



RETHINKING BUDGETING

SHOULD WE RETHINK RESERVES?

A Multimillion-Dollar Question





ABOUT THE AUTHORS

- **Shayne C. Kavanagh**, Senior Manager of Research, Government Finance Officers Association (GFOA)
- **Vincent Reitano, PhD**, Associate Professor - School of Public Affairs and Administration, Western Michigan University
- **Peter A. Jones, PhD**, Associate Professor - Department of Political Science and Public Administration, The University of Alabama at Birmingham

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- **Judith M. Marte**, Deputy Superintendent, Operations, Broward County Public Schools
- **Kevin A. Knutson**, Assistant County Administrator, Pinellas County - Office of the County Administrator
- **Josh Harwood**, Fiscal & Tax Policy Director, METRO
- **David Allen Hines**, Director of Operations, City of Pittston
- **Ian Tyson**, Senior Managing Consultant, PFM Financial Advisors
- **Katie Sabo**, Managing Director, Public Sector Partnership, Aon
- **Sam Savage**, Executive Director, ProbabilityManagement.org
- **Caroline Kousky**, Associate Vice President for Economics and Policy, Environmental Defense Fund
- **Christopher Forster**, Assistant Town Manager, Town of Bluffton
- **Timothy Blake**, Managing Director, Moody's Investor Service
- **Shayne Kavanagh**, Senior Research Manager, GFOA
- **Chris Morrill**, Executive Director, GFOA
- **Mike Mucha**, Director, Deputy CEO, RCC Center, GFOA
- **Katie Ludwig**, Director of Resource Development, GFOA
- **John Fishbein**, Senior Program Manager, GFOA
- **Jake Kowalski**, Consultant/Analyst, GFOA
- **Kyle Wedberg**, Senior Manager, GFOA
- **Chris Williams**, Consultant, GFOA

ABOUT GFOA

The Government Finance Officers Association (GFOA) represents over 21,000 public finance officers throughout the United States and Canada. GFOA's mission is to advance excellence in government finance. GFOA views its role as a resource, educator, facilitator, and advocate for both its members and the governments they serve and provides best practice guidance, leadership, professional development, resources and tools, networking opportunities, award programs, and advisory services.

ABOUT THE RETHINKING BUDGETING PROJECT

Local governments have long relied on incremental, line item budgeting where last year's budget becomes next year's budget with changes around the margin. Though this form of budgeting has its advantages and can be useful under circumstances of stability, it also has important disadvantages. The primary disadvantage is that it causes local governments to be slow to adapt to changing conditions. The premise of the "Rethinking Budgeting" initiative is that the public finance profession has an opportunity to update local government budgeting practices to take advantage of new ways of thinking, new technologies, and to better meet the changing needs of communities. The Rethinking Budgeting initiative will raise new and interesting ideas like those featured in this paper and will produce guidance for state and local policy makers on how to local government budget systems can be adapted to today's needs. We hope the ideas presented in this paper will spur conversation about the possibilities for rethinking budgeting. The Rethinking Budgeting initiative is a collaborative effort between the Government Finance Officers Association (GFOA) and International City/County Management Association (ICMA).

To learn more, visit gfoa.org/rethinking-budgeting.



Introduction and How to Use This Paper

The “Best Practices: Fund Balance Guidelines for the General Fund” is one of GFOA’s most often cited standards. However, GFOA’s consulting work with local governments has revealed that there are many opportunities for reserve optimization beyond the guidance provided in the Best Practices. This paper brings what we have learned together with university research to describe new opportunities for local governments to get the best value from their reserve strategies.

To help readers navigate to the parts of this paper that will benefit them most, we have summarized each of the main sections of this paper. If the summary of a section is sufficient for you, we invite you to skip the details of that section.

Section 1—Why Might We Need to Rethink Reserves?

We give four reasons. First, we live in an increasingly volatile and uncertain world. More uncertainty gives rise to more risk. Reserves are one of the tools used to manage risk, chiefly by “self-insuring” against certain risks. More risk means we need better reserve strategies. Second, the public has lower trust in government and experts. This means that governments will face more pressure to justify holding reserves and will be less able to appeal to claims of professional expertise as justification. Third, government is becoming more resource constrained, which means that all dollars, including reserves, must be used with increasing savvy. Fourth, technology makes it easier to analyze reserve strategies and optimize the strategy to the conditions faced by each local government.

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RESERVES VS. FUND BALANCE

“Fund balance” is an accounting term that, generally speaking, describes the difference between assets and liabilities. “Reserves” is a budget and policy term that describes the fungible resources available outside of the budget for use if the resources appropriated inside of the budget are insufficient. There is an overlap between “fund balance” and “reserves,” but the most important difference is that fund balance covers a broader range of resources. For example, fund balance could include prepaid inventories or receivables for delinquent taxes, neither of which is available for current spending.* This paper is focused on the budget and policy role of reserves.

* The Governmental Accounting Standards Board (GASB) provides guidance on how to classify fund balances to differentiate between amounts that are more constrained or less constrained in their potential use. You can read more about these classifications in: “GASB Statement No. 54, Fund balance reporting and governmental fund type definitions,” available at GASB.org.

Section 2—How Do We Rethink Reserves?

We start by changing our mental model. A mental model is a way of viewing the world. *Finance officers can help decision-makers make better decisions by giving them better mental models for public finance.* The traditional mental model for reserves is a “savings account.” We contend that an “insurance policy” has much to offer as a new and complementary mental model. This connects reserves directly to their role in managing risk and opens up new ways of thinking about reserves.

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Section 3—What Actions Can We Take to Rethink Reserves?

The actions below are critical to taking full advantage of the possibilities available from the reserves as insurance mental model. The ideas are presented in a rough order of importance.

1. **Risk-Based Reserve Analysis.** A perennial question in local government finance about reserves is “how much is enough?” The reserves as insurance model would say it depends on what your risks are. We’ll discuss different options for how local governments can take account of their risks.

2. **Develop a Comprehensive Reserve Policy.** A policy helps the government commit to savvy decision-making about reserves by showing why a smart risk-informed reserve strategy is good for the community and defining the boundaries of acceptable actions around reserves. Most important, a policy should address the amount in reserves that a local government will strive to maintain, including a minimum and maximum amount.

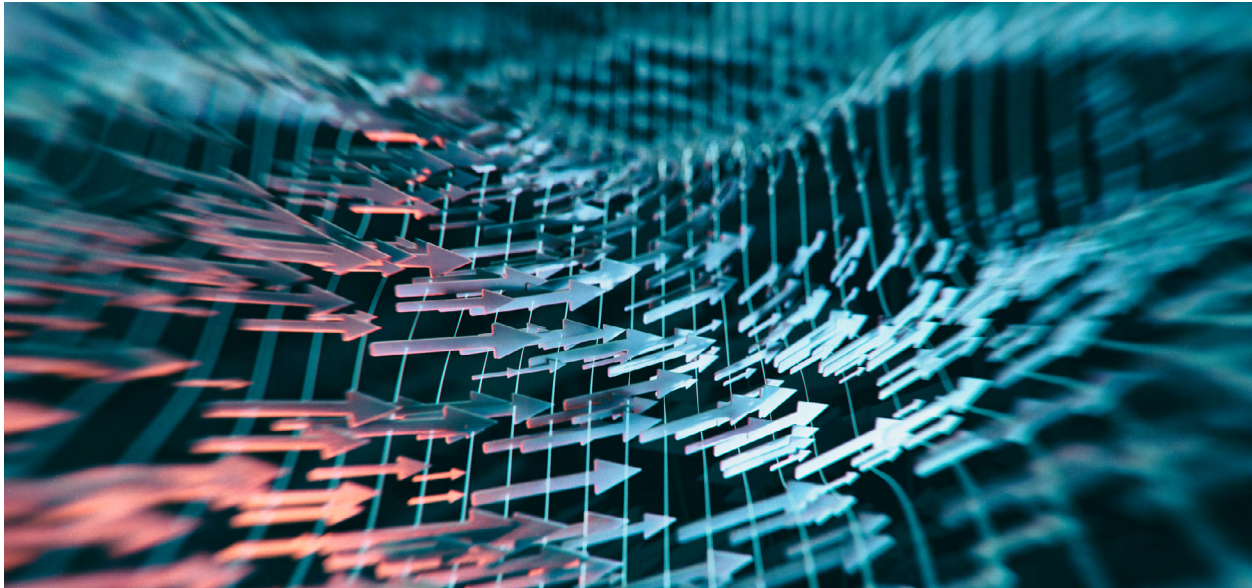
3. **Optimize the Combination of Commercial Insurance and Self-Insurance.** Commercial insurance and self-insurance each have advantages that can complement the other. If we think of reserves as self-insurance, it opens up new ways of thinking about the application of commercial insurance to the risks that local governments face. By using a risk-based approach to identify how much and for what severity of events reserve funds are needed, it becomes easier to identify pricing efficiencies between holding funds and purchasing private insurance.

