

SUMMARY OF UTAH'S BUDGET STRESS TESTING

This memorandum provides information regarding Utah's experience in stress testing its state budget.

DEFINITION OF WORDS AND PHRASES

The following is a list of definitions for terms used in this memorandum:

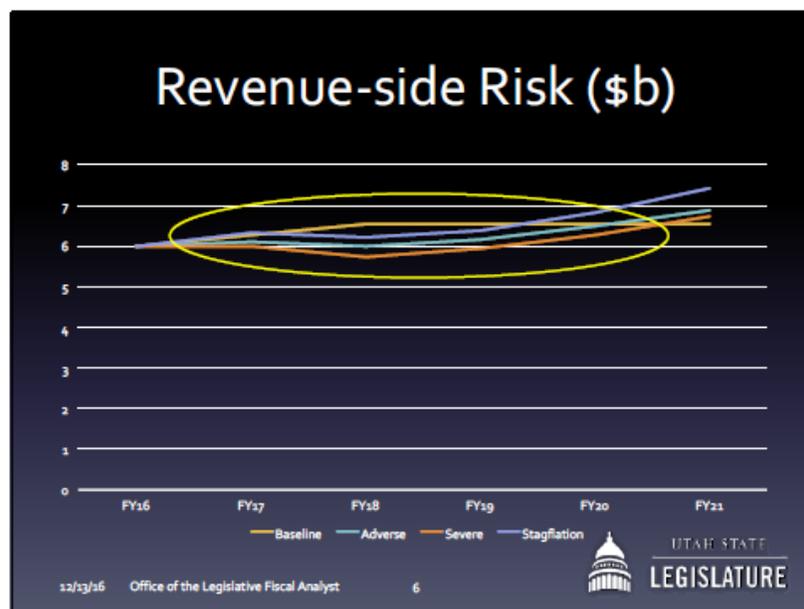
- "Stress test" in financial terminology, is an analysis or simulation designed to determine the ability of a given financial instrument or financial institution to deal with an economic crisis. Instead of doing financial projection on a "best estimate" basis, a company or its regulators may do stress testing to estimate how robust a financial instrument performs in certain negative circumstances, a form of scenario analysis.
- "Stagflation" is a condition of slow economic growth and relatively high unemployment accompanied by rising prices, or inflation, or inflation and a decline in gross domestic product.
- "Nonlapsing balances" are unused funds at the end of fiscal years, which are authorized to be carried forward into the subsequent fiscal year.

UTAH'S STATE BUDGET STRESS TESTING

The state of Utah began stress testing its budget in 2015 to manage the business cycle, set sustainable expectations and meet them, and avoid crisis-driven policy decisions.

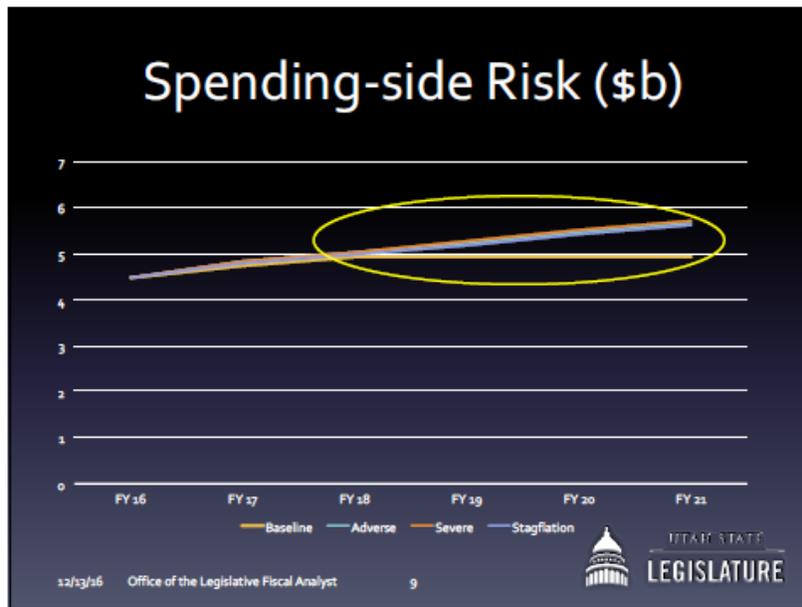
Revenues

Utah uses "what if" economic scenarios, which were purchased from Moody's Analytics, it has expanded its assumption timeline from 2 to 5 years. The assumptions also anticipate baseline growth for 12 months after recession begins, and then flattens as governments begin to respond. The Moody's Analytics scenarios used were a stagflation scenario, adverse scenario, severely adverse scenario, and baseline scenario.



