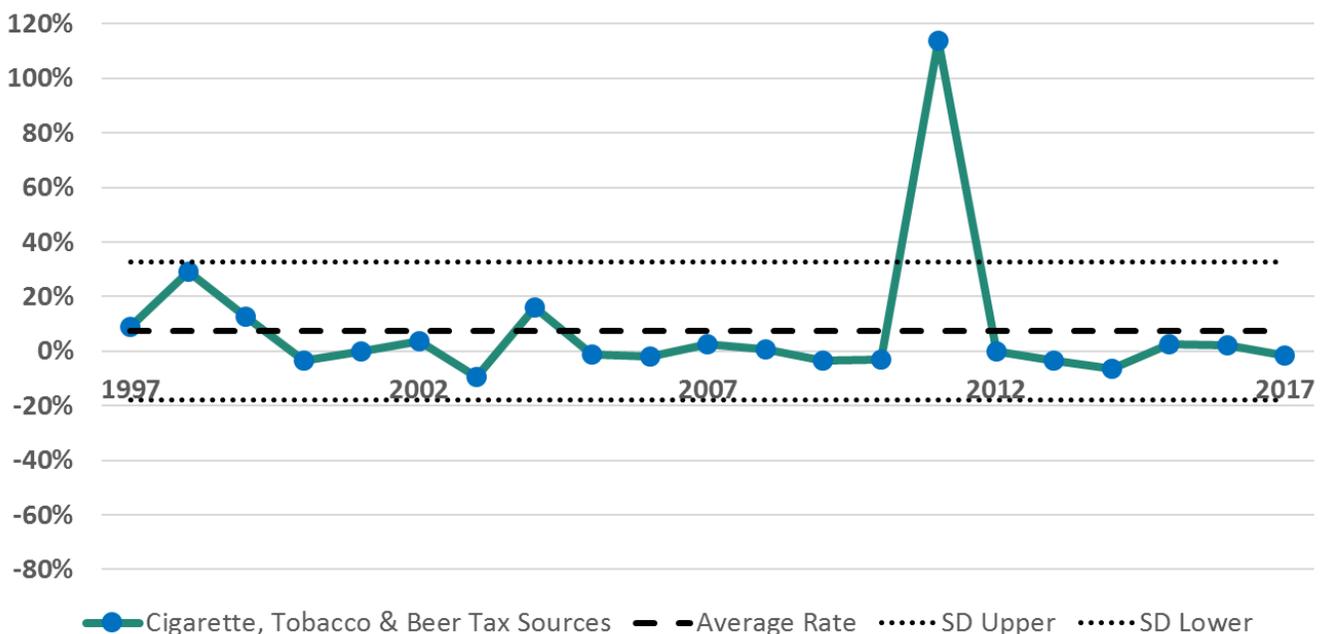
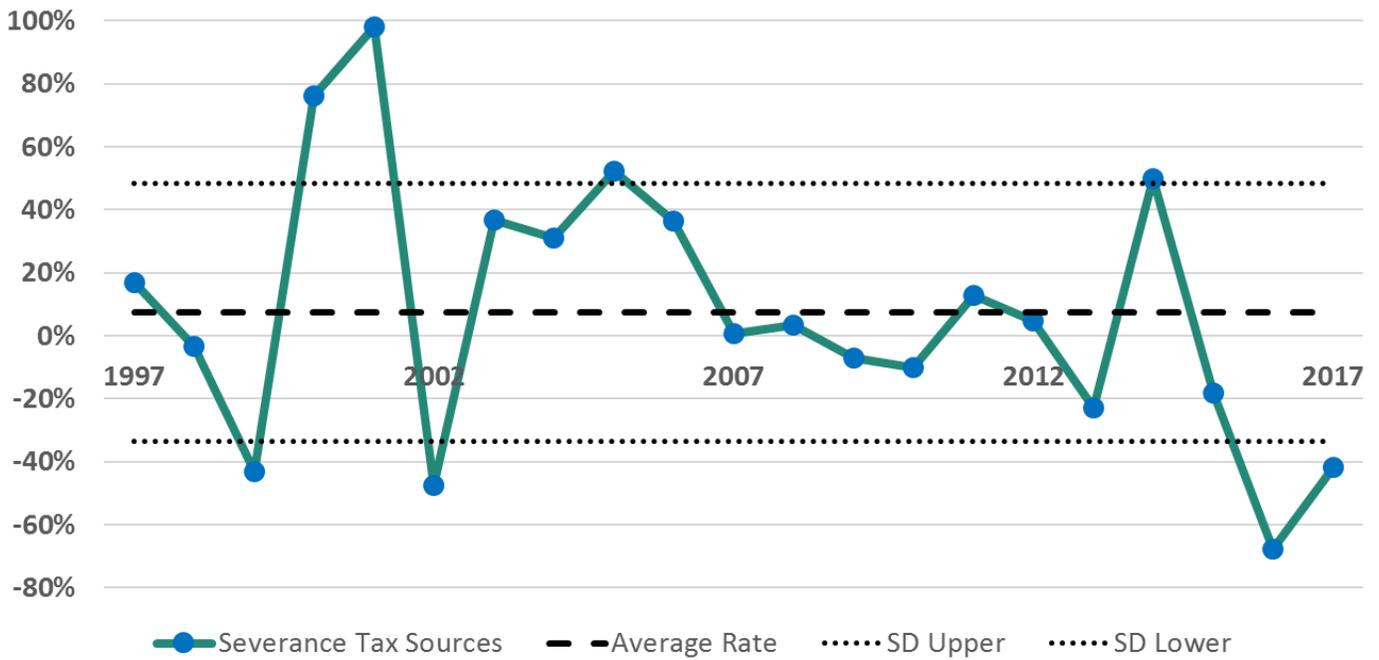