4. **Optimize Investment Strategies.** Reserves are constituted by cash held back from current spending. Knowing how much cash is necessary to keep liquid to provide reasonable assurances for unplanned, unavoidable expenditures tells you how much can be invested in long-term, less liquid but higher yield instruments.

5. **Pool Risk.** Local governments often participate in *external* risk pools to save money. Local governments may have unrealized *internal* risk pooling opportunities. The reserves as insurance model highlights these opportunities.

6. **Understand Bond Ratings and Reserves.** Bond ratings are often used as a reason to maintain high reserves. However, the interest rate advantage will only be justified under certain conditions. Reserves as insurance asks us to consider if higher reserves are “worth” the cost to obtain a higher bond rating.

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SECTION 1

Why Might We Need to Rethink Reserves?

Reserves are the liquid financial resources* that local governments do not include in the annual spending plan. These resources are held back from the budget and held in “reserve” for some other purpose. The most important purpose is to respond to significant, unplanned, unavoidable costs or revenue losses, such as a natural catastrophe or recession. Another common purpose is as a sinking fund or “piggy bank” for a large, nonrecurring, planned future expenditure, like purchasing a capital asset. Reserves also support a strong bond rating by signaling to investors that the local government has resources to pay back debt even with potential disruptions to its financial position.

It has long been thought that having substantial reserves is desirable. Often it is thought that bigger is better. So why might we need to rethink reserves? The reasons are consistent with [many of those cited for GFOA’s Rethinking Budgeting initiative](#). Though, these reasons take on special significance when applied to reserves.

An increasingly volatile and uncertain world. Reserves play a role in buffering local government from volatility. However, if volatility is increasing, we should reexamine how reserves are managed to ensure local government has an adequate buffer. For example, damages from natural disasters have been on the rise in recent decades.¹ Reserves fund the response to natural disasters. Even if federal or state/provincial financial assistance is available, reserves fill the gap until assistance arrives, which can take months or even years.

Lower trust in government and experts. Local government’s stakeholders may be suspicious of large reserves, especially if it is not clear why the government is holding these resources instead of spending them on current services or cutting taxes.² In the past, the expert opinion of the finance officer, perhaps citing GFOA’s “Best Practices,” might have been sufficient to justify reserves, but expert opinion may not be so readily accepted in the future.³ Finance officers may need to be prepared to provide justification for reserves that rely less on appeals to expertise and more on the fundamental reasons why reserves are important.

* Typically comprising cash and investments that can be converted into cash.

Local governments are becoming more resource constrained. Local governments are expected to maintain a sizable reserve by “industry standards” and by bond rating agencies.* At the same time, local governments are facing more resource constraints, especially with employee health care and pension costs rising. For many governments, the increases in costs have consumed revenue increases, which may soon level off.† In fact, some economists believe that the United States’ long-term growth trajectory will slow; indeed, the general trend has been slowing growth since the 1970s.⁴ Further, long-term demographic trends point toward an aging population. Though the United States’ demographic outlook is not as dire as other developed countries, an aging population still does not bode well for local government revenues.⁵ In addition, legislative constraints limit revenue growth. For example, there is evidence that local government revenues do not recover as quickly from setbacks, like recessions, compared to the past, due to legislative constraints.⁶

Building reserves is a use of current revenues, and governments need to weigh the opportunity costs of doing so. Is it better to provide services today or save the money for later?

Rising costs paired with stagnating revenue growth means that local governments need to make efficient use of resources, including reserves. Building reserves is a use of current revenues, and governments need to weigh the opportunity costs of doing so. Is it better to provide services today or save the money for later?

None of this suggests that local government reserves should always and everywhere be lower than they are today. Instead, we should look for more and better options to provide buffers to local governments than reserves have traditionally provided. For example, are there opportunities to make more cost-effective combinations of commercial

insurance and reserves? This might not always lead to reserves going down. In fact, it could call for reserves to be increased as part of a high-deductible insurance strategy for some perils to reduce the total cost of risk (insurance plus reserves).

Information technology makes rethinking reserves easier. Information technologies, like some we will describe later in this report, make it easier to analyze reserve strategies and optimize the strategy to the conditions faced by each local government.

In the next section, we will discuss how to rethink reserves, with emphasis on the reserve’s role in managing risk. In Section 3, we will suggest several actions local governments can take to rethink their reserves and get better value from reserves for their communities.

* GFOA’s “Best Practices: Fund Balance Guidelines for the General Fund” recommends that, at a minimum, general-purpose governments, regardless of size, maintain unrestricted budgetary fund balance in their general fund of no less than two months of regular general fund operating revenues or regular general fund operating expenditures. Moody’s Rating Agency looks for fund balances above 35% of annual revenue to provide a Aaa rating for General Obligation debt.

† Note: We are not referring to the impact of economic cycles (e.g., recessions) but rather the long-term trend across cycles.



SECTION 2

How Do We Rethink Reserves?

We begin rethinking reserves by starting from “first principles”—that is, why do local governments have reserves in the first place? *The answer is to reduce volatility and uncertainty in public finances.* Uncertainty exposes a government to financial risks. *GFOA has found that framing the reserve explicitly as a risk management tool and linking the reserve to concrete risks that decision-makers can appreciate is a great way to communicate why reserves are important.* Let’s examine the key risks that reserves guard against. We will see that there are many possible risks, and it is difficult, if not impossible, to buy commercial insurance to protect against many of them.

Cash flow risk is a concern, especially for governments where a major revenue source, like property taxes, is received only once or twice a year in large chunks, while expenditures occur evenly throughout the year. A similar problem can occur if large portions of state-shared revenue have to be authorized by the state each year through the state budget process. Delays in approving the state budget could result in delays in local government revenues. Reserves help smooth out resource availability and have important advantages over other options like tax anticipation notes (TANs). TANs can entail the risk of high interest rates, for example.

A big risk for many governments is revenue instability, with recessions being the major culprit. If a recession dramatically reduces revenue, then reserves can be used to help a government make a “soft landing.” For example, the City of Savannah’s sales tax was a large revenue source that was sensitive to the economy. The city, therefore, developed a sales tax stabilization reserve. When the Great Recession hit, the city was able to draw from the reserve and avoid layoffs.

RETHINKING IS LOCAL

Each local government will need to decide how to best apply the ideas in this paper to their circumstances. For example, a local government’s “reserves” are commonly associated with the general fund. Yet, many of the same ideas presented in this paper could apply to other funds, like enterprise funds.

There could be other sources of revenue instability, too. Perhaps a major revenue source is subject to changes in the political environment, as in the case of some state-shared revenue. It might also be the case that a local revenue source is subject to periodic reapproval by the voters. In one city the GFOA worked with, the potential for a major industrial employer to close was a risk because the city relies heavily on a local income tax.

Historically, reserves have not consistently been used by local governments to offset revenue losses from a recession.⁷ This has been, perhaps, the result of state and federal government support during the last two recessions that came through the American Recovery and Reinvestment Act of 2009 and the American Rescue Plan Act of 2021. While these pieces of legislation were a major help to local government fiscal health, local governments should not expect these to be available in future

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recessions. Recovery funds require Congress to pass major legislation, and the rise of political polarization and gridlock makes this far from guaranteed. Even if the federal government offers relief, future funding might have restrictions, and it will be impossible for local governments to predict how much money they will receive. Hence, local governments would be wise to prepare to handle the impacts of recession on their own. Reserves provide another option, besides spending cuts.

Another major risk category is natural disasters like earthquakes, wildfires, floods, hurricanes, and the like. These can result in urgent needs like overtime

for first responders or shelter, food, and supplies for displaced families. They also sustain recovery from disasters by covering unforeseen expenditures like the cleanup that follows the initial devastation. Sometimes, a local government will have some of its costs reimbursed by the Federal Emergency Management Agency (FEMA) and/or state agencies. If this is the case, reserves are still important to cover the nonreimbursable costs, including lost revenue and fees and increased operating costs, while also fronting the costs until reimbursement arrives. GFOA sampled several local governments that received FEMA reimbursement for natural disasters and found it took an average of 18 months to be reimbursed.

Some extreme weather events might not be declared an “emergency” by national or state government. In this case, the local government may be on its own. A common example of this is an extreme snow season where an unusually large amount of snow may cause the local government to dramatically exceed its snow removal budget. Reserves could be used to fund the overage and be replenished by surpluses from light snow seasons.

Man-made disasters are also a risk. The possibility of hazardous material spills that cost a lot to clean up is one such risk that can have a material impact on local finances. Cyberattacks are another example of a man-made risk that might have implications for reserves. As of this writing, cyber insurance policies are becoming more expensive or totally unavailable to some governments. So a government might need to raise the deductible on a commercial policy or forgo a policy altogether. In this case, the government is self-insuring against cyberattacks either partially or fully, and reserves provide the financial backing. Capital infrastructure also presents risks that reserves can help mitigate. Debt is a powerful tool for local governments to finance infrastructure acquisitions, and reserves provide assurances to creditors that the local government is not at unacceptable risk of default. Reserves can also be used to pay for capital assets directly (i.e., cash financing).

