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Social Equity in Budgeting:
A Roadmap for Practitioners

John R. Bartle[i, c], Marilyn Marks Rubin[ii]

There is a growing recognition that budgets are key tools governments can use to advance equity for all residents. In the United States, governments at all levels are looking for ways to incorporate equity into their budget process to address concerns, particularly racial inequities, in delivering public services. Several local governments have taken steps to implement an equity focus in their budgeting processes, although most have yet to do so. In this article, we use lessons learned from equity budgeting initiatives, primarily at the local level, to provide suggestions for practitioners considering integrating an equity dimension into their budget process. We begin by discussing how public administration values influence budgeting and how they are connected to the budget orientation and format. Next, we look at the efforts of several local governments to incorporate an equity dimension into their budget process, followed by a consideration of the influence of state and federal actions on local governments. We then identify the key steps governments can take to implement an equity-focused budget.

Keywords: Equity, Local Government, Public Budgets, Public Values

There is growing recognition among public administration practitioners and scholars that a budget is a key tool that governments can use to provide a pathway to a more equitable society (Martinez Guzman et al., 2023; McDonald et al., 2024; Rubin et al., 2022). In the United States, governments at all levels are looking for ways to incorporate equity into their budget process to address concerns, particularly racial inequities, in delivering public services. Several local governments have taken steps to implement an equity focus in their budgeting processes, although most have yet to do so. Among the states, some are changing tax systems and funding equity-related initiatives. However, as of 2023, only the state of Washington had "formally introduced reforms to make the budgetary process more equitable" (Martinez Guzman et al., 2023, p. 8). At the federal level, President Biden, on his first day in office, issued an executive order identifying equity as a responsibility of the federal government that was to be implemented through the budget (Biden, 2021). In this article, we use lessons learned from equity budgeting

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Box 1. Definitions of Budget Formats

Line-item budget format: Classifies expenditures in terms of the items of expenditures, such as salaries, benefits, supplies, and equipment.

Performance budget format: Classifies expenditures by outputs (activities performed) by each agency related to program outcomes.

Program budget format: Classifies expenditures by their contribution to broad government objectives, such as education, regardless of the specific agency responsible for providing the activity or service.

initiatives, primarily at the local government level, to provide suggestions for practitioners considering integrating an equity dimension into their budget process. We begin by discussing public administration values in budgeting, including equity, economy, effectiveness, and efficiency, and how they are connected to budget orientations and formats. Next, we look at the efforts of several local governments to incorporate an equity dimension into their budget process. This is followed by considering the influence of state and federal actions on local governments. We then identify the key steps governments can take to implement an equity-focused budget and conclude with some remarks.

Public Administration Values in Budgeting

In 2005, the National Academy of Public Administration (NAPA), the field's preeminent organization,[1] identified equity as the fourth pillar of public administration. The focus of equity is on *who* gets public services. NAPA's first three pillars - economy, efficiency, and effectiveness - focus on *how* public services are provided. Taken together, the four pillars reflect values foundational to public administration. In 2019, in recognition of the growing role of government in advancing equity, NAPA included "Foster Social Equity" as one of the 12 Grand Challenges facing public administration today.[2] Similarly, in both the academic study (McDonald et al. 2024) and the practice of public administration, social equity has been increasingly emphasized. This emphasis did not exist in earlier public administration practices or literature. This is especially true for public budgeting. While some scholars discussed equity in taxation and, to a lesser degree, in government spending (Rubin & Bartle, 2023), equity has rarely been explicitly considered in the practice of public budgeting nor in discussions of budget orientations and formats.

There is, however, a link between public administration values and budget orientations and formats. Almost 60 years ago, Allen Schick (1966) identified three orientations of public budgeting systems: control, management, and planning.[3] These orientations manifest the public administration values of economy, efficiency, and effectiveness that, taken together, were seen as establishing the framework for management decisions. The three orientations are incorporated into budgeting routines using different formats that determine how governments classify expenditures (see Box 1).

The control orientation is most closely associated with the line-item budgeting format (See Table 1). The focus of the information presented is on each line item in the budget (e.g., salaries, supplies, and capital expenses), and the emphasis is on controlling the growth of line-

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Table 1. Public Service Values in Budget Orientations and Formats

Value	Budget Orientation	Budget Format
Economy	Control	Line item
Efficiency	Management	Performance
Effectiveness	Planning	Program
Equity	Outcome or process	Not yet defined

item expenditures to achieve the broader value of the economy, i.e., "the thrifty management of resources, such as money, materials or labor" (Norman-Major & Wooldridge, 2011, p. 209).

The efficiency value is defined as "getting the most output for the least input" (Norman-Major & Wooldridge, 2011, p. 209) and is most closely associated with the management orientation and the performance budgeting format. Efficiency is a dynamic concept that seeks to allocate resources to achieve the highest social satisfaction. The performance budgeting format regularly assesses agency outcomes to see if program performance meets social goals, such as improved student learning, reduced recidivism, or reduced road congestion.

Effectiveness looks at whether "government is accomplishing the goals it set out to accomplish" (Norman-Major & Wooldridge, 2011, p. 209). It is most closely associated with the planning orientation and the program budgeting format that seeks to allocate resources to organizational objectives, irrespective of the agency or department funding the services or activities.

Equity in the Budget Process and Format

Due to the notable absence until recent years of an equity focus in budgeting, it was not discussed as part of the framework for management decisions. The budget orientation for the equity value is thus just evolving and the budget format associated with it has yet to be defined. We posit that at least two orientations could apply: an outcome orientation and a process orientation. An outcome orientation would emphasize equity goals and focus programs on achieving them by regularly measuring progress and adapting management or budgetary allocations as necessary. A process orientation would focus on expanding citizen participation in the budget process to achieve broader, more democratic decision-making involvement.

The outcome and process orientations are not mutually exclusive or mutually supportive. An outcome orientation would focus on measuring progress toward specified equity goals. The participation orientation might or might not specify equity goals. Conversely, a process with broad citizen participation may not necessarily achieve a more equitable allocation of resources since "access and opportunity to participate are often inequitable in their own right" (McDonald & McCandless, 2023, p. 10). While we opine that the outcome orientation, focusing on equity goals, is more definable and appropriate, local governments have used both orientations to incorporate equity into their budget decisions. The City of Philadelphia, for example, emphasizes the outcome orientation by asking departments to specify how the outcomes of their budget proposals will impact the allocation of resources among marginalized communities (Waxman, 2022). On the other hand, in its efforts to advance equity, King County, Washington, uses a participatory budgeting orientation to allocate funds outside of the regular budget process (Martinez Guzman et al., 2023).

The budget format best associated with equity-based budgeting is not yet fully defined. Rhonda Sharp (2003), an expert on budgeting for gender equity, argues that the line-item format used by most governments "does not readily lend itself to assigning expenditure (and revenue) inputs in a systematic way according to their gender impacts" (p. 25). Instead, she asserts that a performance budgeting approach is likely best for equity budgeting purposes. We posit that her argument for a performance-based format can extend beyond gender considerations and can apply to a broader concept of equity. We also posit that adapting the program budget format could also provide a good framing for budgets to achieve equity goals, particularly if equity is identified as a stand-alone objective of the government producing the budget. As Kavanagh et al. (2023, p. 28) state, "a program budget supports budgeting for equity because the government can more easily identify the services that are the most powerful levers for achieving equity goals. This then forms the basis for developing criteria for how to allocate funding." Chris Fabian (2023), a local government finance consultant, "strongly recommends a transition from a line-item to a program budget to truly understand how programs and services align with equity outcomes, and how programs and services may be adjusted to advance equity outcomes."

Some U.S. local governments have adopted what is referred to as priority-based budgeting (PBB). PBB brings together elements of the zero-based budgeting format in which the budget for each new cycle is created starting from a "zero base," with the program format in which expenditures are classified by their contribution to broad government objectives without regard to the specific agency responsible for providing the activity or service. Integrating the two formats, PBB emphasizes "working with the resources available as a starting point r*a*ther than with the previous year's expenditures and allocating funding to programs rather than departments" (Zencity n.d.). Using PBB, programs can be evaluated based on desired outcomes such as equity. However, according to Fabian (2023), most local governments have not adopted a PBB format because "they perceive that they don't have the resources to launch these new efforts. Compounding that challenge, the cost of providing current services continues to increase, while budget shortfalls brought on by the COVID-19 pandemic put immense pressures on already constrained resources." Despite these challenges, several local governments in the U.S. have explicitly incorporated an equity dimension into their budget process. They tend to be cities where social equity is a government-wide goal. It is important to watch this evolution to see if PBB is accepted as a more widely used format for equity budgeting initiatives.

Equity Efforts by Local Governments

Some local government equity-based budget initiatives stem from participating in the Cities Budgeting for Equity and Recovery (CBER) program run by Results for America (2024). The mission of CBER is to: "make investing in what works the 'new normal' so that government decision-makers use evidence and data to increase the impact of the over $2 trillion that governments spend each year to open opportunities and advance economic mobility" (What Works Cities, 2022, p. 4). The CBER program included 28 cities whose initiatives can serve as models for other local governments. Looking specifically, for example, at Austin, TX and Philadelphia, PA, two cities in the CBER program, three lessons can be learned.