FIGURE 9
Central Tendency of Severance Tax Revenue Year-Over Growth



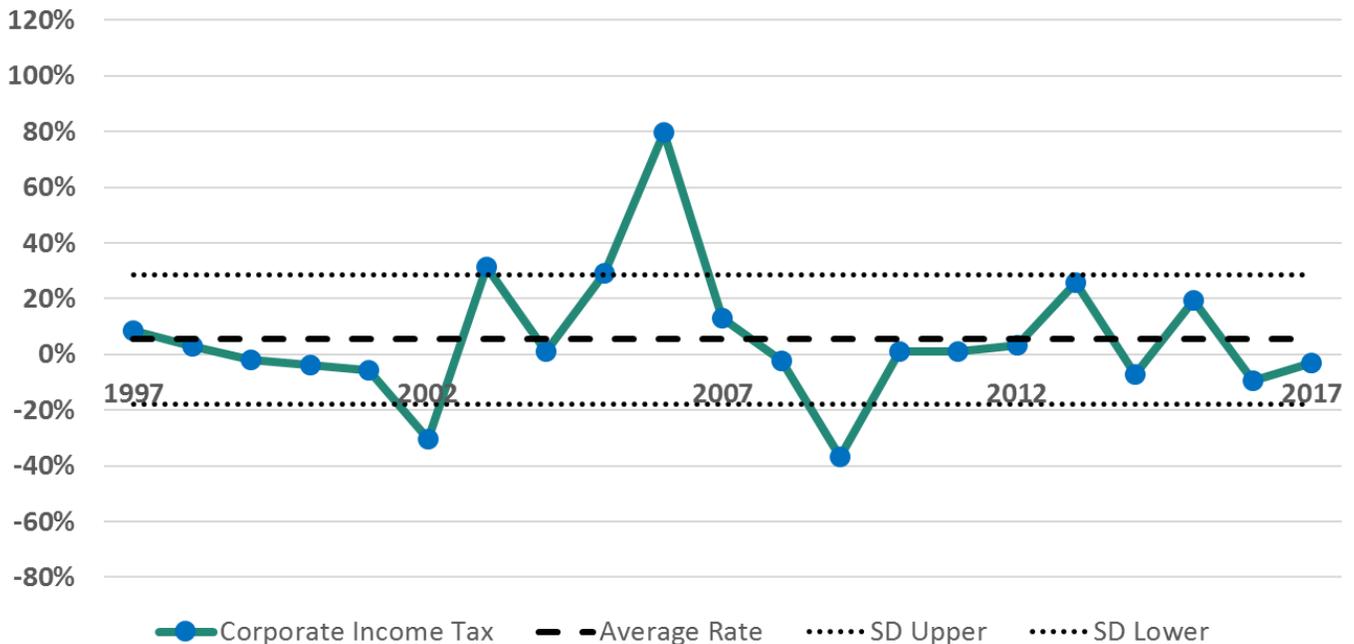
Education Fund Revenues

The primary sources of revenue for the Education Fund are the individual income tax and corporate income tax. Figures 10 and 11 depict these series, and show that the corporate income tax is more volatile than the individual income tax. Both revenue sources are more volatile than the economy in general.

FIGURE 10
Central Tendency of Individual Income Tax Year-Over Growth



FIGURE 11