There may be other risks we haven't covered that might be relevant to reserves. These risks might fall into categories of financial/economic, health crises, security, reputational, and more. Here are a few examples from governments the GFOA has worked with to analyze their risk exposure. You might think of others that are relevant to your jurisdiction.

- **Financial/economic:** For governments with large pension liabilities, a reduction in the rate of return on pension investments could increase the annually required pension payment.⁸ Reserves could be used to smooth out the impact on the budget.
- **Public health:** The COVID-19 pandemic is an extreme example of the potential financial impact of a health event. Less extreme outbreaks could still have financial impacts. For example, local governments with public health responsibilities in urban areas could face large costs from local outbreaks of serious diseases, like hepatitis.
- **Public safety:** Terrorism and civil disorder can cause a spike in public safety costs. It is worth noting that civil disorder events could become more difficult to insure against because social media can spread civil disorder beyond a local phenomenon.⁹ In other words, civil disorder in one community can easily spread to others. Insurance companies try to avoid insuring risks where this kind of “domino effect” is in play.

Recognizing that *reserves are essentially a tool for risk management* leads to our next point on how to rethink reserves: Adjust your mental model.

A mental model is a way in which we view the world. Mental models guide how we make decisions. *If public finance officers can give decision-makers a better mental model, they will make better decisions.* The traditional mental model for reserves is **a savings account**.

Indeed, the savings account has several advantages as a mental model. First, it's an easy analogy to grasp for people who are not public finance experts. Second, it has a seemingly obvious parallel to the personal lives of local governments' stakeholders. This is particularly true for the “sinking fund” function of reserves, as most people have experience with building up their personal savings to pay for some consumer expenditure or personal investment (e.g., education, house, car, etc.).

However, the savings account model has disadvantages as well.

First, the analogy to personal savings as a buffer against risk might not be as powerful as it seems. Personal savings rates have been in long-term decline.¹⁰ Not only that, but most consumers also start saving reactively, after an adverse event has occurred (e.g., recession, pandemic). Obviously, this is not a viable strategy for local government reserves.¹¹ Given the reactive strategy that most savers adopt, it is not surprising that most Americans are well short of the amount of personal savings that personal finance experts recommend keeping for an emergency.* Given the lack of emphasis on saving for an emergency, many people may now see personal savings more as a vehicle for saving up for future purchases than as a way to manage risk.¹²

RESERVES AREN'T ALWAYS THE ANSWER

We must recognize that reserves are not the best way to manage all of the consequences of the risks local governments are subject to. Let's take pensions. Though reserves could be used to cushion the initial shock from a reduced rate of return and consequent increase in required annual contributions, a government will, at some point, need to realign its annual spending to accommodate increased pension costs.

* The average American's monthly expenses are \$5,111. Fifty-one percent of Americans have less than \$5,000 in savings. Personal finance experts recommend more than one month's worth of expenditures, with three months regarded as the minimum. Information taken from: Backman, M. (2022, May 9). *Study: Average American's savings account balance is \$4,500*. The Ascent. <https://www.fool.com/the-ascent/research/average-savings-account-balance>

There is evidence that financial managers are more likely to view their own personal savings as a tool for managing risk compared to the average person. This means that the “saving account” metaphor for reserves may be more impactful in the minds of financial managers than it is for other people.¹³

Second, the savings account mental model implies that having more in your account is better. However, this is not always true with local government reserves. Local governments are faced with *opportunity* costs that are different from private individuals. Monies placed in reserves are resources that are removed from the private economy. It can be argued that **excess*** reserves could do better for the community if those resources were put to work in the private economy. Even if excess reserves weren't returned to the private economy, a good argument could be made that the excess amounts should be used by the government to benefit the current generation of taxpayers (the ones who provided the money to create the reserve). Further, there are diminishing returns to putting aside money to offset risk. We will mathematically demonstrate this later in this paper. For now, a simple thought experiment will do. Imagine a person had \$10,000 in their savings account to offset personal risk. This is a healthy amount, but it is not hard to imagine circumstances where this amount proves insufficient. Now imagine another similar person had \$1 million in their savings account. It is much harder to imagine the circumstances where this would be insufficient. Now imagine each person was given an additional \$10,000. It is easy to see how the first person could better insulate themselves from risk by using this money to build their savings. It would be hard to argue that the second person would experience an equal gain in risk mitigation from building their savings further. The \$10,000 creates greater marginal benefit for the first person than the second. The same logic applies to government. We will address how to identify the point at which excess has been reached later, including establishing for floor and ceiling amounts on the desired level in reserves.

If the savings account mental model has important limitations, what is the alternative? **We propose insurance as a new mental model. This does not necessarily replace the savings account model but does supplement it by providing a new and better perspective on some of the most important purposes of a reserve.**

Insurance has an obvious parallel to people's personal lives. Given that local governments hold reserves to manage risk, insurance is an accurate analogy for reserves. Further, insurance is purchased *proactively*, before an adverse event occurs; much like reserves must be built up ahead of time to prepare for future, unpredictable adverse events.

Another advantage of insurance as a mental model is that it invites local governments to think about how commercial insurance and self-insurance can work together for an optimized risk financing strategy. Reserves are a self-insurance strategy, but commercial insurance policies (those purchased from a broker) can supplement reserves. For example, commercial insurance could be useful for protecting against low probability but extreme consequence events. Later in this report, we will discuss specialized insurance policies called “parametric” insurance that are designed to provide the policyholder with compensation in the event of an extreme event.

RESERVES AS INSURANCE AND THE ELECTED BOARD

One author of this paper was part of a discussion with a city council about reserve strategy. One council member asked what the practical implications of spending the reserve would be. Reserves as insurance would point out that lower reserves would be the equivalent of taking a lower limit (or higher deductible) on your insurance policy. Reserves as savings account struggles with this question because an increasingly prevalent view is that savings exist to be spent.

* Of course, defining the point of excess is key. We will address that later in this paper.

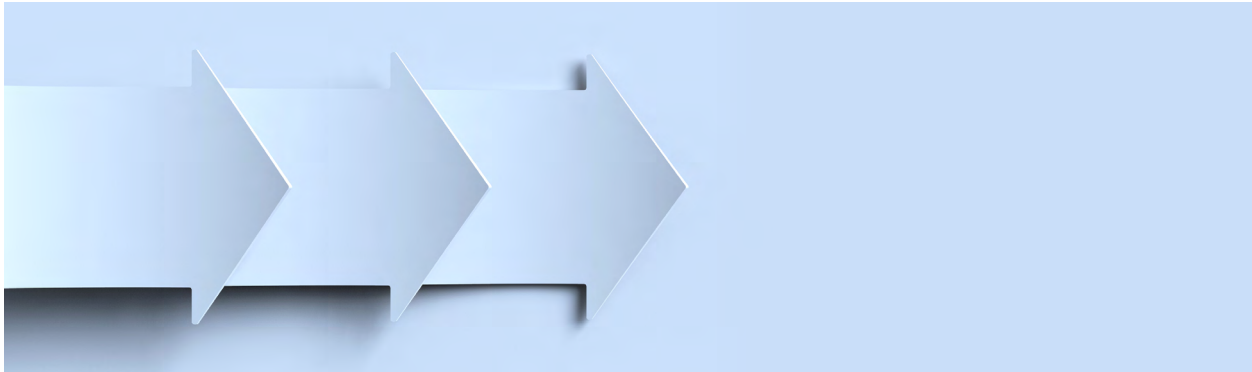
Using insurance as a mental model also implies that there is an optimal amount to have on hand. Nonexperts can appreciate that it is possible to either overinsure or underinsure the risks that you face. Insurance also implies that there is a point at which the “policy” should be used. Let’s consider recessions as an example. Recessions are the most important source of financial instability for local governments, so reserves can play a crucial role in counteracting downturns in economic cycles. However, there is little evidence that local governments use reserves during times of economic recessions.¹⁴ In the Great Recession, the 30 largest U.S. cities used their fiscal reserves, but only 25% of the 600 smaller cities studied drew down their reserves (the remaining cut spending).¹⁵ Failure to use reserves likely caused distress to the community in the form of interruption to public services. While local governments should consider spending cuts during a revenue downturn, a strong reserve can help avoid the most damaging spending cuts.

The insurance mental model is not without its disadvantages, though. Insurance can be an abstract and difficult concept to grasp, even in our personal lives. This means people sometimes don’t make optimal personal decisions about insurance, just like they make suboptimal decisions about personal savings. Another disadvantage is that the analogy becomes more complicated when commercial insurance and intergovernmental aid is considered. Taking these other risk management tools into account is necessary for an optimal risk management strategy, but the trade-off is additional complexity.

