STABILIZING CONNECTICUT'S REVENUE STREAM WITH THE BUDGET RESERVE FUND

KEVIN LEMBO
Office *of the* State Comptroller

OVERVIEW

Connecticut's high concentrations of individual wealth and significant number of corporate headquarters result in large fluctuations in revenue as economic conditions change. Revenue fluctuations result in significant revenue shortfalls when the economy is under-performing, requiring cuts in programs, reductions in aid to cities and towns, tax increases or all of the above. The Budget Reserve Fund (BRF), also known as the Rainy Day Fund, can be used as an important tool for stabilizing the state's revenue stream to protect against large fluctuations in revenue. Currently, the state only makes deposits into the BRF when there is a surplus not set aside for another purpose. The state could better manage revenue fluctuations if excess revenue from the most volatile revenue sources were automatically deposited into the BRF during periods of strong economic growth and used to offset revenue shortfalls during economic downturns. In order to accomplish this goal it is recommended that Connecticut:

1. Adjust its BRF deposit formula to require automatic deposits whenever the most volatile tax revenue streams produce revenue above historic norms.
2. Increase the cap on the BRF balance to 15 percent of net General Fund appropriations.
3. Consider directing excess revenues of other one-time and highly volatile revenue sources to the BRF, including excess revenue from the inheritance and estate tax.

Two of Connecticut's four largest tax revenue streams are particularly volatile due to the demographic and economic makeup of Connecticut – the estimated and final payments portion of the income tax and the corporations tax.

A new BRF deposit formula tied directly to these taxes could help to normalize General Fund revenues and increase the balance in the BRF available to offset revenue shortfalls during challenging economic times.

Several other states have BRF deposit formulas in place that seek to limit revenue volatility. Applied to Connecticut's revenue system, other state formulas, to varying extents, reduce revenue volatility and generally result in increased BRF balances. However, every state's revenue system is unique and formulas designed for application in other states also present a variety of issues when applied to Connecticut, including: undermining the growth potential of significant tax revenue streams and requiring significant deposits in fiscal years immediately following a recession.

A new BRF deposit formula designed specifically to meet the needs of Connecticut should:

- lower General Fund revenue volatility;
- retain the long-term revenue growth potential of revenue streams to which it is applied;
- require zero or minimal deposits immediately following a recession; and
- increase the BRF balance available to offset revenue declines during recessions.

These objectives are not mutually exclusive. This paper identifies at least one BRF deposit formula that is capable of meeting all four objectives; significantly lowering overall General Fund revenue volatility and increasing BRF balances without undermining revenue growth or requiring deposits in the immediate aftermath of the 2001 or 2009 recessions. Had such a deposit formula been in place since the inception of the income tax, Connecticut would have more easily weathered the most recent recessions.

The state should also consider increasing the cap on the BRF balance to 15 percent of net General Fund appropriations. The 10-percent cap, though never achieved due to inadequate deposits, would not have allowed the state to accumulate enough funds in the BRF to weather either of the last two recessions. In order for a new BRF deposit formula to have long-term success, the cap on BRF balances should also be adjusted.

Finally, the state should consider directing excess revenues of other one-time and highly volatile revenue sources to the BRF, including excess revenue from the inheritance and estate tax. Including additional revenue streams would diversify the source of BRF deposits and reduce the potential of incorporating abnormally high revenue collections into future year revenue projections.

The State of Connecticut has not been able to accumulate adequate deposits in its BRF in the years leading up to either of the previous two recessions. Opportunities to make greater deposits were missed and budgets were built upon one-time and volatile revenue sources. Reforming the BRF deposit formula to leverage volatile revenue streams would increase total deposits while reducing the volatility of General Fund revenue sources. Making changes to the BRF deposit formula now will put the state in a better position leading into the next recession, requiring fewer budget cuts and reducing the need for future tax increases.

CONNECTICUT'S APPROACH

The State of Connecticut makes deposits into its BRF in years when there is a surplus that has not been set aside for some other purpose. Current state law sets the maximum allowable balance for that fund at 10 percent of the state's net General Fund appropriation.[1] At the end of FY 2014, the BRF balance stood at $519.2 million or 3 percent of net appropriations.

Why Should Connecticut Re-evaluate BRF Deposits?

Inadequate Deposits

Historically, the Budget Reserve Fund has helped the state offset revenue losses during economic downturns; however reserves have been inadequate to fill revenue shortfalls in each of the last two recessions.

FY	ACTUAL Accessible $$ in BRF in millions	Revenue Shortfall* in millions
2002 - 2004	$595	-$1,715
2009 - 2011	$1,382	-$2,416

*Revenue shortfall measure assumes 4.8% growth (average General Fund revenue growth FY 1992-2013) above prior year realized General Fund revenue as reported in the Annual Report of the Comptroller - Budgetary Basis. Schedule B2. The difference between realized revenue and projected revenue using the average General Fund growth rate is calculated as a revenue shortfall. This measure was used because it is directly comparable across the analysis period and isolates revenue shortfalls from budget deficits which compare both spending and revenue collections.

[1] Connecticut General Statutes. Section 4-30a. http://search.cga.state.ct.us/dtsearch_pub_statutes.html.