First, both Austin and Philadelphia made structural changes to advance equity, such as establishing equity offices. Philadelphia gave its equity office the power to execute a city-wide racial equity mandate, and Austin developed an equity assessment tool. Second, both cities were

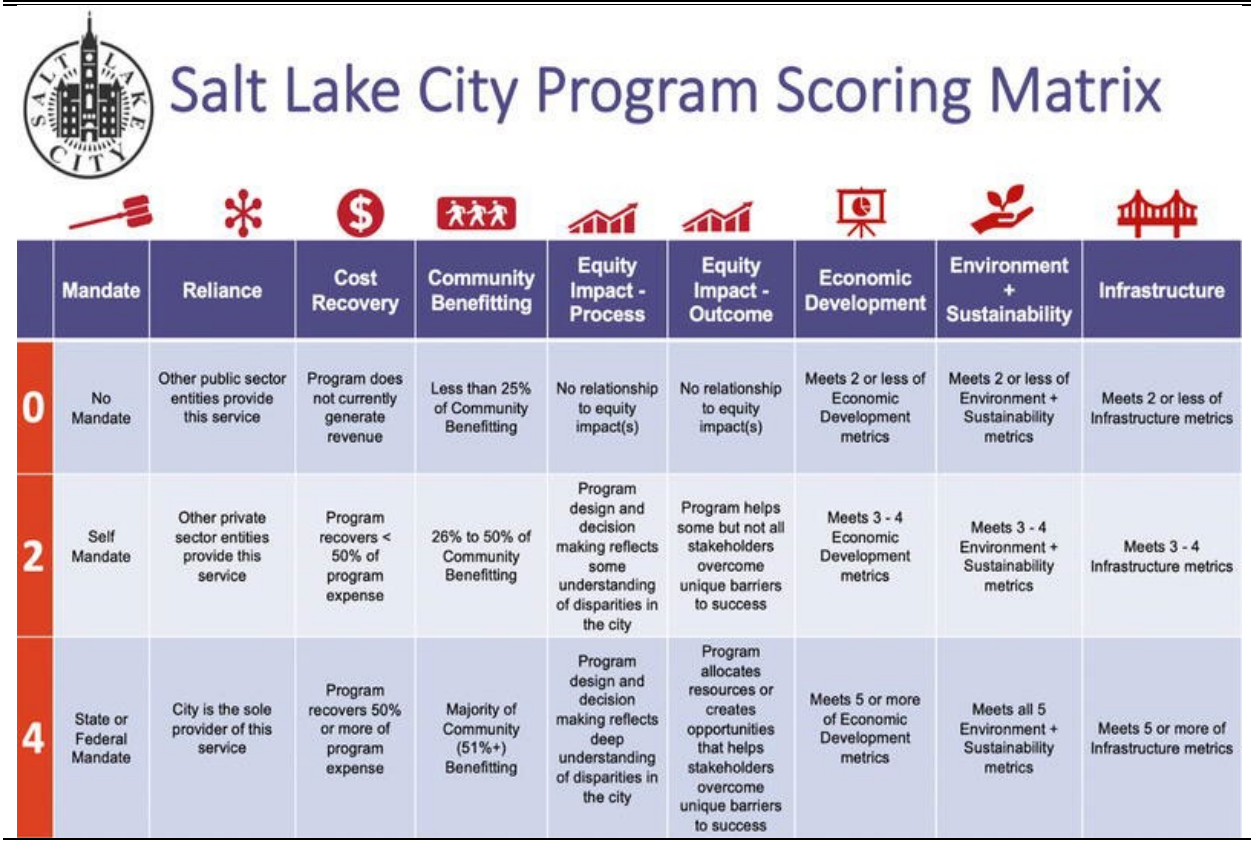
deliberate in finding opportunities to prioritize equity. Philadelphia redesigned its budget forms to require departments to assess the impact of their budget requests on racial equity. Austin used its equity assessment tool to examine the effect of its policies on equity. Third, both cities took specific actions to improve collaboration with stakeholders. Austin encouraged departments to engage with each other and to collaborate with stakeholders. The city also created a dashboard with links to department dashboards (What Works Cities, 2022). Philadelphia identified agencies that were engaging minority populations and had incorporated equity in their budgeting decisions and used this information to help other agencies learn from these experiences. The city also launched a participatory budgeting initiative. It should be noted, however, that while Philadelphia assesses the outcomes, engagement, and impact of policies, it realizes the limitations of its efforts: inadequate metrics and "uneven training and experience using a racial equity lens among agencies" (Waxman, 2022).

The CBER program results analysis also shows that city capital improvement plans (CIPs) present an opportunity to incorporate equity into the government's infrastructure plan. Because it is a longer-term plan that spends large amounts of money, incorporating equity in the CIP can have an important long-term impact on equity (What Works Cities, 2022).

Fabian (2023), drawing on the experiences of nine large local governments, reported several major findings of equity-focused budget initiatives. First, he found that in the budget development, equity can be advanced by asking agencies questions focused on the equity impact of their budget requests. These questions can help agencies better understand the potential of their programs to advance equity. We have identified several cities that ask agencies to identify the impact of budget requests on racial equity, including Philadelphia, PA (Waxman, 2022), Dallas, TX (Office of Equity & Inclusion, 2022), San Antonio, TX (Office of Equity, 2021), and Madison, WI (Racial Equity & Social Justice Initiative, 2018). For example, in Philadelphia, the equity evaluation rubric for health care includes questions such as "how will this change impact racial disparities in health outcomes?" In the implementation phase, the rubric asks, "how certain are we of the impacts on disparities if the change is effectively implemented" (Waxman, 2022). In San Antonio, the Budget Equity Tool asks agencies to "[d]escribe how your budget allocates funds in ways to advance racial and economic equity. Consider a global view (not program-level) in how funds are allocated to reduce or eliminate disparities and improve outcomes for low-income communities and communities of color" (Office of Equity, 2021, p. 4). If the agency uses an equity lens in assessing expenditures, then for specific programs, managers are asked, "What specific racial and/or economic inequities in San Antonio does this program intend to address/reduce? What metrics will the Department use to evaluate or assess the program's impact on communities of color and low-income communities" (Office of Equity, 2021, p. 4)?

The second finding reported by Fabian is that data collection and the use of empirical evidence for program equity analyses encourage agencies to show the value of programs in advancing equity goals and facilitates the budget office evaluation of the effectiveness of different programs in meeting equity and other goals. Tacoma, WA, and Dallas, TX, require data disaggregated by demographic categories to track program access and outcomes. Tacoma has a strategic plan, "Tacoma 2025," that identifies goals such as: "improve health outcomes and reduce inequities for all Tacoma residents" and "decrease the percentage of individuals who are spending more than 45% of income on housing and transportation costs" (City of Tacoma, 2020). Tacoma also uses an equity index with 32 data sources in five categories: livability, accessibility, economy, education, and environmental health. Tacoma's index maps out equity by census block. Dallas has five goals (economic, workforce and community development,

Figure 1. Salt Lake City, Utah Budget Matrix



	Mandate	Reliance	Cost Recovery	Community Benefitting	Equity Impact - Process	Equity Impact - Outcome	Economic Development	Environment + Sustainability	Infrastructure
0	No Mandate	Other public sector entities provide this service	Program does not currently generate revenue	Less than 25% of Community Benefitting	No relationship to equity impact(s)	No relationship to equity impact(s)	Meets 2 or less of Economic Development metrics	Meets 2 or less of Environment + Sustainability metrics	Meets 2 or less of Infrastructure metrics
2	Self Mandate	Other private sector entities provide this service	Program recovers < 50% of program expense	26% to 50% of Community Benefitting	Program design and decision making reflects some understanding of disparities in the city	Program helps some but not all stakeholders overcome unique barriers to success	Meets 3 - 4 Economic Development metrics	Meets 3 - 4 Environment + Sustainability metrics	Meets 3 - 4 Infrastructure metrics
4	State or Federal Mandate	City is the sole provider of this service	Program recovers 50% or more of program expense	Majority of Community (51%+) Benefitting	Program design and decision making reflects deep understanding of disparities in the city	Program allocates resources or creates opportunities that helps stakeholders overcome unique barriers to success	Meets 5 or more of Economic Development metrics	Meets all 5 Environment + Sustainability metrics	Meets 5 or more of Infrastructure metrics

Source: Fabian (2023). Reprinted with the permission of the City of Salt Lake City.

infrastructure, environmental justice, public safety and wellness, and housing), each of which has action targets and progress measures that departments use to measure and address disparities (Office of Equity & Inclusion, 2022). During FY 2022-23, Dallas made $20 million in one-time investments and allocated $20.8 million in current funding for these five goals (Office of Equity & Inclusion, 2022).

The third finding reported by Fabian (2023) is that "[t]he creation of an 'evaluation matrix' is critical to consistently and effectively evaluate budget proposals and supports the determination of which proposals to approve." The example of an evaluation matrix from Salt Lake City shown in Figure 1 includes several criteria the city uses to score program proposals, including "equity impact–process" and "equity impact–outcome," as well as more traditional criteria such as economic development, cost recovery, and infrastructure. The "equity impact–process" measure evaluates whether program design and decision-making reflect an understanding of economic and social disparities. The measure of "equity impact–outcome" evaluates whether the program allocates resources to overcome barriers to success and creates opportunities for stakeholders. Programs are scored by how well they meet these and other community goals considered in budget decisions. Fabian also cites Los Angeles, CA, and Pueblo, CO, as cities that use an evaluation matrix. Kavanagh et al. (2023) include Columbia, SC, on the list.