Central Tendency of Corporate Income Tax Year-Over Growth



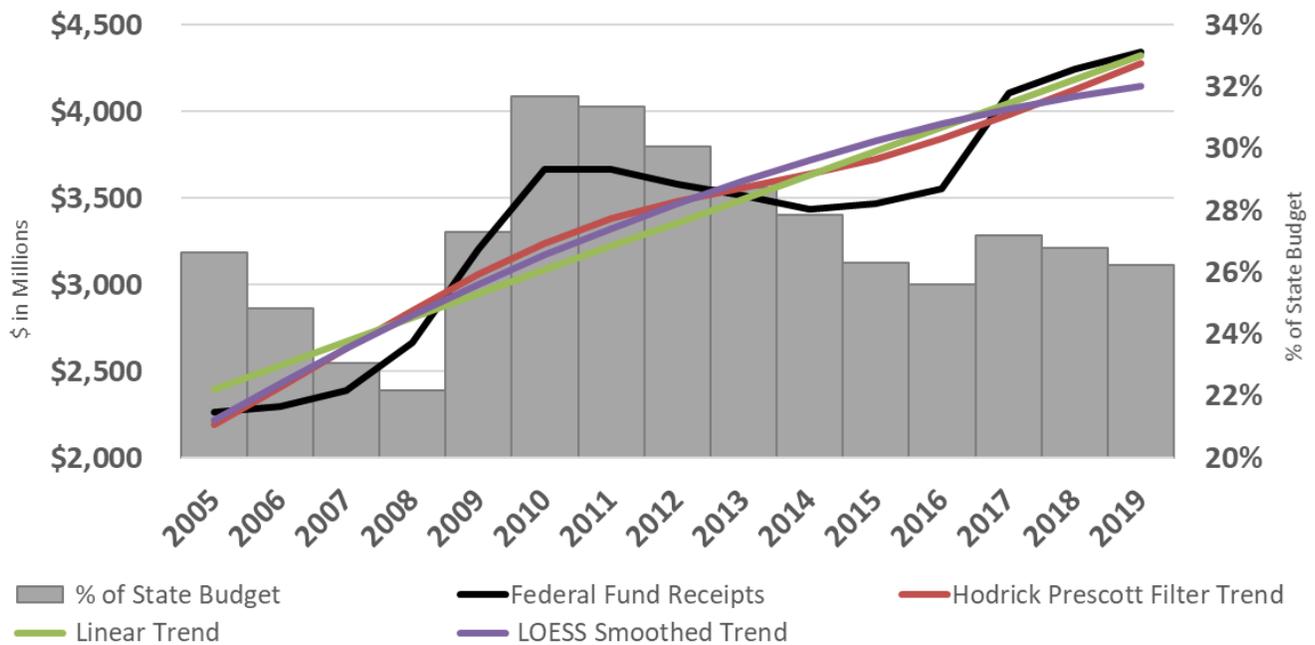
Federal Fund Receipts

In FY 2019, Utah is expected to receive \$4.34 billion in federal funds, approximating 26% of the total budget. Major programs funded by federal funds include Medicaid (\$1.86 billion), public education programs and school lunches (\$542 million), transportation projects (\$407 million), the Supplemental Nutrition Assistance Program (\$308 million), and Temporary Assistance for Needy Families (\$102 million).