As the table above shows, the available balance in the BRF just prior to the 2001 and 2009 recessions was inadequate to cover the revenue shortfalls that ensued in the years immediately following each recession.

The 2009 recession was historically severe and may not be an accurate representation of future recessions. Nonetheless, had the 2009 recession merely been equivalent to the milder 2001 recession, the state's reserves still would have been insufficient to make up for the decline in revenues.

Reserves were insufficient primarily because not enough excess revenue was dedicated to the BRF in the expansion years of the mid 1990s and 2000s. Since 1990, Connecticut has had revenue windfalls of over $5 billion, but deposited less than half that amount ($2.5 billion) into the BRF.[2] In essence, Connecticut has used temporary windfalls to fund both one-time and recurring state budget expenditures instead of putting them aside to cover inevitable revenue declines during economic downturns.

Volatile Revenue Streams

Connecticut is heavily reliant on volatile tax revenue streams. Volatile revenue sources can fluctuate drastically from year to year depending on underlying economic factors. The fluctuations in major tax categories can result in significant unanticipated revenue shortfalls in poor economic times or significant revenue windfalls in good economic times for taxes that follow cyclical economic trends. Of the state's four most significant sources of General Fund tax revenue, two are highly volatile.

Revenue Sources	Volatility Measure[3]	Percent FY 13 GF Revenue
Withholding (Income Tax)	6.0%	27%
Sales Tax	4.6%	20%
Estimated & Final Payments (Income Tax)	***15.3%***	***18%***
Corporations Tax	***15.2%***	***4%***
Total GF Revenue[4]	**4.8%**	**100%**

Both the estimated and final payments portion of the income tax and the corporations tax rise and fall with economic booms and busts. These revenue sources are more volatile in Connecticut than they would be in other states due to its unique demographics and economy. Connecticut ranks first in the nation in per capita income. A significant portion of income reported by high earners comes from capital gains. Capital gains are reported through the estimated and final payments portion of the income tax and are a highly volatile revenue source. According to a MassINC study in 2008, Connecticut was the second most at risk in the country if capital gains income within the state declined. In 2009, in the midst of the financial crisis, capital gains dropped 60 percent,[5] contributing to a significant decline in estimated and final payments revenue of $904 million.[6] The corporations tax is similarly volatile as corporate profits fluctuate with the economy. While the state relies less heavily on corporate taxes for General Fund revenue, it is home to the second largest number of corporate headquarters per capita, and has historically been susceptible to significant fluctuations in revenue generated from taxing corporate profits through the corporations tax.[7,8]

According to a MassINC study in 2008, Connecticut was the second most at risk in the country if capital gains income within the state declined.

[2] Windfalls calculated as realized revenue minus budgeted revenue – source: Annual Report of the Comptroller - Budgetary Basis. FY 1992-2014, schedule B2.
[3] Volatility measure is calculated by the standard deviation of the year-over-year change in revenue from FY 1992 – 2014.
[4] FY 2014 is not included in the calculation of total revenue because in 2014 there was a major policy change that moved Federal Medicaid reimbursement out of General Fund revenue calculations. This artificially reduced FY 14 revenue and increased overall revenue volatility.
[5] Office of Policy and Management, "Fiscal Accountability Report Fiscal Years 2015- 2018". November 2014. www.osc.ct.gov/openCT/docs/far_presentation_final_11-21-14.pdf
[6] Huff, Cameron, "Capital Gains: Avoiding Harm to the State Budget". MassINC. December 2008. www.massinc.org/~/media/files/mass%20inc/research/full%20report%20pdf%20files/cap_gains.ashx
[7] Connecticut ranks first in the nation in income per capita and second in corporate headquarters per capita. www.ceo.com/entrepreneurial_ceo/two-charts-showing-states-with-the-most-fortune-500-companies
[8] The volatility in revenue from the corporations tax has been somewhat muted over the last dozen years by temporary rate increases that have propped up revenues during recessionary or slow economic periods. In the absence of these policy changes revenue from the corporations tax would be even more volatile.

Deposits Based on Surpluses

The state's current deposit rule is dependent on end of year un-appropriated surpluses. Historically, Connecticut has passed budgets in which estimated revenues and expenditures are balanced.[9] As a result, deposits into the BRF only occur when the state under-projects revenue collections or over-projects expenditures. The deposit rule places a low priority on BRF deposits. Projected surpluses as a result of revenue windfalls are often carried forward into the next biennium or used for some other purpose. Moreover, there is no guarantee that historically high revenue collections will result in a significant deposit. During economic expansions revenue estimates often anticipate significant year-over-year growth in revenue collections, and appropriated expenditures follow suit creating the potential for abnormally high revenue collections without a corresponding BRF deposit.

A deposit rule based on end of year un-appropriated surplus places BRF deposits at a low priority and does little to ensure that budgets are not built off of surging revenues during economic expansion that will not be available when the economy slows. Connecticut's BRF can be a powerful tool to manage revenue volatility, but only if deposits are a high priority and the deposit rule is specifically designed to limit General Fund revenue volatility overtime by diverting abnormally high revenue collections to the BRF.