Fabian's findings suggest several initiatives that local governments can take to use their budgets to advance equity. Most importantly, the effort requires the support of the political

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leaders and the budget office. Moreover, agencies must see how using an equity priority in their budget request will affect budget allocations.

State and Federal Actions

While our focus here is on local governments, they are often regarded as "creatures of the state" because the state is the source of their legal powers, and state equity initiatives can affect them. For instance, states have had long-standing performance requirements related to education, such as special education and English as a Second Language (ESL), that impact school districts. Several states use their tax systems to advance equity (Rubin et al., 2024). One approach taken is to target sales tax actions at specific demographic groups. For example, to end discrimination specifically against women, 24 states have eliminated "pink taxes" imposed on the sale of female menstrual and hygiene products, and 17 have eliminated sales taxes on diapers (Jiminez, 2023). Other states are making the tax system more progressive. Although directed primarily at addressing income inequity, these actions have also had implicit social equity impacts since higher-income taxpayers are predominantly white (Rubin et al., 2024). State tax actions can affect local governments that piggyback on state tax base definition.

On the spending side, several equity-related state initiatives affect local governments, such as healthcare, the workforce, and broadband connectivity (Rubin et al., 2024). Examples include declaring racism as a public health crisis, advancing equity in the workplace, eliminating barriers to contracting and procurement for businesses owned by women and members of minority groups, and expanding broadband access to lower-income and underrepresented populations (Rubin et al., 2024). States may aid local governments to accomplish these goals, and/or mandate local actions to achieve them.

On the Federal level, on President Biden's first day in office, he issued Executive Order 13985, identifying social equity as a responsibility of the federal government and directing agencies to revise their policies to address historical inequities, especially those related to race. With this Order, Biden became the first U.S. president to identify equity as a responsibility of the federal government that would be operationalized through the budget (Rubin & Bartle, 2023). The budget proposal for the fiscal year 2022 acknowledges the President's directive stating that agencies are to "review policies and activities to assess whether underserved communities and their members faced systematic barriers in accessing benefits and opportunities" (Office of Management and Budget, 2021, p. 29).

In February 2023, the President issued Executive Order 14091 to strengthen the administration's efforts to implement a "whole-of-government" approach to advancing social equity, particularly emphasizing racial equity (Biden, 2023). One of the action items in Order 14091 required that an annual "equity action plan" be integrated into each agency's strategic planning and budget proposal. In efforts to comply with Order 14091, federal agencies may change grant programs or create new ones that affect local governments. For example, the U.S. Department of Transportation (DOT) has a new program, Reconnecting Communities and Neighborhoods, which, according to U.S. Transportation Secretary Pete Buttigieg, provides program grants to address the "infrastructure choices of the past and [make] sure that our transportation investments serve to connect, rather than divide, people and communities across the country, This funding will support projects that bring people closer to jobs, schools, housing, places of worship, and one another" (DOT, 2024). While many other federal efforts to advance

equity are nascent, it is likely that, once implemented, some will use grants or issue mandates that will affect local governments.

Factors for Local Governments to Consider in Using Their Budgets to Advance Equity

Based on the findings here and related research that has investigated equity initiatives in government budgeting, including gender equity (Rubin & Bartle 2023), we offer several recommendations to local governments considering infusing equity into their budget process.

1. Embed equity throughout the budget process. To accomplish this:
   - Chief executives should discuss how their budget submissions address equity related to race, gender, national origin, and other demographic characteristics.
   - The central budget office should include equity in its budget preparation instructions to agencies and provide guidance and instructions to agencies regarding how to include an equity dimension in budget requests.
   - Agencies should discuss how equity is reflected in their budget requests for programs and operations and use data and evidence in presenting these requests. They should develop equity measures and monitor progress towards meeting them.
   - Evaluators and auditors should assess whether agencies/programs are making progress toward equity benchmarks articulated in earlier stages of the budget process. An equity matrix is a tool that can be used to make this assessment.
2. Work across agencies to share best practices in gathering and using data and engaging with citizens.
   - Establish a cross-agency equity data working group. Data disaggregated by race, gender, and other demographic characteristics and geographic data are essential to measure and assess the equity of taxes and expenditures across agencies.
   - Some agencies regularly engage with constituents and can assist agencies with less experience.
3. Provide continual feedback and training to agencies regarding consideration and measurement of equity for ongoing improvement in advancing budgeting for equity (Martinez Guzman et al., 2023).
4. Obtain support from organizations and other stakeholders outside government (Rubin & Bartle, 2023).

Conclusion

In recent years, governments at all levels have started to use their budgets to advance equity. We have identified patterns in these initiatives and suggested what is needed for equity-based budgeting to work. In conclusion, we stress that there are several *sine qua non* for these initiatives to be successful. First, elected officials and top administrators must see equity as a high priority. Second, lead budget offices must proactively use budgets to advance equity. Third, budget equity must become integral to the administrative routines of government. Fourth, budget

staff and agency employees must be trained in and see the importance of equity. Incorporating a new value such as equity, into the age-old budgeting process will not happen overnight and will vary from place to place. There will be failures as well as successes. As Kavanagh et al. (2023, p. 18) write, "budgeting for equity is hard because it reveals tensions. It raises the central tension in budgeting of who gets what." No budget reform is for the faint of heart, which is certainly true of an equity-focused reform. However, the experiences of many governments already implementing equity initiatives provide a roadmap for how to proceed. Learning can happen faster if governments share their experiences, and equity can become a more widely accepted part of government budgeting.

Endnotes

[1] NAPA is an independent, nonprofit, non-partisan organization established in 1967 and chartered by Congress in 1984. Its close to 1,000 elected Fellows include former U.S. Cabinet officers, members of Congress, governors, mayors, state legislators, prominent scholars, career public administrators, and nonprofit and business executives.

[2] This work uses the terms equity and social equity interchangeably. Equity is generally individualized; social equity refers to fairness for and among groups.

[3] Allen Schick is one of the intellectual leaders of the study of public budgeting. The article cited here is considered one of the seminal readings in public budgeting.

Disclosure Statement

The authors declare that they have no conflicts of interest related to the research, authorship, or publication of this article.

References

Biden, J. R. (2021). Executive order on: Advancing racial equity and support for underserved communities through the federal government. Executive Order 13985. *The White House.* https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/

Biden, J. R. (2023). Executive order on further advancing racial equity and support for underserved communities through the federal government. *The White House*. https://www.whitehouse.gov/briefing-room/presidential-actions/2023/02/16/executive-order-on-further-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/

City of Tacoma. (2020). *2021-22 Tacoma operating and capital budget.* https://cms.cityoftacoma.org/Finance/Budget/2021-2022/2021-2022AdoptedBudgetBook.pdf

Fabian, C. (2023, August 1). Identifying highest impact practices in municipal budgeting for equity. *PM Magazine.* https://icma.org/articles/pm-magazine/identifying-highest-impact-practices-municipal-budgeting-equity

Kavanagh, S. C., Kleine, A., Fabian, C., & Fabian, E. (2023). Building a better community for everyone. *Government Finance Review*, *39*(5), 17-31.

Martinez Guzman, J. P., Jordan, M. M., & Joyce P.G. (2023). Towards inclusive public administration systems: Public budgeting from the perspective of critical race theory. *Public Administration*. https://doi.org/10.1111/padm.12956

McDonald, B. D., Larson, S. E., Maher, C. S., Kavanagh, S., Hunter, K. W., Goodman, C. B., Minkowitz, H., McCandless, S. A., Afshan, S., Jordan, M. M., et al. (2024). Establishing an agenda for public budgeting and finance research. *Public Finance Journal*, *1*(1), 9-28. https://doi.org/10.59469/pfj.2024.15

McDonald, B. D., & McCandless, S. A. (2023). *Budgeting for social equity: Exploring the (nearly) unknown* (Working Paper No. 4040299). Social Science Research Network. https://doi.org/10.2139/ssrn.4040299

Norman-Major, K., & Wooldridge, B. (2011). Using framing theory to make the economic case for social equity: The role of policy entrepreneurs in reframing the debate. In N. J. Johnson & J. H. Svara (Eds.), *Justice for all: Promoting social equity in public administration* (pp. 209-227). ME Sharpe.

Office of Equity. (2021). Fiscal year 2022 budget equity instruction manual. *City of San Antonio*. https://www.sanantonio.gov/Equity/Initiatives/BudgetEquityTool

Office of Equity & Inclusion. (2022). *2022-2023 Racial equity plan*. City of Dallas. https://dallascityhall.com/departments/office-of-equity-and-inclusion/Equity/DCH%20Documents/COD_RacialEquityPlan22_Final.pdf

Office of Management and Budget. (2021) *Budget of the United States government: Fiscal year 2022*. Office of Management and Budget.