The reserves as insurance mental model addresses the risk management function of reserves well. The reserves as savings account mental model addresses the “sinking fund” function of reserves, so we do not suggest discarding the savings account mental model entirely. Rather, putting these two models together offers a more comprehensive perspective on the role of reserves.



With better mental models in place, we are positioned to think about the actions we can take.



SECTION 3

What Actions Can We Take to Rethink Reserves?

In this section, we'll look at the steps local governments can take to rethink reserves. We've summarized the major ideas and will discuss them in detail immediately after. The ideas are presented in a rough order of importance.

1. **Risk-Based Reserve Analysis.** A perennial question in local government finance about reserves is “how much is enough?” The reserves as insurance model would say it depends on what your risks are. We'll discuss different options for how local governments can take account of their risks.

2. **Develop a Comprehensive Reserve Policy.** A policy helps the government commit to savvy decision-making about reserves by showing why a smart risk-informed reserve strategy is good for the community and defining the boundaries of acceptable actions around reserves. Most important, a policy should address the amount in reserves that a local government will strive to maintain, including a minimum and maximum amount.

3. **Optimize the Combination of Commercial Insurance and Self-Insurance.** Commercial insurance and self-insurance each have advantages that can complement the other. If we think of reserves as self-insurance, it opens up new ways of thinking about the application of commercial insurance to the risks that local governments face. By using a risk-based approach to identify how much and for what severity of events reserve funds are needed, it becomes easier to identify pricing efficiencies between holding funds and purchasing private insurance.

4. **Optimize Investment Strategies.** Reserves are constituted by cash held back from current spending. Knowing how much cash is necessary to keep liquid to provide reasonable assurances for unplanned, unavoidable expenditures tells you how much can be invested in long-term, less liquid but higher yield instruments.

5. **Pool Risk.** Local governments often participate in *external* risk pools to save money. Local governments may have unrealized *internal* risk pooling opportunities. The reserves as insurance model highlights these opportunities.

6. **Understand Bond Ratings and Reserves.** Bond ratings are often used as a reason to maintain high reserves. However, the interest rate advantage will only be justified under certain conditions. Reserves as insurance asks us to consider if higher reserves are “worth” the cost to obtain a higher bond rating.



Risk-Based Reserve Analysis

GFOA strongly recommends that local governments adopt a formal policy that describes how much it will strive to maintain in its reserve. A perennial question, though, is “how much is enough?” The reserves as insurance model would say it depends on what your risks are.

The first step toward a risk-aware reserve target is to think of the target as a range instead of a single point. For example, a government might say, “Our policy is to maintain reserves *between 15% and 25% of annual revenue*,” rather than “...*equal to 20% of annual revenue*.” A range has several advantages over a single point:

- Risks are difficult or often impossible to estimate exactly. A range expresses that a government must have a margin of error to operate within. Conversely, a single point leaves ambiguity over whether actual reserves are too high or too low. To take our example: If the government’s policy was based on a single point (20%) and the actual reserves were at 17% of revenue, would that be acceptable? What if reserves were 27%? Would that be too high? The single-point policy is not clear about boundaries the government should stay within.* If the policy was based on the range, we’d know 17% was acceptable but 27% was too much. This feature of ranges not only helps with discussions among decision-makers about reserve strategies, but it might also help with explaining reserve strategy to the public.
- A range accommodates different risk appetites. The “right” level in reserves will be a function of the risks a government faces and of local officials’ willingness to bear those risks. A range can accommodate the views of risk-averse elected officials and less risk-averse officials. They can find grounds for compromise by negotiating a floor and ceiling that accommodates different appetites for risk.
- A range better supports the ongoing management of reserves. Reserves fluctuate from year to year. If the reserve stays in range, there is little need to revisit whether the actual reserve is too high or low. If the reserve falls outside the range, it suggests a clear course of action (i.e., do something to get it back in range). This helps make sure that reserves stay where they need to be to manage risks.
- A range includes a floor that communicates that there is a minimum amount necessary to be a good steward of the community but also a ceiling that communicates that there is an upper limit on the usefulness of reserves and a point at which excess resources should be devoted to some other purpose.

* Defining boundaries is essential to good financial public finance. See GFOA’s *Financial Foundations for Thriving Communities*, published May 2019.

The next step in developing a risk-aware reserves policy is to analyze the risks the local government is subject to. A risk analysis can take place at varying levels of sophistication. A qualitative or subjective risk assessment is the most accessible approach. A local government can review categories of risks, like those described earlier in this report, and: A) assess their exposure in each category; and B) consider if their reserve target accommodates that exposure. [GFOA has developed a simple template](#) to facilitate this kind of review.

The City of Berkeley, California, illustrates how the template can be used. The city's budget staff led the risk assessment and included participation from the public works, police, and fire departments. The city determined that the greatest exposure was "extreme events and public safety concerns," particularly earthquakes, fires, landslides, floods, hazardous material spills, and terrorism. Other important exposures included "expenditure volatility," due to upcoming large expenditure obligations that did not have a funding source, and "other funds' dependency on the general fund." The city's general fund was a backstop for other city operations outside of the general fund, so the general fund would be relied

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[GFOA RISK ASSESSMENT TEMPLATE →](#)

upon if these operations were to encounter unplanned, unavoidable expenditures or revenue interruptions. By reviewing all the risks on [the GFOA template](#), Berkeley determined that it faced a moderate to high level of risk. The template suggested that between 25% and 35% of annual revenues would be reasonable to buttress the effect of routine downturns in the economy and respond quickly and decisively to major emergencies.

The advantage of a qualitative risk analysis is accessibility. The City of Berkeley (and many other governments) have completed such an analysis within their own resources. A qualitative analysis also can be effective for acclimating the government to being aware of risk as part of their

reserve strategy. Berkeley performed the analysis described above in 2016/17. The analysis helped convince the city to commit to reexamining its risk exposure five years later, and the city is doing so as of this writing (using the more sophisticated chance-based approach we'll describe later).

The disadvantage of a qualitative risk assessment is that the results are subjective. This means that there is likely to be a gap between: A) the reserve target suggested by the assessment and B) the optimal reserve amount, given the risks. There is no way to tell how accurate or inaccurate the subjective estimate might be, relative to the optimal amount.

Thus, the next step forward in sophistication is to quantify risks to reach a more objective estimate. A local government can look at historical experiences, the analogous experiences of other governments, and other sources of data to estimate the potential cost of the risks the local government is subject to. A quantified approach might be needed when there is controversy about the right amount in reserves. GFOA, for example, has worked with local governments where reserves were low, and an objective analysis was needed to see if there was a case for raising them. GFOA has also worked with and heard from governments where some felt the reserves might be too high, so an objective analysis was needed to see if there was a case for lowering the reserves.

A LIMIT OF ANY RISK ANALYSIS—THE PROBLEM OF UNKNOWN UNKNOWNS

A limit of any risk analysis is that you can only analyze the risks that you know of, or the “known unknowns.” Local governments could experience a loss from a totally unexpected source, or the “unknown unknowns.” For instance, five years ago, not too many governments would have anticipated the current tightening of the cyber insurance market, which might place pressure on local governments to partially or fully self-insure cyber risks. The COVID-19 global pandemic is another example of an unknown unknown.



Both examples illustrate how to deal with unknown unknowns. First, a local government should periodically update the risk analysis. Cyber risk losses have steadily been increasing across all local governments for several years, so cyber risk should have been on local government radars before the current tightening of the insurance market. Second, a local government should use reserves to cover multiple purposes. Though global pandemics were not considered a high risk by most local governments

prior to 2019, recessions certainly were. The economic slowdown caused by the COVID-19 pandemic could be considered a kind of recession. By grouping multiple risks together into the reserve, the reserve will be more likely to withstand the addition of previously unknown risks. We’ll have more to say about this concept of “pooling” later in this report.

The easiest quantified approach to risk analysis is building a model where single numbers are used to represent the potential impact of risks. To illustrate, to estimate the risk from recessions, we might look back at past recessions to see the losses incurred from those recessions. We would see that the 2008 Great Recession represents a particularly bad recession. Perhaps revenues decreased by \$5 million, which might suggest that a \$5 million reserve could be necessary to be prepared for most future recessions. Outside studies and the experiences of other local governments can also help. The Town of Bluffton, South Carolina, used a publicly available university study that calculated the per capita cost to recover from hurricanes at different storm category levels.¹⁶ The town applied these numbers, adjusted for inflation since the study was completed, to derive a figure that the town used as the target number to hold for emergency recovery reserves.

The GFOA report [“A Risk-Based Analysis of General Fund Reserve Requirements”](#) describes how to perform this analysis, including how to account for the possibility of historically unprecedented events. The advantage of this “single-number” approach is that many governments should be able to perform such an analysis using their own resources. In fact, several governments have contacted GFOA to let us know they have followed the methods described in the GFOA report.