APPROACHES BY OTHER STATES

BRF deposit formulas that reduce income volatility by making regular and predictable deposits during times of economic growth make state budgets less susceptible to the booms and busts of economic cycles. According to analysis recently released by PEW Charitable Trusts, twelve states now have rules in place that harness volatility.[10]

States link their rainy day fund deposits to volatility in different ways. Five states determine deposits based upon overall revenue volatility, four tie deposits to a particularly volatile revenue source and three to measures of economic volatility. In general state formulas that are linked to a measure of volatility succeed in increasing required deposits and managing volatility, but often are not followed or are otherwise undermined by other state policies.

For instance, Virginia ties its deposit formula to historic revenue growth of its major tax categories. The formula succeeded in the mid-2000's in driving large deposits during the economic expansion, however the state had a 5 percent cap on deposits, which was reached in 2006 preventing future deposits and leaving the state with inadequate reserves heading into the 2009 recession. Similarly, Idaho's BRF deposit formula makes deposits when overall revenue growth is greater than four percent, but limits annual deposits to one percent of annual revenue. The cap on annual deposits limits the effectiveness of the formula.[11] Other states, like Texas and Louisiana have linked their deposit formulas to highly volatile severance taxes (taxes on natural resources like oil and gas) requiring deposits when revenues exceed certain thresholds. The volatile nature of these taxes has resulted in large required deposits; however severance taxes do not follow broad economic trends, requiring deposits in years in which overall revenue was depressed.[12] To avoid some of the challenges faced by other states, thorough and regular analysis is required to ensure that a BRF deposit formula is meeting the needs of the state.

[9] Article XXVIII of the Connecticut Constitution states: "The amount of general budget expenditures authorized for any fiscal year shall not exceed the estimated amount of revenue for such fiscal year". In rare occasions the General Assembly has passed budgets in which estimated revenues were higher than estimated expenditures.
[10] PEW Charitable Trusts. "Building State Rainy Day Funds", July 2014. www.pewtrusts.org/en/research-and-analysis/reports/2014/07/15/building-state-rainy-day-funds-policies-to-harness-revenue
[11] Idaho Code. Sub-section 57-814.
[12] PEW

Still, an appropriate formula can help states manage volatility and better weather economic downturns. For example, states like Tennessee which deposits 10 percent of year-over-year growth into its BRF were able to accumulate enough reserves to help them better manage the 2009 recession than others.[13] The credit markets also reward strong deposit rules. In April 2014 Moody's Investors Service noted that "Virginia's reserve rebuilding mechanism is a strong feature of its Aaa rating and will help to prepare it for future downturns."[14] Following the last recession Virginia increased its BRF cap to 10 percent of certain revenue sources. The fund is projected to reach $1.2 billion by June 2017, up from a low of $300 million in 2010. [15]

> ***Virginia's reserve rebuilding mechanism is a strong feature of its Aaa rating and will help to prepare it for future downturns.***
>
> **– Moody's Investors Service**

Other State Strategies Applied to Connecticut

Connecticut's BRF deposit rule does not tie deposits to revenue volatility. In order to determine the impact of a volatility based BRF deposit formula in Connecticut, formulas used in three other states were applied to historical Connecticut data.

- Virginia: half of any annual increase that is more than the average annual percentage increase in the sum of income, sales and corporate tax revenues over the previous six years;[16]
- Idaho: an annual increase of more than 4 percent, with deposits capped at 1 percent of General Fund collections for the year just ended;[17] and
- Massachusetts: revenue over the average historical capital gains tax revenues as determined when the model was implemented, adjusted annually by the average annual rate of growth in US gross domestic product over the prior 5 years.[18]

The analysis of the Virginia model was adjusted to a 5 year look-back to comport with other statutory threshold formulas used in Connecticut like the state's spending cap. The Idaho model removed the 1 percentage point limit on BRF deposits because it limits volatility reduction and overall deposits. The Massachusetts formula applies to a tax on capital gains. Connecticut taxes capital gains through the estimated and final payments portion of the income tax, so the formula was applied to estimated and final payments revenue. An additional adjustment was made to the base threshold; Massachusetts set an initial deposit threshold of $1 billion, determined by average capital gains revenues as of 2010 when the formula was implemented.[19] A deposit threshold is the level above which revenue from a particular source is allocated for deposit in to the BRF. The analysis below uses an $800 million initial deposit threshold to more closely match typical estimated and final payments revenue during the early 1990's in Connecticut, the start of the analysis period.

Each of the above formulas represents an effort to normalize realized tax revenue by diverting significant revenue increases into the BRF and each is designed to grow over time with either tax revenues (Virginia, Idaho) or economic growth (Massachusetts). Each of the strategies reduces the risk that abnormally high revenue increases will be built into the base of future state revenue estimates.

The table below shows the total deposits in millions that would have been made using the three states' deposit formulas starting in 1992 and accumulating until the years preceding the early 2000s recession (1993 – 2001), the 2009 recession (2003 – 2008), and the current year (2010 – 2014). The following tables shows the volatility of General Fund revenue using each formula before and after required deposits into the BRF were made according to each formula.