Racial Equity & Social Justice Initiative. (2018). Racial equity & social justice tool: Comprehensive version. *City of Madison*. https://www.cityofmadison.com/civil-rights/programs/racial-equity-social-justice-initiative

Results for America (2024). *Our mission*. https://results4america.org/about-us/

Rubin, M. M., & Bartle, J. R. (2022). Gender responsive budgeting: A global perspective. In P. M. Shields & N. Elias (Eds.), *Handbook on gender and public administration* (pp. 133-148). Edward Elgar Publishing.

Rubin, M. M., & Bartle, J. R. (2023). Equity in public budgeting: Lessons for the United States. *Journal of Social Equity and Public Administration*, *1*(2), 11-25. https://doi.org/10.24926/jsepa.v1i2.4995

Rubin, M. M., Bartle J. R., & Willoughby K. (2024). Equity in budgeting: U.S. state and local government initiatives. *Journal of Policy Studies*.

Schick, A. (1966). The road to PPB: The stages of budget reform. *Public Administration Review*, *26*(6), 243-258. https://doi.org/10.2307/973296

Sharp, R. (2003). *Budgeting for equity: Gender budgeting initiatives within the framework of performance oriented budgeting*. U.N. Women.

U.S. Department of Transportation. (2024). *Biden-Harris administration Makes over $600 million available for projects that reconnect communities.* https://www.transportation.gov/grants/reconnecting/rcp-announcement

Waxman, M. G. (2022). Budgeting for equity in Philadelphia. A paper presented at the annual conference of the American Society for Public Administration. Jacksonville, FL: March 18-22, 2022.

What Works Cities (2022). *Charting an equitable future. City budgeting for equity and recovery*. https://designrr.page/?id=174830&token=3850645198&type=FP&h=2406

Research Article

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Savings Lost:
The Damage of Taxable Advance Refundings to Taxpayers

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Refinancing ("refunding") outstanding debt for interest savings represents a significant amount of annual issuance in the $4 trillion municipal securities market. We conduct a "counterfactual" analysis of select taxable advance refundings by state and local governments between 2018 and 2020. Instead of advance refunding their not-yet-callable tax-exempt bonds with taxable bonds, municipal issuers could have waited until the call date and then refunded these bonds with tax-exempt bonds. A comparison of the actual savings to the "counterfactual" savings reveals that waiting until the call date would have been substantially more beneficial, providing over 58% more savings. We estimate that in aggregate taxable advance refundings cost taxpayers billions of dollars. We introduce the notion of proficiency to assess the effectiveness of debt management ex-post. The counterfactual methodology and the resulting proficiency measure should be of interest to both the chief executives and taxpayers of state and local governments. Routine counterfactual analysis, combined with reported proficiency, is certain to result in more disciplined and systematic debt management practices.

Keywords: Bond Refunding, Counterfactual Analysis, Refunding Efficiency

The refinancing ("refunding") of outstanding debt for interest cost savings represents a significant amount of annual issuance in the $4 trillion outstanding municipal securities market.[1] For example, municipal borrowers in 2020 sold $483 billion in total debt, with $149 billion of that amount consisting of refunding bonds, which represents almost one-third of the total market (Bagley et al., 2021). As such, refunding outstanding indebtedness represents a major component of these borrowers' capital market activities.

Prior to the Tax Cuts and Jobs Act of 2017 (the 2017 Act), which was signed into law on December 22, 2017, municipal borrowers could "advance" refund their outstanding bonds on a tax-exempt basis more than 90 days before the actual call date. These transactions were known

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as "tax-exempt advance refundings." The federal government allowed one tax-exempt advance refunding over the life cycle of the bond issue as a means of minimizing the foregone federal tax revenue afforded by tax exemption (Johnson et al., 2021).[2] However, the 2017 Act prohibited previously eligible borrowers from using tax-exempt bonds to advance refunds. This restriction led many borrowers to use taxable, rather than tax-exempt, bonds to refund their not-yet-callable debt.

It is important to note that advance refunding with taxable bonds was optional. Municipal issuers could have waited until the call date (i.e., retain the call option) and then refund with tax-exempt bonds at potentially lower interest rates. Previous research has stressed the importance of comparing the forfeited value of the call option to the cash flow savings from the refunding to assess whether to refund (Boyce & Kalotay, 1979; Kalotay et al., 2007).

According to Kalotay (2021), the efficiency of the typical taxable advance refunding transaction after the 2017 Act's passage was barely 70%, indicating that the *ex-ante* waste was 30% of the option value. The *actual* waste (if any) can only be determined by examining interest rates as of the call date of the refunded bonds when the debt could have been refunded with tax-exempt bonds. This paper performs exactly such "counterfactual" ex-post analysis for 14 taxable advance refunding transactions between 2018 and 2020.

Although the savings from taxable advance refundings were significant, waiting until the call date would have been more beneficial. Specifically, we estimate "waiting" would have provided almost 58% more savings. We propose the 'proficiency' measure, defined as the ratio of the actual savings to the counterfactual savings, to assess how effectively the debt has been managed. In this paper, the proficiency calculation is limited to refunding decisions. However, the proficiency concept applies to other areas of debt management. The corresponding average proficiency ratio was roughly 63% for these 14 transactions.

Based on our results, we estimate that taxable advance refunding has cost taxpayers billions of dollars in the aggregate. We believe that ex-post counterfactual analyses, such as the ones conducted here, would lead to more disciplined municipal debt management practices in general and to more efficient refunding decisions in particular. From a policy perspective, the results suggest that the current metrics advocated by professional organizations and employed by government finance managers and their financing teams are insufficient to ensure these entities efficiently manage their bond portfolios on behalf of taxpayers.

Management of Interest Rate Risk

The objective of debt management is to minimize the suitable defined cost of debt, subject to constraint (not considered here). For a simple example, suppose the municipality needs a given loan between today and some future date, and it intends to raise the required amount by issuing a single bond.

The bond's coupon rate depends on both the general level of interest rates and the structure of the bond. Attributes of the latter include maturity, embedded call options, and coupon structure (fixed or floating rate). Fixed-rate bonds can be sold at a premium over par by raising the coupon rate or at a discount. If the bonds are sold at a premium, the principal payment at maturity will be less than the proceeds at issue; in the case of a discount, the principal will be larger than the proceeds. Either structure would generate the desired loan amount, but the issuer's resulting cashflow obligations would differ.

The call option benefits the municipality from lower rates by calling and refunding the bond. From the investors' perspective, the call option is undesirable, and therefore, the market price of a callable bond is lower than that of an otherwise identical options bond. As a result, the face amount of the issue needs to be increased. Investors will demand a higher coupon if the issuer wishes to lower the call price (say, keep it at par). In either case, the call option has a quantifiable upfront cost to the issuer. Conceptually, the call option is a risky investment, which may pay off handsomely if rates decline or will be a waste if rates rise.

Option-based analysis allows issuers to quantify the opportunity cost of refunding the bonds. Municipal debt managers, at the minimum, should be aware of the option value at the time, be it an issuance or a refunding. As mentioned above, option-based analysis of the taxable advance refundings after the 2017 Act indicated that these transactions were premature because they captured barely 70% of the option values. One may argue that option value is 'just a theory,' but as we show in this paper, the taxable advance and refunding performed even worse than expected on an ex-post basis.

Overview of Methodology

The waste from taxable advance refunding can only be determined by comparing the savings it generates to the savings generated by refunding the bonds with tax-exempt bonds at the call date. We use the methodology known as counterfactual analysis to estimate the difference. The term counterfactual describes what could have happened if the municipal issuer waited until the call date to refund with tax-exempt bonds. Thus, we compare the savings from the actual taxable advance refunding transaction to the counterfactual savings from refunding with tax-exempt bonds at the call date.

While the counterfactual analysis may not be common in the finance literature, it is regularly used to assess the effectiveness of government policies through various formal program evaluation approaches (Reichardt, 2022; Weiss et al., 2014). In this line of research, the government policy is evaluated by looking at the difference in the outcome of interest between the entity that received the policy treatment (treated outcome) and the entity that did not receive the policy treatment (counterfactual outcome) (Reichardt, 2022; Weiss et al., 2014).

As it relates to our study, the government policy is the decision to advance refund debt using taxable bonds. Thus, the savings from the actual taxable advance refunding represent the treated outcome, and the savings from the hypothetical tax-exempt current refunding represent the counterfactual outcome. This paper converts the difference between these savings to a proficiency ratio to determine how effectively these municipal issuers managed the debt refunding decision.

The study considers 14 taxable advance refundings sold between 2018 and 2020. We initially focused solely on the ten largest taxable advance refunding transactions. However, because four of these refundings had call dates beyond late 2023, we could not construct the counterfactual refundings for those financings. That left us with six of the top ten taxable advance refundings. We added eight other clear-cut taxable advance refundings, avoiding complex transactions such as those with several call dates, and issues sold for multiple purposes.

The 14 transactions consist of various government issuers across geography, type (city, state, special purpose), credit ratings (AAA, AA, and A), size, and timing (issuances in 2018,

2019, and 2020; refunded bond call dates in 2019, 2020, 2021, and 2022). The aggregate par amount of the taxable advance refunding issues amounted to $5.69 billion.

Background

Given the budgetary benefit of refinancing, researchers have studied municipal refunding transactions for decades. Some of this research focused on describing a general framework for assessing bond refundings (Dyl & Joehnk, 1976; Joehnk & Dyl, 1979; Luby, 2014). Other research has explored the factors associated with the refunding decision (Moldogaziev & Luby, 2012; Vijayakumar, 1995). Another subset of studies quantified the impact of bond refundings on the finances of governments (Ang et al., 2017; Luby, 2012).