The single-number approach has an important disadvantage, though. “Risks,” by definition, are uncertain quantities. However, this approach represents these uncertainties as single numbers. This obscures the full range of risk that the government faces.

One of the most important consequences of obscuring the full range of risk comes in how a total reserve goal is determined. A total reserve target is the sum of potential losses from each risk a government is subject to. However, because risks are uncertain numbers, the sum is not as straightforward as adding

the single-number estimates of risk together. The most important potential error is dramatically overestimating the size of reserve the government needs. An explanation of why this is the case is best provided with [a video, which you can find here](#).^{*} For example, imagine that a local government is subject to three different types of extreme events, where there is a 5% chance of each occurring in a three-year period. A simple summation would lead a government to prepare for a 5% chance of each occurring (5% + 5% + 5%). However, because reserves can be used to respond to any extreme event, the optimal strategy is to think about the total risk from all extreme events at once. There is a small chance (less than 1%) of all three events occurring within a single three-year period (5% x 5% x 5%).

The way to overcome the disadvantages of the single method is to evaluate the full range of risk, rather than condensing risk down to a single number. We will call this “chance-based” because we can use the full range of risk to derive the chance that any given reserve level will be adequate to protect against the risks in question. GFOA has worked with several local governments to develop chance-based reserve models, also known as “probabilistic (or chance-based) simulations,” using Microsoft Excel and open standards for computer simulation from [ProbabilityManagement.org](#). These projects included working with elected officials to bring the results of the simulation into policy decisions. A full explanation of what chance-based simulation is and what it looks like is best accomplished [with a video, which you can watch here](#), and you can see a series of videos about simulation at [gfoa.org/risk-savvy-thinking-about-reserves-videos](#). The advantages of simulation are many, including:

- It is the best way to estimate the potential of pooling risks inside of local government. We will have more to say on this later in the paper. Suffice to say for now that risk pooling is a time honored and powerful strategy for reducing the cost of risk. You can learn more about risk pooling [in this video](#).
- It will provide the best estimate of the range of optimal reserves for addressing the risks that are included in the analysis. It also provides a clear illustration of the decreasing marginal benefit of accumulating too much in reserves and shows the point at which the marginal benefit decreases. You can watch [this video to see how](#).
- The simulation can address a multiyear time frame. This is important because reserve levels are not easy to increase quickly. You can watch [this video to see how](#).



All videos are available at:

[gfoa.org/risk-savvy-thinking-about-reserves-videos](#)

- A simulation can include forces that influence reserves outside of risk factors. For example, the simulation could include a local government’s willingness to cut its expenditures instead of using reserves. Or the simulation could address how likely it is that a local government will generate budget surpluses that build up reserves and offset losses. The video on analyzing a multiyear time frame provides an illustration of how willingness to cut expenditures can be integrated into a simulation.
- Simulations can highlight the full range of risk a local government is exposed to—from risks that could be easily self-insured all the way to catastrophic risks that are impossible to fully self-insure. This helps highlight the need for strategies like preventative investments and a robust disaster response strategy.
- Chance-based simulation is the same method used by insurance companies to develop policies, so it has proven to be best suited to problems of insurance.

The major disadvantage of chance-based simulation is that it is more complex than the single-number analysis method. Though chance-based simulations can be conducted in Microsoft Excel,¹⁷ GFOA is not aware of any local government that has conducted a simulation of reserves without outside consulting support. Also, the results are often expressed in odds and probabilities, and though odds and probabilities are essential for the best understanding of risk, they are not the first language of many people. Thus, explaining the result of the simulation can be more difficult than a single-number analysis. That said, GFOA’s experience is that it can be done—especially with the help of interactive models, like those you can see in the videos above. In fact, we have yet to meet an elected official who could not grasp the essential ideas of a chance-based analysis.



RETHINKING RESERVE CHECKPOINTS

Develop a Risk-Aware Reserves Policy

- Express your reserves policy as a range of desired reserves, with a floor and a ceiling.
- Conduct a risk analysis to get a sense of how the risks you face impact the reserves you should hold. We presented three methods of reserve analysis of varying sophistication. Any of them would provide a reasonable basis for a more informed discussion with policymakers about why reserves are necessary and how much should be kept in reserves.
- Quantification of risk offers important advantages over subjective approaches. We described both “single-number analysis” and “chance-based simulation” methods of quantification. A quantified approach might be particularly useful when there is a strong sense among decision-makers that existing reserves are too high or too low.
- The single-number analysis will be more accessible to local governments than a chance-based simulation. However, a chance-based simulation is better; it is how insurance companies conduct their analysis. The choice between the two depends on factors such as a government’s ability to pay for outside consulting support, demand from the audience for a more rigorous analysis, and the number of risks and size of reserves in question (more/bigger risks and reserves means more potential to make the best use of funds by optimizing the size of the reserve).

Develop a Comprehensive Reserves Policy

A reserves policy is a method to “pre-commit” the organization to wise decisions about reserves. Rather than deciding on reserves strategies in the heat of a moment when a tough decision is required, a policy can be developed when the pressure is off. That policy then provides the boundaries for decision-making when difficult decisions need to be made about reserves. A policy should address the following: 1) why reserves should be accumulated; 2) how much should be accumulated; 3) what strategies should be used for accumulation; and 4) when and for what purpose reserves can be used.

Regarding the question of “why,” the answer is to protect the local government against risks, ranging from weather events like flooding, earthquakes, wildfires, and snowstorms to man-made problems like lawsuits against the local government. Citing in policy locally relevant risks and the notion of self-insurance can help answer the question of “why” reserves are needed.

A reserves policy is a method to “pre-commit” the organization to wise decisions about reserves.

A policy should also address the “savings account” role of reserves in saving up for larger projects. Differentiating the “insurance policy” role of reserves from the “savings account” function could help decision-makers be savvier with their reserve strategy.

Our prior section on risk-based reserve analysis addressed how much to accumulate, including a recommendation that reserve targets be expressed as a range. A policy can also discuss strategies to use for accumulation. This could be as formal as formulas tied to any yearly surplus or even a formal budget allocation to hold back some amount of a year’s revenue for building a reserve. A policy could also allow for a less structured approach by encouraging surpluses and one-time revenue to be used to build the reserve, if the local government is below its target range. In fact, a government could apply some of the same risk savviness we’ve been discussing in this paper to its forecasting in order to estimate the size of surpluses that could be produced by a given spending plan. You can read the article [“Speaking Uncertainty to Power: Risk-Aware Forecasting and Budgeting”](#) to see how one government did just that and use our [mini stress test demonstration](#) to conduct the same analysis featured in the article.

A policy should also address how reserves can be used. Most important, a policy should discourage reserves from being used for ongoing expenditures (e.g., hiring more employees) because reserves are not an ongoing resource. An exception might be made for supporting continuity of public services in the face of a revenue interruption, like a recession. This would be temporary until revenues recover or until expenditures can be restructured to be affordable under the revenues that are available.

A policy that addresses these points helps to foster a better and shared understanding of reserves in relation to the maintenance of public services amid the risks the government faces.



“THE BEST CONVERSATION WE’VE EVER HAD ABOUT RESERVES”

GFOA worked with the City of Vista, California, which went from a policy where the reserve goal was defined by a single point to a policy with a risk-informed range. Based on this new approach, the council engaged in a wide-ranging and thoughtful discussion about the city’s reserves—with the Deputy Mayor characterizing it as “the best conversation we’ve ever had about reserves.”

A finance officer will also have to consider whether and how to describe the reserve relative to the “fund balance” figures that are included in the annual financial report. Governmental Accounting Standards Board (GASB) Statement No. 54 provides a series of categories of fund balance that have to be reported. Usually, however, reserves will have to be reported in the “unassigned” fund balance category. The finance officer can make the link between the reserve (i.e., a budgetary/financial planning strategy) and fund balances (i.e., an accounting mechanism) in the notes to the financial statements or as supplementary information in the annual financial report, or in budget documents. In this way, decision-makers can see the link between the fund balance, the financial statements, and differentiate between net resources that are available for use as self insurance, and those that are being put aside for spending on a future project, for example.

Finance officers could positively influence how stakeholders think about reserves by developing a comprehensive policy that describes why reserves are important to the community amid a budgetary shortfall or other contingency, the range of reserves that is prudent to maintain, and transparency on how reserves (a budgetary strategy) connect to the total fund balance available in financial reports. You can access a template for developing a reserve policy [here](#).



RETHINKING RESERVE CHECKPOINTS

Develop a Comprehensive Reserves Policy

- A reserves policy is a method to “pre-commit” the organization to wise decisions about reserves.
- A policy should address the following: 1) why reserves should be accumulated; 2) how much should be accumulated; 3) what strategies should be used for accumulation; and 4) when and for what purpose reserves can be used.
- The finance officer should strive for transparency in how reserves (a budgetary policy) are reflected in the reporting of fund balances in the annual financial report (an accounting mechanism).