[13] PEW

[14] Moody's Investor Service. "Virginia's Aaa Rating Supported by Stable Economy and Strong Management," Credit Focus. April 14, 2014.

[15] Common wealth of Virginia, Auditor of Public Accounts, Revenue Stabilization Fund Calculations for the Year Ended June 30, 2013. www.apa.virginia.gov/reports/RSF13.pdf

[16] Virginia Constitution Article X sub-section 8. http://constitution.legis.virginia.gov

[17] Idaho Code sub-section 57-814. http://legislature.idaho.gov/idstat/Title57/T57CH8SECT57-814.htm

[18] Massachusetts General Laws chapter 29, sub-section 5C, 5G. https://malegislature.gov/Laws/GeneralLaws/PartI/TitleIII/Chapter29

[19] Governor's Budget Recommendation FY 2011. "Capital Gains Revenue in the Budget." www.mass.gov/bb/h1/fy11h1/exec_11/hbudbrief15.htm

Cumulative Deposits Applying Other States' Formulas to CT

Years	Actual BRF Balance	Virginia Formula	Idaho Formula	Massachusetts Formula
1992-2001	$595 M	$180 M	$1,431 M	$956 M
2003-2008	$1,382 M	$1,109 M	$2,341 M	$3,150 M
2010-2014	$519 M	$1,104 M	$247 M	$2,805 M

Total General Fund Revenue Volatility[20]

Actual	Virginia Formula	Idaho Formula	Massachusetts Formula
4.8%	5.0%	4.0%	4.0%

Average Annual Total General Fund Revenue Growth

Actual	Virginia Formula	Idaho Formula	Massachusetts Formula
4.8%	4.8%	4.8%	4.4%

When applied to actual historical collections, the Idaho and Massachusetts formulas reduced the volatility of overall General Fund revenues, while the Virginia formula slightly increased it. The BRF balances created by each formula were uneven, with the Virginia formula producing lower BRF balances than Connecticut had just prior to either of the last two recessions and both the Idaho and Massachusetts' formulas producing higher balances.

Despite some positive results, each of the formulas has certain issues. The Virginia formula, in addition to increasing General Fund volatility, would have failed to create high enough BRF balances to weather either of the last two recessions. The formula does produce a relatively high FY 14 BRF balance, but that is primarily the result of it capturing a large portion of the revenue growth that resulted from the significant tax policy changes that went into effect for the first time in FY 12. The Idaho formula improved fund balances and significantly reduces overall General Fund volatility. However the formula would have required significant BRF deposits in fiscal years immediately following recessions. In these years, the demand for government services was high and revenues were still depressed compared to historical averages. The state would not have been in a position to make such significant deposits. Paradoxically, the Idaho formula would have required relatively small deposits in the lead up to the 2001 and 2009 recessions, periods when the demand for government services was low and revenues historically high. The Massachusetts formula produced very high fund balances and also significantly reduced overall revenue volatility. However, after the mid 1990's, increasingly large deposits were required every year, regardless of underlying economic conditions. As a result, the formula would have significantly reduced overall revenue growth. By basing the threshold calculation on 5-year average GDP growth, the Massachusetts threshold grew more slowly over the analysis period than estimated and final payments revenue, the tax revenue to which it applied. The result was an increasing percentage of estimated and final payment revenues dedicated to the BRF over the analysis period, until in FY 2014 approximately one third of all estimated and final payments

[20] Formula revenue volatility assumes that required BRF deposits are not considered General Fund Revenue. Actual revenue volatility is the standard deviation of the year-over-year percent change in realized General Fund revenue as reported by the Annual Report of the Comptroller - Budgetary Basis. Schedule B2.

revenue was dedicated for deposit into the BRF.

The BRF deposit formulas evaluated generally reduce revenue volatility and increase BRF balances, but fail to meet the needs of Connecticut's unique revenue system, resulting in untimely and/or unnecessarily high required deposits.

THE BEST APPROACH FOR CONNECTICUT

Connecticut's demographics and economy are relatively unique. High concentrations of wealth and a substantial number of corporate headquarters result in large fluctuations in significant revenue sources in reaction to changing economic conditions. The result is a revenue system that is more volatile than most other states. [21] The volatility of Connecticut's tax system results in insufficient revenues to fund current services when economic conditions are poor. The estimated and final payments portion of the income tax and the corporations tax have historically been the most significant contributors to General Fund revenue shortfalls during such periods. At the same time, these two taxes represent an important revenue source for the General Fund. Estimated and final payments revenues are also a significant driver of long-term revenue growth, offsetting the stagnant growth of other large revenue sources like the sales and use tax. The state can use its BRF to benefit from the revenue potential of the estimated and final payments portion of the personal income tax and the corporations tax without exposing itself to the inherent volatility of these taxes. A BRF deposit formula specifically designed to capture exceptionally high revenue collections for deposit into the BRF would greatly reduce the volatility of General Fund revenue collections in these tax categories and lower General Fund revenue volatility overall.

A new BRF deposit formula should also consider the distribution of required deposits. Revenues often take several years after a recession to recover to pre-recession levels, while the need for government services remains high. In order to avoid putting further stress on state revenues during such periods, a BRF deposit formula should seek to limit required deposits in recovery years immediately following a recession.