Most germane to our study, there is a strand of rich literature that details the importance of explicitly valuing the call option, rather than just focusing on the cash flow savings, in assessing whether to refund (Boyce & Kalotay, 1979; Kalotay & May, 1998; Kalotay et al., 2007; Kalotay & Raineri, 2016; Zhang & Li, 2004). Specifically, this research advises borrowers to quantify the value of this call option and compare it to the savings. The savings ratio to the option value, the so-called refunding efficiency, provides specific guidance (Kalotay, 2007, 2011). The maximum refunding efficiency is 100%, and refunding is not generally advisable unless the efficiency is approximately 90%, which should be viewed as a "floor." As discussed in Kalotay (2021), the efficiency of the typical taxable advance refunding was barely 70%.

The Municipal Market Landscape

Over the last couple of decades, the institutional tax-exempt municipal market has been dominated by 5% coupon bonds callable at par (100%) in 10 years (i.e., "5% bonds") (Khang et al., 2023).[3] Because tax-exempt interest rates have been significantly below 5%, 5% bonds are sold at substantial premiums over par.[4] The above-par price appeals to institutional investors, who understandably want to avoid the underperformance of bonds purchased near par in the event rates rise due to the de minimis tax treatment (Kalotay, 2020; Kalotay & Davidson, 2021; Kalotay & Fennell, 2022).[5] Because over the last couple of decades, the borrowing cost of investment-grade government issuers has been far below 5%, the par call in year ten has virtually guaranteed that 5% bonds would be called and refunded even if rates increased if they stayed below 5% (Kalotay, 2012a). This is evident by observing that there are virtually no outstanding investment-grade 5% callable bonds over ten years old.

As discussed above, until the passage of the 2017 Act, tax-exempt municipal bonds were eligible for advance refunding with tax-exempt bonds. In a tax-exempt advance refunding transaction, the borrower would issue new tax-exempt bonds and use the proceeds to purchase an escrow fund. The escrow fund would be invested to cover the interest and principal payments of the refunded bonds until the call date. The lower the escrow fund's invested interest rate, the greater the refunding bond issue size necessary to ensure enough in the escrow fund to pay the interest and principal payments on the refunded bonds. Thus, in low interest rate environments, the interest cost savings of advance refundings are reduced by the greater amount of refunding bonds necessary to satisfy the refunded bond escrow requirements. Also, advance refunding resulted in the proliferation of tax-exempt bonds because the refunded bonds remained outstanding until their call date.

The 2017 Act prohibited the issuance of tax-exempt advance refunding bonds (Kalotay, 2018). A possible alternative was to advance refund with taxable bonds instead of tax-exempt bonds. Because interest rates remained relatively low from 2018 until 2022, investment-grade municipal borrowers could issue taxable bonds well below the 5% coupon rate of their outstanding tax-exempt bonds and report large savings despite the very low escrow interest earnings.

As the relative cost savings of refunding at call with tax-exempt bonds versus advance refunding with taxable bonds depends on the unknown future interest costs, a cost-based decision to advance refund rests on assessments of future interest rates. The taxable borrowing rate of a municipal issuer is obviously higher than its tax-exempt rate, typically by 50 to 100 basis points, depending on maturity. Consequently, if interest rates were to remain near their level at the time of the taxable transaction, refunding with tax-exempt bonds at the call date would result in significantly greater savings. The likely rationale for advance refunding with taxable bonds would be the concern that by the time the bonds became callable, interest rates could substantially rise to the point where refunding would not realize cost savings.

Overview of Taxable Advance Refundings

Between January 1, 2018, and January 1, 2022, well over 200 tax-exempt bond issues were advance refunded with taxable bonds (Thomson Reuters). Based on our preliminary review of these transactions, the typical refunding occurred one to three years before the refunded bonds' call date. The taxable refunding bonds were sold near par, and some of them are callable in ten years (and some with a make-whole call).[6] During this period, Treasury rates were exceptionally low, resulting in very low escrow yield, typically well below 1%. Low yields increased the size of the escrow, thus reducing the interest costs savings from the taxable advance refunding (Kalotay, 2019). Table 1 displays the ten largest taxable advance refunding transactions. The table reveals the significance of this financial strategy by observing the large size of the transactions ($539 million to $1.2 billion), usage across multiple states (Arizona, California, Florida, Massachusetts, New York, Ohio, and Texas) and diversity in the types of borrowers (state, city, county, toll road, community college, public utility, and building authorities, both school and dormitory).

Analytical Approach

We analyze the actual interest cost savings from the 14 taxable advance refunding transactions to the counterfactual savings that would have been realized if the issuer had waited until the call date to refund. Because the interest cost savings are quantified in present value terms, they depend on various assumptions listed below. In addition to the dollar amounts, we are also interested in their relative size as a percentage, defined by us as the proficiency ratio. Our specific analytical approach follows.

Assumptions on present value calculations:

- The common present value date is the date of the taxable refunding

Table 1. Ten Largest Taxable Advance Refunding Issues, January 1, 2018 to January 1, 2021, millions of dollars

	Issuer	Description	Series	Size	Issue Date
1	State of California	GO Refunding Bonds	Series 2018	1,200.00	04/25/18
2	NYS Thruway Authority	General Revenue Bonds	Series M	857.63	10/30/19
3	Broward County, Florida	Airport System Revenue Refunding Bonds	Series 2019 C	719.94	11/21/19
4	Massachusetts School Building Authority	Subordinate Dedicated Sales Tax Bonds	2019 Series B	715.42	11/20/19
5	San Diego Community College District	GO Refunding Bonds	2019 Series A & B	693.44	10/16/19
6	San Francisco City/County Public Utility Commission	Water Revenue Bonds	2019 Subseries A, B and C	656.96	01/09/20
7	NYS Dorm Authority	Facilities Revenue Bonds	Series 2019B	560.80	12/03/19
8	Houston City, Texas	Utility Revenue Refunding Bonds	Series 2019C	539.14	09/17/19
9	Arizona Transportation Board	Highway Revenue Refunding Bonds	Series 2020	510.28	02/12/20
10	Ohio Turnpike & Infrastructure Authority	Senior and Junior Lien Revenue Refunding Bones	Series 2020A	472.47	02/13/20
			Total	6,926.08	

- The discount rate is *the* cost of *taxable* debt. Municipal issuers should use their taxable cost of borrowing, whether the bonds being valued are taxable or tax-exempt (Kalotay & Tuckman, 1999). Therefore, we use the taxable advance refunding bonds' true interest cost (TIC) for discounting purposes. We parenthetically observe that TIC is a 'callable' rate because the portfolio on which it is based may include callable bonds. Theoretically, option-adjusted TIC (Kalotay, 2012b) would be preferable to conventional TIC, although it would have a negligible effect on the results.[8]

Savings From Taxable Advance Refunding

The first step is to calculate the size of the advance refunding by deriving the amount of the tax-exempt bonds that were refunded with taxable bonds. The transaction size can be ambiguous because some of the funds deployed in the taxable advance refunding transaction may have come from sources other than the taxable issue. For example, in the Massachusetts School Building Authority (MSBA) transaction featured below, the issuer deployed the debt service reserve fund of the refunded bonds. We exclude such funds from the analysis for an 'apples to apples' comparison.

The proceeds of the taxable issue are known, and this allows us to determine how much of the outstanding tax-exempt issue was refunded with taxable bonds. This calculation is based on the size of the escrow, which is reported in the official statement. We determine the percentage of the escrow funded with taxable bond proceeds and then scale down the outstanding tax-exempt bonds to determine the amount refunded with the taxable issue. This is the amount that was refunded with the taxable issue. Based on the amount that was refunded with the taxable issue, we determine the cash flow savings from the taxable advance refunding in the usual manner by calculating the present value of leaving these bonds outstanding until maturity and the present value of the taxable advance refunding bonds.[9] The savings from taxable advance refunding is the difference.

If some of the bonds in the taxable issue are callable at par, we estimate the value of the call option ("Option Value Acquired") and increase the savings by that amount. Estimating the Option Value Acquired is necessary since the call could be used to refund the taxable bonds for interest cost savings. Thus, ignoring such optionality would understate the savings from the taxable advance refunding. We use the industry standard (Bloomberg) log-normal interest rate process (Black-Karasinski, with 0 mean reversion) to estimate the Option Value Acquired. Option Value Acquired assumes the bonds may be refunded with taxable bonds. Refinancing the taxable refunding bonds prior to maturity with tax-exempt bonds or through tender could be considered in a future study.[10]

The market-implied volatility can be estimated from the difference between the prices of similar (in terms of credit and maturity) callable and optionless bonds. In the case of a log-normal interest rate process, such as the one used in this study, the higher the level of interest rates, the lower the interest rate volatility. Between 2019 and 2021, interest rates were exceptionally low; therefore, their implied volatility was unusually high. Analysis of callable taxable bonds indicated that 20% volatility was reasonable for investment-grade taxable bonds, and therefore, we valued their options at 20% interest rate volatility.