Optimize the Combination of Commercial Insurance and Self-Insurance

Commercial insurance is a valuable complement to reserves. A useful analogue is self-insurance programs for employee health care. Self-insurance of employee health care has been shown to provide potential savings for employers compared to commercial insurance.¹⁸ However, few governments would self-insure every last dollar of potential loss. Instead, self-insured governments often purchase “stop loss coverage,” where a commercial insurance policy kicks in after a certain size of loss is reached. Thus, the government is spared: A) the cost of covering extremely large losses and B) the cost of the more expensive premiums that would come with using commercial coverage for more routine losses.

A similar concept can be applied to the risks a reserve is “self-insuring” against. Reserves will be most useful for lower magnitude, higher frequency risks. Commercial insurance is of the greatest value when the losses from catastrophic risk would be unaffordable. Let’s examine some practical applications of this idea.

The most straightforward example is to purchase higher deductible insurance policies for liabilities that are commercially insured. This strategy is useful for insurance policies that have become more expensive due to market conditions. Insurance against cyberattacks is a prime example, with some governments experiencing 100% year-over-year increases in prices as of this writing. For example, because of the increasing cost of policies, Mecklenburg County, North Carolina (covering Charlotte and surrounding areas), went from a \$1 million deductible with \$15 million in coverage to a \$5 million deductible with \$10 million in coverage.* The county has substantial general fund reserves, so it can “self-insure” the larger deductible and the lower limit.

* The county also negotiated several exclusions and limitations to the policy. This means the final price of the new versus the old policy is not comparable.



Another application might be “parametric insurance.” Parametric insurance policies pay out a set sum of money when a given condition comes to pass. For instance, a policy might pay out \$10 million if hurricane wind speeds in the community reach 120 miles per hour. Parametric policies are in wide use in many other sectors but are a relatively new instrument for local governments. Parametric policies might be most useful for catastrophic events where a local government’s reserve would be stretched to respond. Of course, federal and/or state assistance often is available for these kinds of events but also often take over a year to arrive.* Further, some costs of a catastrophic event may not be reimbursable by the state or federal government. For instance, if the tax base is so damaged that tax revenues do not recover quickly, the funds from a parametric policy could help fill the gap. Also, parametric policies provide full coverage on day one after the policy goes into effect, whereas it could take years to build up a reserve sufficient to cover the full impact of a catastrophic event. Parametric policies can also be designed around a specific geographic area. For example, perhaps an area where low-income people live is particularly vulnerable to a certain kind of hazard. A policy could be developed to provide a payout for an occurrence of that hazard in that area. That would allow the local government to provide additional support to the people who live there.†

You can read more about parametric insurance in the GFOA report [“Parametric Insurance: An Emerging Tool for Financial Risk Management.”](#) The report includes case studies of local governments that have purchased parametric policies and how insurance policies complement FEMA reimbursement.



RETHINKING RESERVE CHECKPOINTS

Optimize Commercial Insurance Combined With Reserves

- Consider if you have commercial insurance policies where a higher deductible could be self-insured by reserves. The highest potential will usually be with policies where premium prices are going up substantially.
- Consider if a parametric insurance policy could supplement reserves. Parametric insurance might be particularly useful when a government finds that it is underinsured for a catastrophic risk. This is because parametric insurance can provide additional coverage immediately, while it could take years to build an equivalent reserve.

* According to a sample of data obtained by GFOA, it takes 18 months, on average, for a local government to obtain FEMA reimbursement.

† Kousky, C., & Wiley, H. (2021, January). Improving the post-flood financial resilience of lower-income households through insurance. *Wharton Risk Management and Decision Process Center Issue Brief*.

Optimize Investment Strategies

Insurance companies invest the monies collected from premiums to make substantial profits.¹⁹ A government's reserves are basically premiums collected from the community to stabilize their government services against risk. Those monies held in reserves will be idle most of the time, so governments can adopt savvy investment strategies for their reserves.

A risk analysis, like we described earlier, is essential for a savvy investment strategy. A government can divide their idle funds into tranches, where each tranche represents a different likelihood of the government needing to access the money for emergency purposes. As a simple example, let's assume a government has only two investment options: 1) short-term, lower earning; 2) long-term, higher earning, where the term of the investment is three years. Let's assume a government does a risk analysis that suggests that \$10 million is a good ceiling amount for its reserve, and the government has \$10 million in its reserve. The risk analysis also suggests that there is only a 10% chance that the government would need to use more than \$9 million of its reserve in the next three years. Thus, decision-makers conclude that putting \$1 million in

The decision to invest in any combination of assets with different risk/reward profiles will, at some point, depend on the subjective appetite for risk of the decision-maker.

investment option 2 is worth the risk. This leaves \$9 million in the shorter-term, lower-earning investments, but which provides greater ability to access the cash if the need arises. Research by one financial technology firm that helps local governments determine their investable resources suggests that there are large gains in investment returns available by following a more risk-savvy investment strategy, like that described above. Data provided by this firm suggests that the potential improvement in returns are as much as 35% to 40% more than what most governments get currently from the resources that comprise their reserves.²⁰

Our example assumes a probabilistic risk analysis, but a less rigorous risk analysis could still help reach a similar conclusion. For example, if a less rigorous analysis suggests that \$10 million is the ceiling amount for reserves, then we know that amounts closer to the ceiling are far less likely to be used than the "first dollar" that comprises the reserve. Thus, a government would still have the bulk of the \$10 million invested in more liquid assets, while placing a smaller amount in a less liquid, higher return asset.

Our example also reveals a potentially sticky question. The decision to invest in any combination of assets with different risk/reward profiles will, at some point, depend on the subjective appetite for risk of the decision-maker. Going back to our example, who is to say that a 10% chance of needing more than \$9 million is the objectively correct threshold for investing the remaining \$1 million in longer-term securities? Perhaps some people would be comfortable with a 15% or 20% chance, while others may be uncomfortable with as high as 10%. These decisions will have to be discussed with the relevant decision-makers to come to a consensus. GFOA's experience has been that reaching agreement is easier when based on an objective analysis, like a risk assessment. GFOA has done this kind of analysis with its own finances and found that reaching agreement on the preferred investment strategy was not that difficult, as the risk analysis provided objective criteria and data for decision-makers.



RETHINKING RESERVE CHECKPOINTS

Optimize Investment of Reserve Funds

- Use a risk analysis to identify tranches of funding, ranging from more likely to be needed to cover unplanned, unavoidable needs to less likely. The less likely tranches may be candidates for less liquid, higher return investments.
- Convene a discussion with the relevant decision-makers to determine the level of risk the government is willing to take on with respect to investment liquidity versus the potential need to draw upon reserves.

Pool Risk

Risk pooling is widely recognized and a time-honored strategy for reducing the cost of risk. The reason pooling works is diversification. Put simply, it is unlikely that a loss event will happen to all the pool participants at the same time. For a more in-depth explanation, you can [watch this video](#).

Local governments often pool risk across multiple local governments (regional insurance pools). Local governments also pool risk inside their own organizations. Let's return to our example of employee self-insurance. Local governments do not set up separate self-insurance pools for each department or for each accounting fund. All employees fall under the same self-insurance program. This saves money because the total amount needed to insure the entire organization is less than you would need if you insured each department separately. We also addressed this concept earlier—that risks don't add up the way you might think. We also explain the concept in more detail [in this video](#).

Similarly, local governments could realize some advantages from pooling reserves. There are many opportunities to apply pooling, though these opportunities have varying degrees of difficulty.

The first and easiest way is to make sure there are no unrealized opportunities for pooling within the general fund. For example, some governments set up one reserve for economic uncertainty (e.g., recessions) and another for extreme events (e.g., natural disasters). These two reserves could be pooled. Because recessions and natural disasters are unlikely to occur at the same time, a combined reserve should be more cost-effective.* The combined reserve could still be labeled as a reserve for extreme events and economic uncertainty to make the intent clear but without keeping the two reserves separate. The most accurate way to judge the potential savings is the probabilistic risk analysis described earlier. Combining reserves in order to make the money in the reserves more fungible could improve cost-effectiveness for the same reasons we described in our employee health plan self-insurance example.

Another possibility is to define policies for emergency interfund borrowing. The idea is that the total reserved across the entire government could be less if each fund did not have to prepare for the most extreme circumstance but could rely upon financial backup from other funds in extreme cases. You can read the GFOA article "[The Last Line of Financial Defense? Internal Loans in Emergency Situations](#)" for more on how to develop a policy.