Finally, the formula must generate enough required BRF deposits to provide for an adequate fund balance to offset revenue declines during recessions. In short, a new BRF deposit formula for Connecticut should meet four basic criteria:

- Lower General Fund revenue volatility;
- Retain the long-term revenue growth potential of revenue streams to which it is applied;
- Require no or minimal deposits immediately following a recession; and
- Increase the BRF balance available to offset revenue declines during recessions.

Other States' Formulas Adjusted

The BRF deposit formulas used in other states do not perform well on one or more of the criteria listed above when applied against historical Connecticut data. In order to find a deposit formula that performs better, the adjusted Idaho and Virginia formulas were applied only to the state's two largest highly volatile revenue streams; estimated and final payments and the corporations tax. The Massachusetts formula was not run again as it was applied to estimated and

[21] PEW Charitable Trusts. "Managing Uncertainty: How State Budgeting Can Smooth Revenue Volatility". Feb. 2014. www.pewtrusts.org/en/research-and-analysis/reports/2014/02/04/managing-uncertainty

final payments with problematic results. The results of applying the adjusted Virginia and Idaho formulas to historic Connecticut collection data for the estimated and final payments and corporations taxes are below:

Cumulative Deposits using Other States' Formulas

Years	Actual BRF Balance	Virginia Formula	Idaho Formula
1992-2001	$595 M	$215 M	$646 M
2003-2008	$1,382 M	$784 M	$1,606 M
2010-2014	$519 M	$524 M	$856 M

Volatility of Combined Estimated and Final Payments & Corporations Tax Revenues

Actual	Virginia Formula	Idaho Formula
12.9%	12.5%	11.3%

Both the Virginia and Idaho adjusted BRF deposit formulas, when applied to Connecticut's two major volatile revenue sources, moderately decrease revenue volatility and the Idaho formula increases BRF balances compared to actual fund balances prior to the two most recent recessions. The distribution of deposits under these formulas is improved but remains a problem as the recovery years immediately following recession still require significant deposits. Moreover, the reduction in revenue volatility in each tax category and overall is fairly modest.

One of the shortcomings of these formulas is in using prior year revenue collections as a base upon which each current year BRF deposit threshold is built. Building a deposit threshold off of prior year revenues can result in required deposits in years with below average revenue collections or no deposits in years with historically high revenue collections. The formulas perform most poorly immediately following a year that saw a drastic change in realized revenues. In years in which there was a significant decline in revenue, the following year's BRF deposit threshold is often too low, requiring deposits while revenues are still depressed.

Similarly, the formulas can require no or limited deposits in years of historically high collections. A year of modest growth following several years of very strong growth in either estimated and final payments or the corporations tax could result in no required deposits into the BRF despite the fact that collections are at an all-time high.

Using prior year revenue collections as the base for a formula limits the extent to which volatility can be mitigated and can also result in an undesirable distribution of required deposits. The Massachusetts BRF deposit formula, analyzed earlier, avoids this issue by basing the BRF deposit threshold calculation on a predetermined sum that is annually adjusted based upon average five year GDP performance. The formula succeeds in greatly reducing the volatility of the tax to which it is applied, however because the formula threshold has no relationship to the performance of the tax against which it is applied, it has the potential, over time, to require significant deposits annually or no deposits at all depending on how the revenue collections of a particular tax are performing in relation to the growth factor in the BRF formula. If tax revenues are increasing faster than the applied growth factor, then required deposits will consistently increase as a percentage of revenues collected by the tax. On the other hand, if the tax grows more slowly than the applied growth factor, required BRF deposits will consistently decrease over time as a percentage of revenue collected, eventually falling to zero. Thus an effective BRF deposit formula must calculate a deposit threshold that accounts for changes in the revenue streams to which it is applied but does not do so by building the threshold off of the collections of a single prior year.

A New Approach

The inherent volatility associated with basing a BRF deposit formula off of prior year revenues can be smoothed out by creating a formula that calculates a deposit threshold based on average revenue collections of several previous fiscal years and adjusting the result to account for annual revenue growth.[22] Using the average of revenues collected over multiple years to establish a deposit threshold has the desired effect of automatically adjusting for changes in revenue collections over time while significantly reducing the volatility of the threshold, and correspondingly revenues.

For this analysis, a 10-year look-back was chosen.[23] To establish the deposit threshold, the 10-vyear average combined revenues of estimated and final payments and corporations tax collections were calculated. The result was then adjusted upward to reflect the growth in collections of these taxes over time. The calculation required a two-step process. Growth adjusted average revenue deposit formula:

Step 1: $Zn = (Xn\text{-}1 + Yn\text{-}1 + \ldots.. Xn\text{-}10 + Yn\text{-}10)/10$

Step 2: $T = Zn\ (1+((An\text{-}1 - Zn\text{-}1)/(An\text{-}1)+\ldots... (An\text{-}10 - Zn\text{-}10)/(An\text{-}10)/10)$

Where

X = estimated and final payments tax revenue
Y = corporations tax revenue
Z = calculated 10 year combined average revenue collections
n = current fiscal year
A = actual combined revenue collections as listed in schedule B2 of the Annual Report of the Comptroller Budgetary Basis.
T = deposit Threshold

An example of the growth adjusted average revenue formula calculated for FY 15 is shown on the following page:

[22] An adjustment is required because revenues generally grow over time. An average would be ideal if year to year changes in revenues were entirely the result of volatility, however when revenues are growing, an average based upon prior year collections will consistently be lower than the revenues realized in the current year. The faster a particular tax revenue is growing the more significant the difference between the average of prior years and current year revenues. One way to adjust a threshold based upon the average of prior year revenue collections is to inflate it based upon the difference between actual revenues collected and the calculated threshold in prior years.