While the concept of normalizing and evaluating funding flows against 15-year trends has been statutorily popularized in recent years, it is difficult to estimate changes in federal funding with precision because it is uncertain what actions Congress will take with the federal budget or exactly how entitlement programs will respond to changes in the economy. Senate Bill 209 'Budgeting Revisions' of the 2017 General Session requires the Governor's proposed budget to the legislature to include a projection of 15-year trends of federal funds receipts. Numerous statistically-acceptable methods for calculating the 'trend' of a timeseries exist and final 'over/under' trend determinations are very sensitive to the methods selected. When using a Hodrick- Prescott filter to decompose the 15-year timeseries of federal funds, it is estimated that Utah's receipt of federal funds in FY 2019 will be about \$67 million above trend. When applying a linear ordinary least squares method, FY 2019's federal funding trend comparison comes in much lower at \$18 million above trend. If the data is smoothed using a local regression method, FY 2019 federal funding levels would be considered an extreme \$193 million above trend. Moreover, these selected methods converge in estimating a counterintuitive and perhaps spurious 'above trend' federal funds status in FY 2019 despite the fact that federal funding as a share of the state budget is expected to decline to 26%, one of the lowest shares of the state budget since before the Great Recession.

It is the Governor's recommendation that prudent budgeting practices be exercised in general and appropriation decisions be informed by reasonable analyses of all funding sources over all relevant time periods, rather than using a single method for defining a trend over a limited and arbitrary period of time.

FIGURE 12
Federal Fund Receipt Trends and Federal Funds as a Percent of the Utah Budget



STRESS TESTING THE STATE BUDGET & BUSINESS CYCLE MANAGEMENT

Results from the 2016 Governor’s Office of Management and Budget, Legislative Fiscal Analyst Office and Utah State Tax Commission *Utah State Budget Stress Testing* analysis suggests that the state is well-positioned to weather a typical economic downturn, with over \$3.2 billion in aggregate reserves to cover an estimated \$2.5 billion value at risk over a five-year period. Importantly, formal rainy day funds are not the state’s only budget reserves. Reserve buffers can be characterized as *easily accessible* (e.g. unappropriated balances, operating reserves, buildings working rainy day funds), *moderately accessible* (nonlapsing balances, roads working rainy day fund, capital improvements relief valve), *somewhat difficult to access* (capital improvements corpus, restricted fund balances), *difficult to access* (formal rainy day funds) and *very difficult to access* (permanent trust funds).

FIGURE 13
State Budget Revenue and Expenditure Risk for Economic Downturn Scenarios