An option that could present some challenges also presents large potential payoffs—and that is to pool reserves across funds. It has a large potential payoff because the amounts involved will be large. It can be challenging because monies may be segregated into different funds for legal reasons such that there might be practical barriers to operating such a pool. Pooling funds will be most effective when

MENTAL ACCOUNTING AND RESERVES

"Mental accounting" refers to the practice of dividing money into separate buckets in our personal lives, such as the "vacation money" versus "the kids' college fund." Economists have shown that mental accounting leads to suboptimal financial decisions, though there is a good argument to be made that mental accounting is useful for navigating life, even if financially suboptimal.²² Mental accounting may not be so different from when local governments place monies into different categories. The trick to avoiding the worst consequences of mental accounting is avoiding excessive limitations on fungibility of money while still being clear about the government's plans for its funds and why those plans are important. Risk analysis does this by making clear why it is important to have funds in reserve and how much should be kept in reserve.

* For more on this point, see the video that describes pooling.

two conditions are met: 1) the funds involved do not have legal restrictions in place that make pooling impractical; and 2) the risks faced by funds are not overly similar. If the risk profiles of the funds are similar, then pooling will not be of great benefit. This is because each fund will receive a shock when a given risk happens. However, if the funds have substantial differences in their risk profiles, then pooling could be quite valuable. A given risk may give a shock to one fund but not the other. The fund that was not shocked can support the fund that was shocked.

Many local governments may be unwittingly pooling the reserve risks of several funds. In our work with local governments, we found that an important risk for the general fund is that the general fund is often a de facto “backstop” for other funds. If those funds run into unplanned, unavoidable emergency financial needs, then the general fund is on the hook. Rather than building up separate reserves in each fund, it may be better to formalize the current state of affairs and enhance the pooled approach by pulling in the pool of other funds that have their own reserves.

The reason pooling works is diversification. Put simply, it is unlikely that a loss event will happen to all the pool participants at the same time.

We will note that GFOA is not the only one to advocate for the potential of pooling reserves. In Moody’s November 2022 “US Cities and Counties [Bond Rating] Methodology,” Moody’s introduced a governmentwide evaluation of fund balance into its rating methodology. The strength of fund balances and held cash *combined* across all funds is worth 30% the foundational score when Moody’s evaluates a government’s creditworthiness.* Moody’s found that the fund balances in different funds are often flexible enough that different funds can support each other. Moody’s believes that there is enough potential

for interfund support to justify evaluating across the entire government instead of fund by fund. This marks an evolution of Moody’s approach, which used to be focused on specific funds.

Finally, let’s address regional pooling. Local governments often participate in regional insurance pools, so why not regional arrangements for the risks the reserves guard against? The reason this may not provide as much benefit as one might expect is that the types of risks the reserves guard against (e.g., natural catastrophes, recessions) impact the entire region. If all members of a pool are impacted at the same time by the same risk, then a pool loses its value. Another way to think about it is that a pool within government brings together funds that might have *different* exposures. A pool between governments brings together funds (e.g., multiple general funds) that have *the same* exposures.



RETHINKING RESERVE CHECKPOINTS

Apply Risk Pooling to Reserves

- If you have separate reserves in the general fund for different risks, combine those reserves.
- Develop a policy for emergency interfund borrowing.
- Consider pooling reserves across funds within your government. In some cases, you may already be de facto pooling the general fund with financially weaker funds. Improve your risk portfolio by adding other strong funds to the pool.

* We should note that Moody’s separates “fund balance ratio” and “liquidity ratio,” but both cover all funds. Also, it is important to note that the base score is a starting point, and Moody’s analysts may adjust a final rating up or down based on contextual factors particular to the local government being evaluated.

Understand Bond Ratings and Reserves

A rationale for holding a higher amount in reserves is that it will support a strong bond rating, which will translate to lower interest costs on the money a government borrows. Reserves play an important role in the ratings process. We can illustrate with Moody's Investors Service: According to Moody's rating methodology, available *fund balance ratio** is worth 20% of the rating. Moody's also examines liquidity ratio† because fund balance is an accounting term that can include assets not available for current spending. The liquidity ratio constitutes an additional 10% of the rating methodology. Thus, fund balance and cash together comprise 30% of the total ratings methodology.

First, it is worth remembering that “fund balance” and “reserves” aren't the same, though they are related. Fund balance includes a wider scope of resources, so it will be a larger number than reserves. With this in mind, we can see that fund balance/cash plays an important role in the ratings method. But what is considered a good level of fund balance? According to Moody's, the “Aaa” rating (the highest) is associated with fund balances in excess of 35% of revenues. The “Aa” rating is associated with fund balances between 35% and 25%, and the “A” rating with 25% to 15%. That said, it is important to remember that while 30% of ratings evaluation is comprised of fund balances and cash, 70% is not. Further, the Moody's documentation is clear that ratings analysts will consider local factors and other idiosyncrasies to arrive at the final rating. Thus, it is possible to have fund balances/cash below the range for a given rating yet still achieve that rating (or even a better rating).

We also examined rating methodology documentation from S&P Global. Though the specifics of their method are different, the general conclusion is the same: Fund balances play an important, but not decisive, role in arriving at a final rating. A higher amount of fund balance will contribute to a higher rating, but it may not be sufficient to guarantee a higher rating. Similarly, a lower fund balance is not guaranteed to consign a local government to a lower rating. Other factors weigh more heavily, and ratings analysts have some discretion in assigning ratings based on local context.

Now that we know the role of fund balance in bond ratings, the next question to ask is: “Is a higher bond rating ‘worth’ the cost to obtain it?” A bond rating upgrade has a quantifiable benefit, which is the interest savings available at the next highest bond rating. To the extent that higher fund balance (and higher reserves) can move a local government from one bond rating to the next, then it is possible to measure the benefit.

Coupon	Duration	Yield	Change
0.50%	3 Month	0.87%	↑
0.75%	6 Month	0.95%	↑

* The formula is: Available Fund Balance + Net Current Assets/Revenue

† The formula is: Unrestricted cash/revenue



Let’s get a sense of the interest rate differences between bond ratings. Exhibit 1 shows the differences between interest rates (percentage points) at different bond ratings from 1993 to 2022. We show a 90% confidence range, which omits outliers on both the high and low side. It also is notable that the midpoint (median) is closer to the low side of the range. This means, most of the time, the differences between ratings are closer to the low value than the high value.

EXHIBIT 1 | HISTORY OF INTEREST RATE DIFFERENCES BETWEEN BOND RATINGS, 1993 TO 2022²³

Percentage point differences from going from a higher to lower rating →		AAA → AA	AA → A	A → BAA	Notice that the midpoint is closer to the low side of the range. This means most of the time the differences between ratings are closer to the low value than the high value.
90% of the time, the difference is between these points.	Low	0.09%	0.10%	0.12%	
	Mid	0.11%	0.20%	0.38%	
	High	0.25%	0.62%	0.97%	

What are the implications of the differences in interest rates? First, let’s get a sense of the differences in the total cost of bond issue due to an interest rate difference. Let’s imagine a 30-year, \$200-million bond issue at 3% annual interest with a rating of A. The total cost of interest over the life of the bond issue would be about \$106 million. If that same bond issue were to be issued with a rating of AA, let’s assume it would enjoy an interest rate that is better by 0.20% (the midpoint on our table). In that case, the total interest rate paid over the life of the bond would be about \$98 million, or a difference of about \$8 million. This equates to an average of about \$260,000 per year. Conveniently, the midpoint for changes between ratings in the other columns on our table is roughly half or double the midpoint in Exhibit 1, so it is easy to imagine the financial benefit at other bond rating levels.

The question of whether these benefits are worth the cost of accumulating more fund balance depends on several factors, such as:

- **How much debt a government issues.** If a government issues more debt, it will get more benefit from a lower interest rate (assuming it will issue the same amount of debt no matter its rating).
- **The duration of the payback period for the debt.** A longer payback period will result in the government paying more total interest over the life of the bond, making a lower interest rate more impactful.
- **How high a bond rating would be without accumulating a large amount in reserves.** For example, we can see in Exhibit 1 that the interest rate benefit between: 1) AAA and AA is much smaller than 2) A and BAA. This means that, all else being equal, a government that can improve from BAA to A by accumulating fund balance would benefit more than a government that can go from AA to AAA.
- **The opportunity costs of holding fund balances and reserves.** Fund balances/reserves are not costless to hold. Money held by the government is money taken out of the private economy. A less abstract opportunity cost is the public service forgone by not spending this money. In a private firm, the opportunity cost of idle funds is, essentially, the rate of profit that could be made by directing the funds to a business opportunity. Unfortunately, there is not yet a widely accepted, useful way to measure opportunity costs of idle funds in local government. The effect of this has been that the cost of holding idle funds in local government is often underestimated.
- **Secondary benefits of a higher bond rating.** A higher bond rating might confer prestige to the local government, perhaps resulting in greater trust and confidence from the public or making the locality more attractive to businesses.
- **How much additional “coverage” from risk more reserves will buy.** This speaks to the marginal value from accumulating more reserves. If the additional reserves are unlikely to be used, then the potential benefit from the standpoint of risk mitigation is low. That said, we should remember that rating agencies are measuring fund balance and cash. A local government could also accumulate reserves as part of a sinking fund to pay for a special project. The monies in the sinking fund would count positively in the rating agency evaluation.