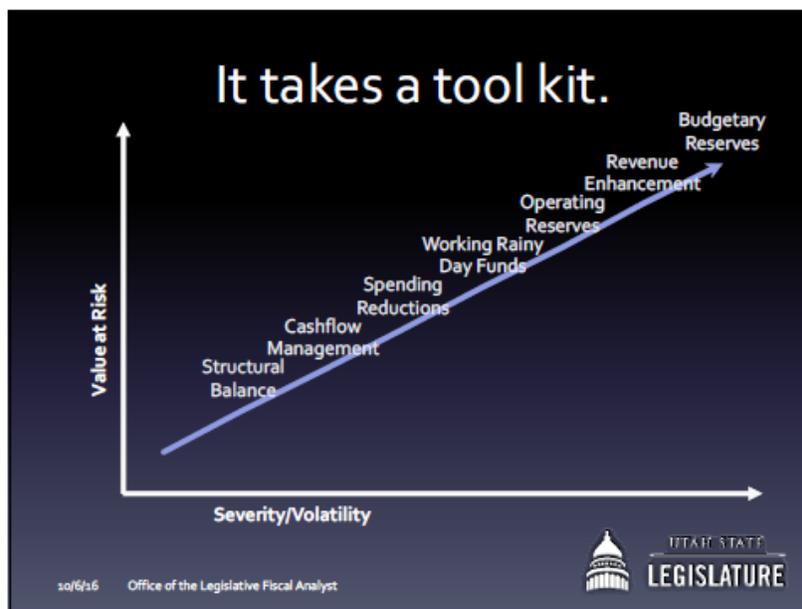
Expenditures

Utah uses the same scenarios used to stress test revenues to stress test expenditures. It models enrollment-driven programs, such as Medicaid, higher education, and public education, and added employee retirement costs.



Tools to Counter Volatility

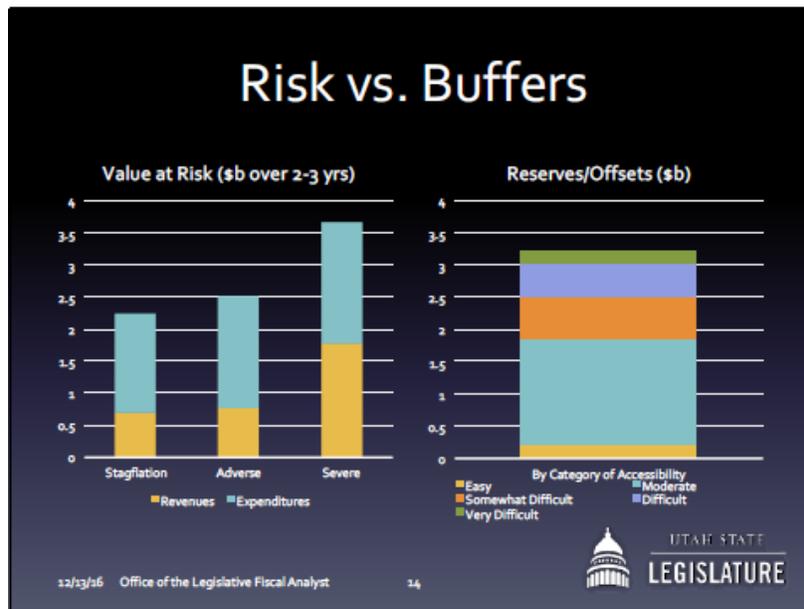
Utah developed a tool kit, shown below, which is based on assets it had available to reduce the effect of volatility.



Utah developed an inventory of existing buffers it had available based on the accessibility of the buffer. The following are the buffers identified in the inventory.

- Easily Accessible - Unappropriated balances, operating reserves, and the state's rainy day funds with few restrictions to use.
- Moderately Accessible - Nonlapsing balances, the state's rainy day fund with some restrictions to use, and the state's capital improvements relief valve.
- Somewhat Difficult to Access - The state's capital improvements corpus, and restricted fund balances.
- Difficult to Access - The state's formal rainy day funds with many restrictions to use.
- Very Difficult to Access - The state's permanent trust funds.

In reviewing the buffers available to the state, it determined its permanent school fund was not available as a buffer, it counts ongoing sources for every year in which they are available, adjusting for debt repayment in early years, and considering expenditure reductions and tax increases. After reviewing its buffers available, Utah compared the risks within the revenues and expenditures in comparison with the buffers available to the state as shown below.



Utah determined in the event of a severely adverse scenario the state's reserves would not eliminate the risk of volatility and in that case, it would need to consider expenditure reductions or tax increases as identified in the following chart.

Cuts and Taxes

Session	FY	Budget			Cut %			Rev %		
		Cuts	Increases	Multiplied	Shortfall	Shortfall	Shortfall	GF/EF Budget	Cut % Budget	Rev % Budget
2008S2	2009	\$161			\$354	45.5%	0.0%	\$5,574	2.9%	0.0%
2008S2	2010	\$251			\$272	92.3%	0.0%	\$5,413	4.6%	0.0%
2009	2009	\$116	\$2	\$6	\$521	22.3%	1.2%	\$5,413	2.1%	0.1%
2009	2010	\$317	\$59	\$177	\$685	46.3%	25.8%	\$5,162	6.1%	3.4%
2010	2010	\$70			\$208	33.7%	0.0%	\$4,845	1.4%	0.0%
2010	2011	\$75	\$43	\$43	\$482	15.6%	8.9%	\$4,770	1.6%	0.9%
		\$990	\$104	\$226	\$2,522	39.3%	9.0%	\$31,177	3.2%	0.7%

• 1% of baseline revenue used in scenarios = \$324 m

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Utah concluded during its budget stress testing process, the 5-year volatility risk was between \$2.3 billion and \$3.7 billion. The state's informal buffers could provide \$2.5 billion in funds, the formal buffers could provide \$500 million, and in a severely adverse scenario, the state would need to make spending reductions and possibly increase revenues through tax increases to provide \$300 million to \$1.3 billion in available funds to offset the volatility risk. Utah also determined that bonding eroded its largest informal buffer because of the requirement to make bond payments from, and then creating, working rainy day funds, which creates future funding commitments.