Savings From Counterfactual Tax-Exempt Current Refunding

What if instead of advance refunding with taxable bonds, the outstanding issue was left outstanding until the call date and then refunded with tax-exempt bonds? This is the counterfactual analysis. The resulting debt service has two components: the known payments on the outstanding bonds until the call date and the payments on the tax-exempt refunding bonds after the call date. The payments on the counterfactual tax-exempt refunding bonds are based on the borrowing rates at the pricing date (usually a couple of weeks before the call date of the refunded bonds), and for the analysis, we need to estimate those rates.

The issuer's tax-exempt borrowing rates (yield curve) can be estimated from the MSRB's EMMA database. This yield curve is based on the yields to call at par in year ten of 5% bonds. If we refund with 5% bonds, we also must account for their option values – as discussed earlier, 5% bonds are virtually certain to be refunded at the end of year ten. Instead of refunding with 5% callable bonds, we have taken a conceptually simpler approach. The approach entails converting the callable 5% bond yield curve to a par optionless curve by the coupon-stripping method, as detailed in the appendix and Kalotay (2017).

Our approach eliminates the need to include option values in calculating savings from the counterfactual tax-exempt refunding. The key is to estimate the yields of optionless par bonds of the relevant maturities. This is accomplished by converting the 5% callable curve from EMMA into a par AAA optionless curve at a specified interest rate volatility, creating a yield curve that removes (strips) the call options. The estimation of interest rate volatility is discussed in the appendix. During the exceptionally low interest rates during the 2019 to 2021 period, 30% interest rate volatility was a reasonable choice for our analysis.

Once we estimate the AAA optionless yield curve, we adjust it to the appropriate credit rating yield curve for each counterfactual issue based on MMD yield spreads (AAA, AA, and A) by maturity on the hypothetical pricing date of the counterfactual bonds.[11] In constructing this curve, we use the issuer's credit rating at the time of the taxable advance refunding.[12] We then structure par optionless tax-exempt bonds so that their maturities and amounts resemble those of the outstanding tax-exempt issue to be refunded. We combine the resulting cashflows with the flows of the outstanding issue prior to the call date and determine the present value of the combined flows. The estimated savings from the counterfactual strategy is the difference between the present value to the refunded bonds' maturity and that of the counterfactual tax-exempt refunding bonds (i.e., the 'waiting to the call date' strategy). We reduce the present value savings by 0.50% to adjust for transaction costs.

Sample Analysis

This section details the analysis of one of this study's 14 taxable advance refunding transactions to detail the specifics of our analytical approach. On November 20, 2019, the MSBA refunded its outstanding 2011 Series B Bonds (the "2011B Bonds"), callable at par on October 15, 2021. Table 2 details the portfolio of refunded 2011B Bonds. The face amount of the 2011B Bonds was $747.69 million; the coupons of these bonds varied between 5% and 5.25%. According to the official statement for the 2019 taxable advance refunding bonds (the "2019 Bonds"), the escrow cost to decrease the 2011B Bonds to the call date was $798.89 million.

MSBA refunded its 2011B bonds with a $715.42 million principal of the 2019 Bonds. The 2019 Bonds carried AA+/AA3/AA ratings. $2.65 million issuance expense reduced the

Table 2. Massachusetts School Building Authority, 2011 Series B Bonds

Maturity Date	Refunded Principal
10/15/2022	20,000,000
10/15/2023	20,000,000
10/15/2027	40,750,000
10/15/2031	46,630,000
10/15/2032	49,025,000
10/15/2033	25,345,000
10/15/2033	26,190,000
10/15/2034	26,645,000
10/15/2034	27,535,000
10/15/2035	28,010,000
10/15/2035	28,950,000
10/15/2036	59,880,000
10/15/2037	62,950,000
10/15/2038	66,180,000
10/15/2039	69,570,000
10/15/2040	73,140,000
10/15/2041	76,890,000
Total	$747,690,000

Notes: Tax-exempt bonds refunded by 2019 Series B bonds, federally taxable. Coupon rates 5% except for 2033, 2034, and 2035 split coupons of 5.25%: callable at 100% on 10/15/2021

Table 3. Subordinated Dedicated Sales Tax Refunding Bonds

Sale proceeds of 2019B Bonds	$715,420,000
Less: Cost of issuance (including underwriters discount) of 2019B Bonds	($2,650,200)
Other available funds	$86,119,184
Total deposit to 2011B Bonds Escrow Fund	$798,888,984
Percentage of 2011 Bonds Escrow Fund allocable to 2019B bond proceeds	89.22%

Notes: 2019 Series B, federally taxable, 2011B bonds escrow fund sources

amount available for the escrow to $712.77 million; the remainder needed for the $798.89 million escrow was funded by other means, mainly liquidating the 2011B bonds debt service reserve fund. Thus, as shown in Table 3, the 2019 Bonds provided 712.77/798.89 = 89.22% of the escrow. Applying 89.22% to the $747.69 million principal amount of the 2011B Bonds reveals that the proceeds of the taxable issue were sufficient to refund the $667.09 million principal amount of the 2011B Bonds. Accordingly, the savings calculated below are based on the $667.09 million principal amount of the 2011B Bonds.

To calculate the present value savings, we first determined that the TIC of the 2019 taxable issue was 3.205%, based on the actual maturity dates, par amounts, and coupon rates of

Figure 1. 10-Year AAA MMD, January 1, 2018 to December 31, 2021

the 2019 Bonds. Based on this discount rate, the present value of the outstanding 2011B Bonds was $819.75 million, and the present value of the 2019 Bonds was $715.42 million. Thus, on a 'present value basis, the cashflow savings amounted to $104.33 million (calculated based on $819.75 million -$715.42 million).

The 2019 Bonds were sold with a ten-year par call date of October 15, 2029. The Option Value Acquired of the 2019 Bonds was $17.30 million, and we increased the savings attributable to the taxable advance refunding by this option value, resulting in total savings of $121.63 million ($104.33 million + $17.30 million.

As shown in Figure 1, the tax-exempt 10-year AAA yield at the time of the refunding in 2019 was roughly 1.52%. Contrary to MSBA's expectations, rates subsequently declined (except for a brief period in March and April 2020 because of the flight to quality effect at the onset of the COVID-19 pandemic), and by the call date on 11/1/ 2021, the 10-year AAA municipal yield fell to 1.22%, about 30 basis points lower than at the time of the advance refunding. Based on the tax-exempt yield curve prevailing as of October 1, 2021, we estimated how much MSBA would have saved by refunding the $667.09 million principal amount of the 2011B Bonds on the call date (the "Counterfactual 2021 Bonds").

Table 4 details the actual 5% tax-exempt 10-year callable yields and the corresponding optionless par bond yields based on 30% interest rate volatility as of October 1, 2021. The optionless par bond yields include an adjustment for the credit spreads between AAA and AA bonds in years 1 through 20 that ranged from 7 to 20 basis points. In order to cover the issuance expense, we grossed up the refunding issue by $3.35 million (0.50% of the par amount), to $670.44 million. Table 4 also details the maturity dates and par amounts for the Counterfactual 2021 Bonds. Based on this counterfactual portfolio, we determined that refunding with tax-exempt bonds at the call date would have resulted in present value savings of $221.63 million.

To recap, MSBA saved $121.63 million by advance refunding the 2011B Bonds with its taxable 2019 Bonds. By waiting until the call date in 2021 and then refunding with tax-exempt bonds on a current refunding basis, MSBA would have saved $221.63 million. The $100 million

Table 4. Counterfactual Tax-Exempt Current Refunding Bonds

Date	Principal	5% Callable Yield	Par Optionless Yield*
10/15/2022	17,935,000	0.153%	0.173%
10/15/2023	17,935,000	0.161%	0.181%
10/15/2027	36,540,000	0.676%	0.809%
10/15/2031	41,810,000	1.117%	1.298%
10/15/2032	43,960,000	1.178%	1.485%
10/15/2033	22,725,000	1.219%	1.606%
10/15/2033	23,485,000	1.219%	1.606%
10/15/2034	23,890,000	1.253%	1.687%
10/15/2034	24,690,000	1.253%	1.687%
10/15/2035	25,115,000	1.286%	1.764%
10/15/2035	25,960,000	1.286%	1.764%
10/15/2036	53,695,000	1.315%	1.824%
10/15/2037	56,445,000	1.347%	1.881%
10/15/2038	59,345,000	1.381%	1.947%
10/15/2039	62,380,000	1.406%	1.987%
10/15/2040	65,585,000	1.442%	2.059%
10/15/2041	68,945,000	1.461%	2.063%
Total	$670,440,000		

*Calculated from 5% callable yields using 30% interest rate volatility

'savings lost' ($221.63 million - $121.63 million) from advance refunding with taxable bonds will be borne by the Massachusetts taxpayers.

It is informative to consider the savings ratio through what we call the "proficiency ratio," which is the percent of actual savings to the counterfactual savings. The proficiency ratio indicates how proficient the issuer was in capturing savings that would have been available by waiting for a refund at the call date. A higher ratio indicates a smaller loss in savings relative to delaying the refinancing decision to the call date. The break-even proficiency ratio is 100%. The MSBA proficiency ratio was $121.63 million / $221.63 million, or 54.88%, indicating that MSBA captured less than 55% of the savings that could have been realized by waiting until the call date. While the reported savings may depend on questionable assumptions pertaining to discounting and option valuation, these ratios are robust and provide an excellent indication of how well or poorly the issuer's debt is managed.