[23] The time frame for the average selected revenues must strike a balance between reducing long-term volatility and adjusting to reflect any structural changes to the revenue stream that may occur over time. A longer look-back generally reduces volatility, while a shorter look-back will more quickly respond to any structural changes impacting revenue performance. A 5 year look-back is common in state policies, but for the purpose of a BRF deposit formula, a longer look-back period may be appropriate to further reduce revenue volatility. At times a 5 year look-back will incorporate several recession or post-recession fiscal years, bringing down the average, or several boom years in good economic times, lifting the average. A 10 year look-back, at least over the last 25 years, generally incorporates both recession and boom years for a more accurate average.

2015 Growth Adjusted Average Revenue Formula BRF Deposit Threshold Calculation

FY	Actual Revenue (Est. & Final Payments + Corp. Tax)	Average Revenue of the 10 prior years (Est. & Final + Corp. Tax)	Difference (Actual Rev. vs. Average Revenue of the 10 prior years)
2005	$2,624,125,555	$1,839,747,429	19%
2006	$3,109,641,704	$1,961,669,042	23%
2007	$3,507,304,742	$2,114,446,859	27%
2008	$3,868,799,875	$2,303,439,049	32%
2009	$2,846,292,398	$2,504,891,819	36%
2010	$2,975,923,165	$2,596,917,130	35%
2011	$3,479,474,337	$2,685,633,843	33%
2012	$3,757,342,553	$2,799,950,426	32%
2013	$4,240,654,624	$3,001,416,158	35%
2014	$4,076,638,307	$3,251,594,114	39%

2015 Preliminary Threshold: (Avg. Actual Revenue)	Average Difference:	2015 Final Threshold: (2015 Preliminary Threshold x Average Difference)
$3,448,619,726	***39%***	***$4,377,918,982***

Growth-Adjusted Average Revenue Formula Analysis

Applying the growth-adjusted average revenue formula above to actual estimated and final payments and corporations tax revenues since the inception of the income tax produces the following results:

Cumulative Deposits

Years	Actual BRF Balance	Formula Balance
1992-2001	$595 M	$1,726 M
2003-2008	$1,382 M	$2,790 M
2010-2014	$519 M	$275 M

Revenue Volatility

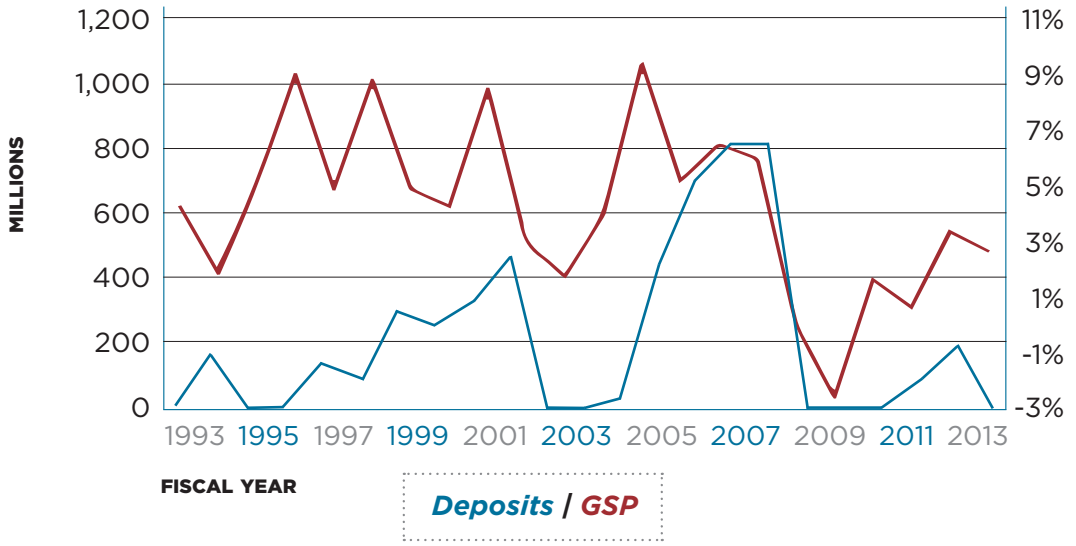
	Total Revenue	Combined Estimated and Final Payments & Corporations Tax Revenue
ACTUAL	4.8%	12.8%
ADJUSTED	3.9%	4.4%

The formula performs well against each of the criteria set forth to evaluate the performance of a BRF deposit formula. It significantly lowers both overall revenue volatility and the combined revenue volatility of the estimated and finals and corporations taxes. Overall revenue volatility decreases by almost a full percentage point, more than any other formula analyzed. The distribution of deposits is also vastly improved, with no or limited deposits during and following recessions, and high deposits at the peaks of economic boom cycles.