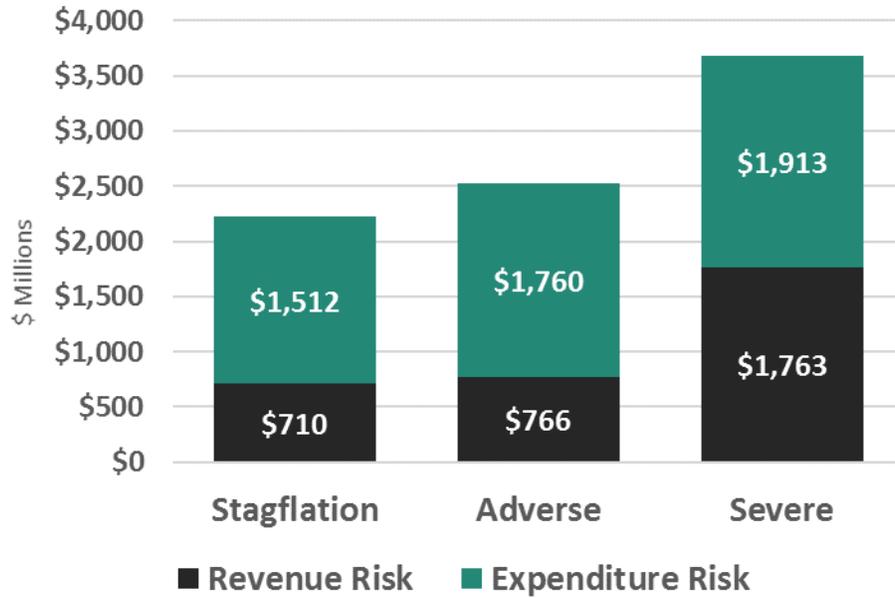
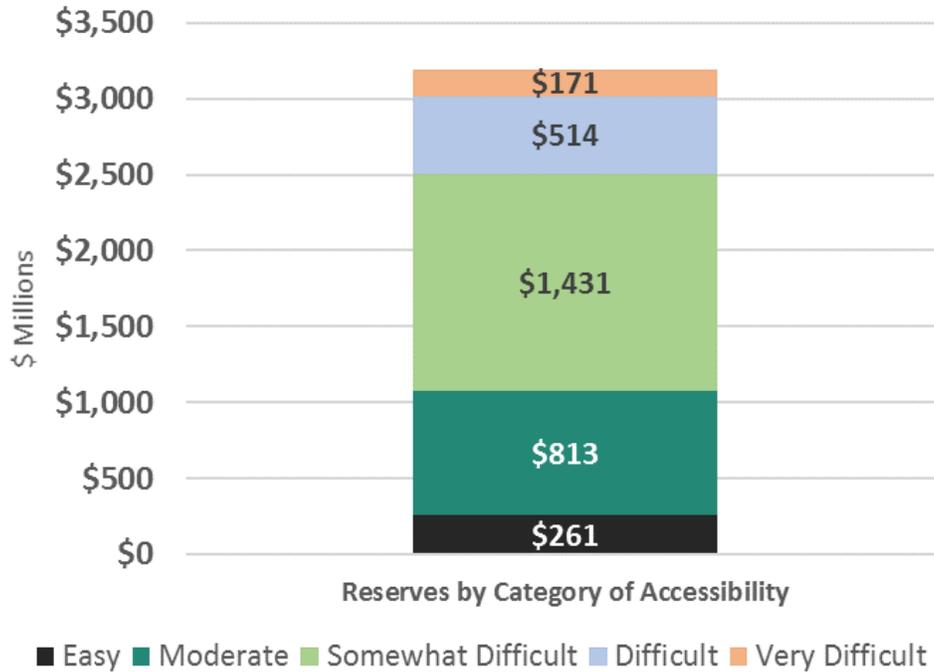


FIGURE 14
State Budget Reserves Available to Offset Economic Risk



TOOLS FOR MANAGING THE STATE BUDGET

In determining the appropriate size of budget reserve accounts, policymakers should consider all forms of budget “buffering”, not just the budget reserve accounts themselves. That is, the size of budget reserve accounts should be considered in context of other budget management tools. The following list briefly describes several tools used to manage the state budget, in particular during a revenue downturn:

- Structure of the revenue system itself. Policymakers control what is taxed and the rate at which it is taxed. To the extent the state’s revenue portfolio is deemed too volatile for budgeting purposes, one option available to policymakers is to change the state’s tax policy, including the relative weighting of each tax in the state’s revenue portfolio and the breadth of what is taxed under each tax. In general, taxes with broader bases will tend to exhibit less volatility over the business cycle. In addition to controlling taxes, policymakers control fees.
- Revenue estimating process. Revenue estimates take into account many different current economic factors that influence the state’s tax revenue collections. Four separate point revenue estimates are made for each fiscal year. A consensus estimating process tends to result in a more conservative revenue forecast overall.
- Revenue monitoring. Revenues are closely monitored on a regular basis, including through monthly reports from the Tax Commission and updated range forecasts between official point revenue estimates. This allows the necessary actions to be taken on a timely basis if revenues are not meeting projections.
- One-time solutions. Unallocated year-end surpluses, budget reserve accounts (“rainy day funds”), restricted fund balances, and nonlapsing balances are all potential sources of one-time funding in difficult fiscal circumstances. In addition, one-time options such as a change in the timing of expenditures (deferral) and revenues (acceleration) can provide one-time budget solutions.
- Capital budgeting. Budgeting for capital items such as roads and buildings is another budget management mechanism. The state often funds many capital items with cash. In an economic downturn, capital expenses can be postponed or the state can borrow to fund capital expenses. The state currently has hundreds of millions of dollars of cash-funded capital expenses.
- Budget reprioritization. Although clearly a difficult process, economic downturns force reprioritization of state funding so that scarce taxpayer resources are targeted to the highest priority programs. If economic changes create a new long-term economic reality, careful consideration should be given to the point at which the state should adjust ongoing budgets to the new ongoing economic reality.