Results

We applied the approach used in the MSBA case study to 13 more transactions to explore the scope of 'savings lost' and the proficiency across other government issuers.[13] Table 5 details the 14 taxable advance refundings in our sample. The TICs on these financings ranged from 2.46% to 4.10%, with an unweighted average TIC of 3.13% (shown in Table 7). The aggregate savings on these transactions was $845.00 million, and the savings from the Option Value Acquired was $143.37 million, for a total option-adjusted present value savings of $988.37 million. This

Table 5. Actual Taxable Advance Refunding Bonds Transaction Details and Refunding Results, millions of dollars

	Issuer	Description	Refunding Bond Size	Refunding Issue Date	Refunded Call Date(s)	Refunded Bond Size	Credit Ratings	Cashflow PV Savings	Option Value Acquired	Total Savings
1	State of California	GO Refunding Bonds	1,200.00	4/25/18	4/1/19	1,209.29	Aa3/AA/ AA-	254.10	60.30	314.40
2	NYS Thruway Authority	General Revenue Bonds, Series M	857.63	10/30/19	1/1/22	784.87	A1/A	91.71	13.16	104.87
3	Massachusetts School Building Authority	Subordinated Dedicated Sales Tax Bonds, Series 2019B	715.42	11/20/19	10/15/21	667.08	AA+/Aa3/ AA	104.33	17.30	121.63
4	San Francisco City/County Public Utility Commission	Water Revenue Bonds, Subseries 2019A	656.96	1/9/20	11/1/20 11/1/21 5/1/22	611.44	AA-/Aa2	85.90	24.50	110.40
5	Houston, Texas	Utility Revenue Refunding Bonds, Series 2019C	539.14	8/19/20	11/15/21 11/15/22	491.02	Aa2/AA	93.91	7.48	101.39
6	Arizona Transportation Board	Highway Revenue Refunding Bonds, Series 2020	510.28	2/12/20	7/1/21 7/1/22	472.96	AA+/Aa1	45.57	2.58	48.15
7	Harris County Metro Transportation Authority	Sales & Use Tax Refunding Bonds, Series 2020A	304.13	2/27/20	11/1/21	281.33	AAA/AAA	68.27	5.88	74.15
8	California State University Trustees	Systemwide Revenue Bonds, Series 2020B	207.76	2/27/20	11/1/21	192.35	Aa2/AA-	39.09	4.27	43.36
9	Pennsylvania State Public School Building Authority	School Lease Revenue Refunding Bonds, Series 2019	188.29	11/20/19	4/1/22	172.07	A2/A+	9.40	0 (MWC)	9.40
10	Kent State University	General Receipts Bonds, Series 2020B	172.83	1/29/20	5/1/2022	158.17	Aa3/A+	20.38	2.68	23.06
11	City of Philadelphia	GO Refunding Bonds, Series 2020A	118.03	1/16/20	7/15/21	111.05	A-/A/A2	14.63	0.95	15.58
12	South Central Connecticut Reg Water Authority	Water System Revenue Bonds, 34th Series B	83.43	7/2/19	8/1/22	74.07	Aa3/AA-	7.04	1.58	8.62
13	Miami-Dade Co-Florida	Prof Sport Franchise Facilities Bonds, Series 2018	77.15	9/5/18	10/1/19	72.50	AA/A+	6.21	1.12	7.33
14	Virginia Port Authority	Commonwealth Port Fund Refunding Bonds, Series 2018	60.35	7/26/18	7/1/20	57.14	AA+/Aa1/ AA+	4.46	1.57	6.03
		Aggregate Results	$5,691.40			$5,355.34		$845.00	$143.37	$988.37

Table 6. Counterfactual Tax-Exempt Current Refunding Bonds, millions of dollars

	Issuer	Description	Bond Size	Issue Date	TIC	Savings
1	State of California	GO Refunding Bonds	1,215.37	4/1/19	2.827%	444.21
2	NYS Thruway Authority	General Revenue Bonds, Series M	788.82	1/1/22	1.635%	226.91
3	Massachusetts School Building Authority	Subordinated Dedicated Sales Tax Bonds, Series 2019B	670.44	10/15/21	1.819%	221.63
4	San Francisco City/County Public Utility Commission	Water Revenue Bonds, Subseries 2019A	614.51	11/1/20, 11/1/21 5/1/22	0.220% 1.904% 2.627%	179.81
5	Houston, Texas	Utility Revenue Refunding Bonds, Series 2019C	493.47	11/15/21 11/15/22	1.686% 3.526%	142.56
6	Arizona Transportation Board	Highway Revenue Refunding Bonds, Series 2020	475.33	7/1/21 7/1/22	0.360% 2.856%	53.03
7	Harris County Metro Transportation Authority	Sales & Use Tax Refunding Bonds, Series 2020A	282.75	11/1/21	1.734%	109.30
8	California State University Trustees	Systemwide Revenue Bonds, Series 2020B	193.31	11/1/21	1.731%	61.07
9	Pennsylvania State Public School Building Authority	School Lease Revenue Refunding Bonds, Series 2019	172.93	4/1/22	2.201%	22.88
10	Kent State University	General Receipts Bonds, Series 2020B	158.97	5/1/22	2.785%	28.68
11	City of Philadelphia	GO Refunding Bonds, Series 2020A	111.60	7/15/21	1.259%	28.14
12	South Central Connecticut Reg Water Authority	Water System Revenue Bonds, 34th Series B	74.45	8/1/22	2.709%	12.26
13	Miami-Dade Co-Florida	Prof Sport Franchise Facilities Bonds, Series 2018	72.86	10/1/19	2.039%	17.44
14	Virginia Port Authority	Commonwealth Port Fund Refunding Bonds, Series 2018	$57.44	7/1/20	1.680%	17.62
		Aggregate Results	$5,382.25		1.978%	$1,565.54

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represents 18.46% savings as a percent of refunded bonds. This is much higher than the static refunding heuristics employed by many governments, such as 3% or 5% minimum thresholds (Government Finance Officers Association [GFOA], 2019). While the actual taxable advance refunding savings levels were significant on an absolute basis, we focus on how these savings compare to the savings if these governments waited a couple of years to refinance on a tax-exempt basis (i.e., the counterfactual).

Table 6 details the results of the counterfactual analysis for the 14 transactions in our sample. The par amount of the counterfactual tax-exempt refunding bonds was $5.382 billion. As a point of comparison with the 3.133% TIC of the taxable transactions, the unweighted average TIC of the counterfactual transactions was 1.978%, indicating that the cost of financing with tax-exempt bonds would have been roughly 1.15% lower than the actual cost of the taxable bonds. The aggregate savings resulting from these counterfactual transactions was $1.566 billion. This represents 29.23% savings of the face amount of the refunded bonds, which should be compared to the 18.46% actual savings from the taxable refundings.

Table 7 compares the results of the actual taxable advance refundings and the counterfactual tax-exempt current refundings. The counterfactual savings ($1.566 billion) was $577 million greater than the actual option-adjusted present value savings from the taxable advance refundings ($988.37 million). The proficiency ratio of every taxable advance refunding transaction was below 100%, indicating that considerably larger savings would have been achieved if these governments waited until the call date to refinance. Most transactions performed poorly; the arithmetic average proficiency ratio was 61.25%. Weighted by the size of the counterfactual transactions, the proficiency ratio was 63.13%. (measured as the ratio of $988.37 million in actual savings to $1.566 billion in counterfactual savings). In the aggregate, these government issuers realized only 63% of the savings that they would have received if they had waited until the call date to refund the bonds. Equivalently, they could have realized 58% more in savings than they did. The ‘savings lost’ resulting from these taxable refinancings amount to $577 million.

Discussion

We have considered 14 taxable advance refundings of tax-exempt bonds between 2018 and 2020. Although these transactions resulted in considerable savings, option-based analysis at the time of the transaction suggested that they were premature. The typical refunding efficiency was roughly 70%, indicating that the savings captured only 70% of the savings that would be expected by waiting until the call date (Kalotay, 2021). Of course, waiting entails interest rate risk – the actual rates by the call date could be higher or lower than expected, resulting in smaller or greater savings than indicated by the option value at the time of the advance refunding. In the case of these 14 transactions, we found that the actual refunding savings if these issuers waited until the call date would have been greater, as measured by our computed proficiency ratio of 63%.