Required BRF Deposits 1992 - 2014 Growth-Adjusted Average Revenue Formula

FY	Deposits
1992	$0.00
1993	$154,013,253.00
1994	$0.00
1995	$0.00
1996	$141,190,504.24
1997	$103,022,881.43
1998	$285,679,372.30
1999	$251,820,634.79
2000	$323,366,076.59
2001	$466,704,486.58
2002	$0.00
2003	$0.00
2004	$24,557,248.05
2005	$433,646,699.69
2006	$697,097,504.25
2007	$815,841,033.44
2008	$818,479,381.93
2009	$0.00
2010	$0.00
2011	$0.00 [24]
2012	$74,994,071.84
2013	$200,364,681.90
2014	$0.00

Growth-Adjusted Average Revenue Formula
Required Deposits vs. Gross State Product
FY 1993 - 2014



[24] A policy change in the form of a tax rate increase that affected estimated and final payments resulted in increased revenue collections that were not the result of long-term growth or volatility in calendar year 2011, affecting fiscal years 2011 and 2012. The impact of any policy change proposal on the BRF deposit formula should be analyzed and necessary adjustments should be made to the formula to ensure the proposed policy change has the desired effect. In the absence of a policy change, the formula would have required less revenue to be deposited in these years.

Moreover, BRF balances just prior to recessions are increased significantly and revenue growth is only slightly reduced from 4.8 percent to 4.7 percent.

The results produced by the growth-adjusted average revenue BRF deposit formula are promising when applied to historical Connecticut data. Adjustments to the formula would produce slightly different results. A shorter look-back period would place greater significance on the most recent performance of the analyzed taxes, impacting both the amount and distribution of required deposits. Moreover, increasing the base threshold by a standard percentage similar to Idaho or an annually adjusting percentage similar to Massachusetts would reduce required annual deposits. While slight changes to the formula would alter the results, the formula broadly achieves the objectives of: lowering revenue volatility; retaining long-term revenue growth; minimizing deposits following recessions; and increasing the BRF balance available to offset revenue declines. Other formulas that annually adjust the deposit threshold based upon historical performance of the estimated and final payments and corporations tax may also perform well against the defined criteria. The exact formula used is less important than the results achieved.

If the adjusted average revenue BRF formula, or one like it, had been enacted along with the income tax, Connecticut would have been in a much better position to manage the drops in revenue experienced in the 2001 and 2009 recessions. Fewer spending cuts and tax increases would have been required. In fact, it is likely that the state would have been in even better fiscal shape than the analysis indicates as annual increases in spending built off of unsustainable revenue windfalls may have been tempered.

Connecticut is and will likely always be dependent on volatile revenue streams. It's the blessing and curse associated with having a wealthy population and many corporate headquarters. The key for Connecticut is not to reduce the volatility of its tax system, but rather to manage the volatility so that excess revenues accumulated in good economic times are available in poor economic times. A BRF deposit formula that manages the revenue volatility of estimated and final payments and the corporations tax creates an opportunity to benefit from the revenue generating capacity of these taxes while reducing the state's susceptibility to their inherent revenue volatility.

ADDITIONAL CONSIDERATIONS

Increasing the Cap on BRF Deposits

Currently, the State of Connecticut limits the balance of the BRF to 10 percent of net General Fund appropriations. While the state has never hit the cap, historical experience indicates that it may be set too low.

The historic purpose of the BRF in Connecticut has been to limit the impact of revenue declines that occur as the result of economic downturns. The extent to which the BRF should offset revenue losses has never been determined by the legislature. Ideally, the BRF would act as a tax stabilization fund, supplanting revenue that has temporarily declined due to a recession or economic downturn until such revenue sources have recovered. Following the 2009 recession, state revenue fell by $2.4 billion[25] over a 3-year period or approximately 15 percent of FY 2008 net General Fund appropriations. Following the 2001 recession, revenue shortfalls totaled about 14 percent of the FY 2001 net General

[25] Revenue shortfall measure assumes 4.8% growth (average General Fund revenue growth FY 1992-2013) above prior year realized General Fund revenue as reported in the Annual Report of the Comptroller - Budgetary Basis. Schedule B2. The difference between realized revenue and projected revenue using the average General Fund growth rate is calculated as a revenue shortfall. This measure was used because it is directly comparable across the analysis period and isolates revenue shortfalls from budget deficits which compare both spending and revenue collections.

Fund appropriations. The experience of the last two recessions indicates that the 10 percent cap on the BRF may be inadequate. In recent years, the Comptroller's office has supported legislation increasing the cap to 15 percent, in line with the latest GASB (Governmental Accounting Standards Board) recommendations. It is recommended that an increase in the cap on BRF balances be increased to 15 percent in combination with changing the BRF deposit formula to better manage General Fund revenue volatility.