RETHINKING RESERVE CHECKPOINTS

Understand Bond Ratings and Reserves

- Fund balances and cash are an important but not an overwhelming determinant of bond ratings.
- Because fund balances/cash are not costless to accumulate and hold, governments should ask if a higher bond rating is worth the cost of holding. The cost versus benefit of a higher bond rating is a function of the amount and duration of debt the government issues, the likely improvement in interest rates available from a rating increase, the marginal improvement in risk management available from holding more reserves, and the opportunity cost of holding fund balance/cash.

Conclusion

Reserves help local governments manage risks by making resources available for unplanned, unavoidable expenditures and revenue interruptions. This makes reserves a form of self-insurance. We have advocated that local governments treat reserves more like self-insurance, including using insurance metaphors to discuss and plan reserve strategies, using risk analysis to determine the size of the reserve, complementing reserves with commercial insurance strategies, pooling risks that reserves are used to cover, and more. This will help local governments make savvier financial decisions about how to manage risk and make their communities more prepared for a volatile and uncertain world.

ENDNOTES

- ¹ For examples of research examining the relationship between natural disasters and reserves, please see the following journal articles:
 Chen, G. (2019). Assessing the financial impact of natural disasters on local governments. *Public Budgeting & Finance*, 40(1), 22–44.
 Lee, S., & Chen, G. (2022). Disaster experience and governments' savings: The moderating role of organizational capacity. *Journal of Public Administration Research & Theory*, 32(3), 591–609.
 Pope, J. V., & Leland, S. M. (2019). Isn't a flood a "rainy day"? Does the political nature of disasters impact the uses of states' rainy day funds? *Social Science Quarterly*, 100(7), 2555–2565.
- ² For further discussion, see, for example: Stewart, L. M., Hildreth, R. W., & Antwi-Boasiako, K. B. (2017). The fund balance conundrum: An ethical perspective. *Administration & Society*, 47(8), 915–942.
- ³ For data on declining trust in experts, see: Funk, C., Tyson, A., Kennedy, B., & Johnson, C. (2020, September 29). Science and scientists held in high esteem across global publics: 1. Scientists are among the most trusted groups in society, though many value practical experience over expertise. *Pew Research Center*. <https://www.pewresearch.org/science/2020/09/29/scientists-are-among-the-most-trusted-groups-in-society-though-many-value-practical-experience-over-expertise/>
- ⁴ For an example of an analysis of growth rates over time, see the work of economist Robert J. Gordon. <https://gordon.economics.northwestern.edu/>
- ⁵ Pisano, M. A. (2017). *The puzzle of the American economy: How changing demographics will affect our future and influence our politics*. Praeger.
- ⁶ See, for example, empirical research on state governments analyzing time to fiscal recovery following economic recessions:
 Buerger, C. (2020). The effect of economic downturns on state budgets: A counterfactual analysis of the great recession. *Applied Economic Letters*, 28(21), 1852–1859.
 Buerger, C., Sandel, R., Reitano, V., Jones, P., & Lofton, M. (2021). Extending difference-in-differences frameworks to Granger equations: Evidence from cutback management during three recessions. *International Journal of Public Sector Management*, 34(6), 688–705.
 Rueben, K., Randall, M., & Boddupalli, A. (2018). Budget processes and the great recession: How fiscal institutions shape tax and spending decisions. *Urban Institute*, Washington, DC. Retrieved from <https://www.taxpolicycenter.org/publications/budget-processes-and-great-recession>.
 Rosewicz, B. (2018). Over long term, revenue lags behind expenses in 10 states. *The Pew Center for Charitable Trusts*, Washington, DC. Retrieved from <https://www.pewtrusts.org/en/research-and-analysis/articles/2018/11/19/over-long-term-revenue-lags-behind-expenses-in-10-states>.
- ⁷ See, for example, the following journal articles empirically examining local government expenditure stabilization:
 Marlowe, J. (2005). Fiscal slack and counter-cyclical expenditure stabilization: A first look at the local level. *Public Budgeting & Finance*, 25(3), 48–72.
 Wang, W., & Hou, Y. (2012). Do local governments save and spend across budget cycles? Evidence from North Carolina. *American Review of Public Administration*, 42(2), 152–169.
- ⁸ For research examining the relationship between public pensions and reserves retained in budget stabilization funds, see the following:
 St. Clair, T. (2013). The impact of budget stabilization funds on state pension contributions. *Public Budgeting & Finance*, 33(3), 55–74.
- ⁹ This was the view expressed by an insurance industry expert at a live educational event hosted by GFOA in 2022.
- ¹⁰ From 1960 to the early 1990s, personal savings rates were around or above 10% but then sharply dropped, reaching a low of around 3% to 4% in 2005 to 2008. Savings increased after the 2008 Great Recession, averaging around 7.5% until the COVID-19 pandemic, when it jumped to historically high levels. After the pandemic, savings rates dropped dramatically, plummeting to the all-time lows of 2005 to 2008.
- ¹¹ For a few more recent examples of research analyzing government savings patterns over time, and in relation to the business cycle, please see the following journal articles:
 Arapis, T., & Reitano, V. (2018). A glimmer of optimism in government savings accumulation? An empirical examination of municipal unassigned fund balance in Florida. *Public Finance Review*, 46(3), 389–420.
 Barrett, N., Fowles, J., Jones, P., & Reitano, V. (2019). Forecast bias and fiscal slack accumulation in school districts. *American Review of Public Administration*, 49(5), 601–613.
 Stewart, L. M., Hamman, J. A., & Pink-Harper, S. A. (2017). The stabilization effect of local government savings: The case of Illinois counties. *Public Budgeting & Finance*, 38(2), 23–39.
 Wang, S., & Scorson, E. (2019). Economic resilience after the Great Recession: An examination of unreserved fund balance in Michigan counties. *Local Government Studies*, 46(5), 716–733.
- ¹² For example, according to a survey conducted by Bankrate in 2021, 46% of Americans are saving for a specific financial goal such as a home purchase, vacation, or education, while only 28% are saving for an emergency fund.
- ¹³ Please see the following research for further related discussion:
 Fenimore, A., & McCue, C. (2021). Are public managers wired for risk aversion? *Public Finance & Management*, 20(1).
 Hildreth, B. W., Yeager, S. J., Miller, G. J., & Rabin, J. (2017). Finance managers' propensity to save. *Journal of Public Budgeting, Accounting & Financial Management*, 24(2), 1–35.
- ¹⁴ See, for example, the following journal articles for examples of how to empirically analyze reserves:
 Marlowe, J. (2005). Fiscal slack and counter-cyclical expenditure stabilization: A first look at the local level. *Public Budgeting & Finance*, 25(3), 48–72.
 Wang, W., & Hou, Y. (2012). Do local governments save and spend across budget cycles? Evidence from North Carolina. *American Review of Public Administration*, 42(2), 152–169.

¹⁵ For a study of the 30 largest U.S. cities, please see the following research:

The Pew Charitable Trusts. (2013). *America's big cities in volatile times: Meeting fiscal challenges and preparing for the future*.

For a study of 600 municipalities, please see the following book chapter:

Marlowe, J. (2014). *Fiscal slack, reserves, and rainy-day funds*. In Levine, H., Justice, J. B., & Scorsone, E. (Eds.), *Handbook of Local Government Fiscal Health* (321–342). Jones & Bartlett Learning.

¹⁶ Boswell, M. R., Deyle, R. E., Smith, R. A., & Baker, E. J. (1999, April). A quantitative method for estimating probable public costs of hurricanes. *Environmental Management*, 23(3), 359–372.

¹⁷ Visit probabilitymanagement.org for resources on how to do this.

¹⁸ Kavanagh, K. (2018, October). Smart practices for self-funded employee health insurance. *Government Finance Review*.

¹⁹ An inquiry with OpenAI's GPT 4.0 replied that "investment income accounts for about 25% to 30% of the profits of a typical property and casualty insurance company." Further, GPT showed that some insurance companies even derive most of their revenue from investments.

²⁰ Data obtained by GFOA from the firm three+one. We note that three+one sells a software service that helps local governments optimize the amount of money invested in higher return instruments.

²¹ Mental accounting. *BehaviorEconomics.com*. <https://www.behavioraleconomics.com/resources/mini-encyclopedia-of-be/mental-accounting>

²² The positive effects of mental accounting include reduced impulsive spending, increased saving and mental well-being, and support for achieving financial goals. An example of research on this point comes from Behavioral Economics and is known as the "endowment effect," which, when applied to savings, says people tend to be more cautious about using money labeled specifically as "savings."

²³ Data sourced from SDC All Municipals, an online data portal from Refinitiv.

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Government Finance Officers Association
203 N. LaSalle Street, Suite 2700
Chicago, IL 60601
312-977-9700 | gfoa.org