Disaggregated Buffers

The state has a sizable number of budget buffers that are disaggregated. When aggregated, these buffers are significant to the tune of \$3.2 billion as estimated by the aforementioned budget stress testing exercise conducted in 2016. In addition to other types of management tools, below is a list of selected budget buffers that currently exist:

- General Fund Budget Reserve Account (\$146 million). This is the most flexible of the budget reserve accounts, as General Fund revenues can be used for any legal purpose.
- Education Fund Budget Reserve Account (\$362 million). Because individual and corporate income taxes deposited into this account are constitutionally earmarked for public and higher education, this budget reserve account is separately maintained for education funding purposes.

- Medicaid Growth Reduction and Budget Stabilization Account (\$44 million). GOMB recommends that the Legislature consider changes to this account to automatically fund any year-end deficits in the Medicaid or CHIP program, or to deposit these reserves into the General Fund Budget Reserve Account, which can be used to fund Medicaid shortfalls.
- Disaster Recovery Restricted Account (\$18 million). Balances in this fund can be used to respond to emergency disaster services for a declared disaster.
- State Permanent Fund (\$196 million). Although this fund has a very high vote threshold for use (three fourths of each house of the Legislature and consent of the Governor), this fund represents a potential funding source for extreme situations.
- Agency Nonlapsing Balances (\$421 million at FY 2017 year-end). Agency nonlapsing balances constitute another budget buffer. Although the Legislature relied on some of these balances as funding sources for the FY 2018 budget, preliminary estimates indicated that nearly \$421 million in nonlapsing balances were anticipated to be carried over from FY 2017 to FY 2018. (See LFA report at <https://le.utah.gov/interim/2017/pdf/00004386.pdf>)
- Restricted Account Balances. Although some restricted funds would not be available as funding sources during an economic downturn, some activities funded by the General Fund could be shifted to restricted account sources. See LFA report at <https://le.utah.gov/interim/2017/pdf/00004388.pdf> for a description of these restricted funds and their balances.

RAINY DAY FUND RECOMMENDATION

In considering the appropriate level of reserves, policymakers face a delicate balance between maintaining sufficient reserves to appropriately manage an economic downturn and amassing scarce taxpayer resources when significant unmet needs exist. In other words, there is an opportunity cost of accumulating reserves.

GOMB believes that the current automatic year-end surplus transfer caps of 11% of Education Fund appropriations and 9% of General Fund appropriations are sufficient for the automatic transfer process. Because these automatic transfer caps are percentage-based, the dollar amount of these automatic transfer caps increase over time as appropriations increase, meaning the budget reserve accounts will continue to grow over time as year-end surpluses occur. These recommendations are informed by the findings in this report that the state's aggregate revenue sources have become less volatile over the past three years, as well as the results of the most recent budget stress testing analysis that suggests Utah is fiscally well-positioned to weather a typical recession.

It is unreasonable to expect the state to maintain reserves to cover any possible contingency. The main question is to what extent policymakers want to mitigate against contingencies and to what extent they are willing to reprioritize budgets during a recession to match available revenues. The Governor's Office of Management and Budget believes that existing rainy day fund deposit caps are sufficient for managing revenue forecast error between legislative sessions, including special sessions that could be called to address fiscal issues. Beyond this forecast error level, in determining the appropriate size of budget reserve accounts, policymakers should contemplate to what degree they believe budget reductions are appropriate and to what degree government programs should be held harmless during economic downturns.

As previously mentioned, policymakers have many options for dealing with budget decisions during an economic downturn. There are those who argue that government should never reduce programs and should only provide ongoing revenues to a government programs if those are permanently sustainable.

Others argue that recessions provide opportunity to truly reexamine priorities in a way which is difficult to do when tax revenues are increasing. Ultimately, these are important policy decisions for policymakers to grapple with, not minor technical decisions.