Other Potential Revenue Streams

Other potential revenue streams that the State of Connecticut should consider as potential sources for BRF deposits include excess (atypical) inheritance and estate tax revenues.

Diversifying the revenue sources dedicated to the BRF would ensure more regular deposits and increase total deposits. Excess inheritance and estate tax revenue is a good candidate for diversification because it does not follow broad economic trends and is one-time in nature.

Generally, excess revenue from the inheritance and estate tax is relatively small but can be significant in years in which extremely high revenue is realized; for example in FY 2013 the inheritance and estate tax was up 129 percent over FY 2012 producing revenues $160 million higher than in any of the previous 20 fiscal years.[26] Dedicating this revenue source to the BRF may allow for deposits in years in which the larger volatile tax revenue sources (estimated and final payments and the corporations tax) do not over-perform.

Unfunded Liability

The existing BRF formula directs un-appropriated surplus to be used to pay down the state's unfunded liability when the fund balance in the BRF has reached 10 percent of net General Fund appropriations. The fund balance in the BRF has never reached 10 percent so un-appropriated surplus has never been used for this purpose as a result of the formula. Increasing the cap on the BRF balance to 15 percent would further reduce the prospect of using excess revenues to pay down unfunded liability.

The state may want to consider using a different formula to distribute excess revenue between BRF deposits and additional payments against unfunded liability. Massachusetts uses a formula that directs 95 percent of excess revenues as identified by the BRF deposit formula into the BRF, retaining the final 5 percent for payments against unfunded liability. Connecticut could consider a similar distribution or perhaps one that increases payments toward unfunded liability as the fund balance in the BRF as a percentage of net General Fund appropriations reaches certain thresholds.

Changing the distribution formula to provide for payments toward unfunded liability prior to hitting the BRF balance cap would limit any potential negative impact of increasing the BRF cap from 10 to 15 percent of net General Fund appropriations while meeting the legislative intent of using excess revenue for both BRF deposits and paying down unfunded liability, with priority given to BRF deposits.

[26] 2013 Annual Report of the Comptroller - Budgetary Basis. Schedule B2. www.osc.ct.gov/2013annual/index.html

Projected Deficits and Un-appropriated Surplus

In certain years, a BRF deposit may be required in the same year that is projected to end in a deficit. In order to prevent unnecessary funding cuts for important programs in years when a deficit is projected, an exception to the BRF deposit rule should be added that allows the projected surplus revenue that would otherwise be deposited into the BRF to instead be counted toward the projected deficit.

At other times, the fiscal year may close with an un-appropriated surplus after all required BRF deposits have been made according to the formula. As noted, under current law, any un-appropriated surplus is deposited into the BRF until the balance of the BRF reaches 10 percent of net general fund appropriations, after which it is applied to unfunded liability and outstanding debt. With an effective BRF deposit formula tied specifically to volatile revenue sources there would be less need to prioritize BRF deposits, leaving more flexibility in determining the best use of un-appropriated surplus above required BRF deposits, which in some cases may be an additional BRF deposit.

Regular Evaluations

Over time, the volatility of Connecticut's revenue system will change. The state should proactively analyze changes in revenue collections and regularly evaluate and review the BRF deposit formula and BRF cap based upon historical patterns and changes in the volatility of the state's revenue sources.

As the volatility of revenue increases, larger reserves will be required to supplement income losses in economic downturns. Likewise, as the volatility of the state's revenue system decreases, smaller reserves will be necessary. Regular evaluations of the state's tax revenue system that look at volatility and estimate the impact of various potential economic scenarios should be performed and used to determine if adjustments to the BRF deposit formula or cap is required.

Policy Changes

The performance of a new BRF deposit formula will be directly impacted by policy changes that increase or decrease tax revenues covered by the formula. Generally, policy changes that reduce tax revenues would decrease the amount required for deposit in the BRF according to the formula while a policy change increasing affected tax revenues would have the opposite effect. As a result, the impact of the policy change proposal on the BRF deposit formula should be analyzed and considered and necessary adjustments incorporated to ensure the proposed policy change has the desired effect.

Timing of Deposits

The appropriate timing of deposits required by a BRF deposit formula into the BRF must be determined. Currently, deposits are made at the close of each fiscal year. Waiting until the close of the fiscal year increases the risk that monies dedicated for BRF deposit will be appropriated for another purpose during the legislative session. Massachusetts makes deposits on a quarterly basis, the best timing for Connecticut should be determined taking into account the expediency of possible deposit schedules.

CONCLUSION

The State of Connecticut has not accumulated adequate deposits in its BRF in the years leading up to either of the previous two recessions. Opportunities to make greater deposits were missed and budgets were built upon one-time and volatile revenue sources. Reforming the BRF deposit formula to leverage volatile revenue streams would increase total deposits while reducing the volatility of General Fund revenue sources. In order to ensure a reformed deposit formula is not undermined by a BRF balance cap that is too low, the current cap should be increased from 10 to 15 percent of net General Fund appropriations. Making changes to the BRF deposit formula now will put the state in a better position leading into the next recession, requiring fewer budget cuts and reducing the need for future tax increases.

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