An unlikely explanation for accepting a 70% refunding efficiency is extreme risk aversion. Based on the interviews of responsible government officials, which include references to not having a crystal ball, these questionable refunding decisions are more likely to be made in an analytical vacuum (Braun, 2023). Indeed, nobody has a crystal ball, but option-based analysis is a reasonable and readily available alternative. It is puzzling why municipal issuers continue to

Table 7. Actual Taxable Advance Refunding Results vs. Counterfactual Tax-Exempt Current Refunding Results, millions of dollars

	Issuer	Description	Counter-factual TIC	Actual TIC	Counter-factual Savings	Actual Savings	Savings Lost	Proficiency Ratio
1	State of California	GO Refunding Bonds	2.827%	4.097%	444.21	314.40	129.81	70.78%
2	NYS Thruway Authority	General Revenue Bonds, Series M	1.635%	3.162%	226.91	104.87	122.04	46.22%
3	Massachusetts School Building Authority	Subordinated Dedicated Sales Tax Bonds, Series 2019B	1.819%	3.205%	221.63	121.63	100.00	54.88%
4	San Francisco City/County Public Utility Commission	Water Revenue Bonds, Subseries 2019A	0.220% 1.904% 2.627%	3.322%	179.81	110.40	69.41	61.40%
5	Houston, Texas	Utility Revenue Refunding Bonds, Series 2019C	1.686% 3.526%	2.633%	142.56	101.39	41.17	71.12%
6	Arizona Transportation Board	Highway Revenue Refunding Bonds, Series 2020	0.360% 2.856%	2.464%	53.03	48.15	4.88	90.80%
7	Harris County Metro Transportation Authority	Sales & Use Tax Refunding Bonds, Series 2020A	1.734%	2.732%	109.30	74.15	35.15	67.84%
8	California State University Trustees	Systemwide Revenue Bonds, Series 2020B	1.731%	2.700%	61.07	43.36	17.71	71.00%
9	Pennsylvania State Public School Building Authority	School Lease Revenue Refunding Bonds, Series 2019	2.201%	3.018%	22.88	9.40	13.48	41.08%
10	Kent State University	General Receipts Bonds, Series 2020B	2.785%	2.993%	28.68	23.06	5.60	80.47%
11	City of Philadelphia	GO Refunding Bonds, Series 2020A	1.259%	2.748%	28.14	15.58	12.56	55.37%
12	South Central Connecticut Reg Water Authority	Water System Revenue Bonds, 34th Series B	2.709%	3.037%	12.26	8.62	3.64	70.31%
13	Miami-Dade Co-Florida	Prof Sport Franchise Facilities Bonds, Series 2018	2.039%	3.908%	17.44	7.33	10.11	42.03%
14	Virginia Port Authority	Commonwealth Port Fund Refunding Bonds, Series 2018	1.680%	3.836%	17.62	6.03	11.59	34.22%
		Aggregate Results	1.978%	3.133%	$1,565.54	$988.37	$577.17	61.25%

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make refunding decisions based on savings thresholds rather than using option-based analytics, even though the latter approach has been around for several decades (Boyce & Kalotay, 1979; Finnerty et al., 1988) and is widely used by corporate issuers and financial institutions.

Tax-exempt municipal bonds have more embedded optionality per capita than any other bond market sector. Unfortunately, many municipal debt managers are unfamiliar with option valuation, relying on municipal advisors who also need to gain adequate knowledge of fixed-income analytics. As a result, decisions tend to be made on amateurish interest rate expectations, rather than on rigorous analytics. Along the lines of the Euclid quote above, there is a dire need for educated debt managers and no shortcuts for these professionals to expertise themselves in this technical area. Those who are currently ignorant of option-based analysis should avoid option-based transactions. Thus, the short-term solution to this problem is to reduce the issuance of callable bonds, and issue optionless bonds instead. In fact, the expected cost of optionless bonds is lower than that of correctly managed callable bonds (Kalotay, 2022). The longer-term answer is greater education of our public sector finance professionals.

Some municipal issuers are primarily interested in realizing whatever savings are available in the current market due to political constraints on increasing revenues or cutting expenses in a current budget cycle. And, perhaps for some short-sighted citizens, their preference would be greater long-term interest costs in exchange for lower taxes and maintained services in short-term budgets. This study does not evaluate an issuer's political motivation to refund debt or citizen preferences regarding short- and long-term budget tradeoffs. However, even if accepting a lower refunding efficiency is preferred, elected officials and debt managers should be cognizant of the specific opportunity cost associated with refunding debt early, and citizens should be aware of what their government gave up because of the specific debt management decisions made on their behalf. The use of refunding efficiency metrics ex-ante and production of ex-post counterfactual analyses, such as the one used in this study, would both be helpful to improve financial decision-making and enhance the transparency of these issuers' actions related to debt refunding.

Callable bonds entail interest rate risk, which must be properly valued and managed. State and local governments acquire the call options at a cost, although the up-front cost of the call option has yet to be recognized or acknowledged. The issuer's rationale for acquiring the call option is to benefit from potentially lower interest rates, by calling and refunding the bond. The savings to the issuer would occur at an offsetting loss to the investors, and therefore investors extract a charge for the call option. The cost of the call option is the difference between the market price of the callable bond and the theoretical value of an otherwise identical optionless bond.

For example, when the market price of a long-term callable bond is 100, the fair value of a non-callable bond might be 105, and the estimated cost of the call option to the issuer is 5 points. However, in the case of the 5% bonds considered in this study, the call option was considerably more costly, because the 5% coupon rate far exceeded prevailing interest rates. As such, the probability of a call was much greater. For example, when the market price of a 5% callable bond is 120, the theoretical value of a similar optionless bond may be 140, and the cost of the call option is 20 points. Unfortunately, municipal issuers are seemingly unaware of this considerable upfront cost. They consider only the savings from refunding, without acknowledging that the savings from refunding are entirely attributable to the presence of the call option, which was acquired at a considerable cost.

As interest rates vary following issuance, the value of the call option changes accordingly. In the case of 5% bonds, issuers have various economically beneficial refunding opportunities even before the call date. The taxable advance refunding featured in this paper is one example. In the process of refunding, the issuer automatically forfeits possibly more favorable refunding opportunities in the future. The value of the call option quantifies these opportunities. Thus, the savings from refunding should be compared to the forfeited option value.

Today, with hindsight, we can observe the tax-exempt rates as of the call dates of the refunded bonds and determine the counterfactual savings resulting from refunding with tax-exempt bonds. In other words, we can quantify what the issuer lost or gained by refunding early. We have shown that the issuer would have realized considerably greater savings by waiting in each case. For example, in the featured MSBA transaction, the savings would have been roughly $100 million more (i.e., 82% greater). In aggregate, the savings on just these 14 transactions would have been $577 million more, or 58% greater.

The aggregate 'savings lost' of taxpayers resulting from the well over 100 taxable advance refunding transactions between 2018 and 2020 is likely to amount to billions of dollars. The municipal finance community and the stakeholders should be aware of this enormous waste and consider how to avoid such in the future.[14] Although the call option is a common feature of tax-exempt bonds, the option value is seldom considered explicitly in structuring and refunding transactions (Kalotay, 2011). The rules of thumb for refunding decisions, such as 3% or 5% present value savings, are inadequate for any bond because they need to consider the forfeited option value. These naive present value savings heuristics are virtually deceitful for 5% bonds issued at a high premium because the above-market coupon rate enables a government to refund 5% bonds immediately after issuance for substantial "savings" (Kalotay, 2012a).

Conclusion

The results reported here suggest the need for reform of best practices for debt managers. Professional associations and federal regulators have a role to play here. Unfortunately, the GFOA contributes to the preservation of simplistic refunding heuristics through its "Best Practices: Refunding Municipal Bonds" statement (GFOA, 2019). Specifically, GFOA identifies five specific refunding savings approaches, all of which utilize variations on net present value metrics in determining when to refund bonds. It relegates "refunding efficiency" to a section on "additional considerations" (GFOA, 2019). The text on refunding efficiency in the GFOA's best practices reads as follows:

> *Refunding efficiency. Governments should understand that the call feature included in most municipal bonds has economic value. Consequently, they may want to set a minimum percentage of the potential call option value to be captured with an advance refunding before proceeding with the refunding. These estimates of the value of the call option depend on complex calculations that should be requested from a municipal advisor (GFOA, 2019).*

While the language and description is correct, we offer a few revisions for consideration. First, the GFOA should identify/suggest a minimum percentage refunding efficiency or at least a

range of acceptable refunding efficiency. This would provide specific and actionable financial policy guidance to municipal issuers. Also, the wording of "potential call option value" is misleading and should be changed since the call option definitively, not potentially, has value. However, the precise amount is dependent on certain assumptions.

Most importantly, GFOA should consider elevating "refunding efficiency" to a primary approach in determining when to refund bonds rather than as a marginal "additional consideration." With the regulation and certification of municipal advisors post-Dodd-Frank, government issuers should be able to request analyses such as refunding efficiency from their fiduciary advisors. In addition, the Municipal Securities Rulemaking Board (MSRB) should mandate through its regulatory processes and competency examinations that municipal advisors possess such technical expertise. These recommendations to the GFOA and MSRB would likely lead to 1) municipal issuers receiving less vague refunding advice along the lines of "you can go either way," "not a bad answer here," or "go with whatever you are comfortable with," and 2) fewer refunding decisions made as a "gut call." In turn, this should reduce harmful financial waste, such as what was estimated by this study.

This study illustrates how the lack of attention to option value and the resulting poor managerial decisions have cost taxpayers dearly. Improving the municipal debt management process will require the participation of several parties, including issuers, advisors, regulators, and trade associations. Ex-post counterfactual analysis and proficiency measures, such as the one introduced in this paper, will shed greater light on the need to improve financial policymaking at the state and local levels in the United States.

Endnotes

[1] The municipal securities market uses the term "refinancing" to describe a refunding of a government or tax-exempt borrower's outstanding debt.

[2] Per federal tax law, one tax-exempt advance refunding was allowed for bonds issued after 1985 (more than one tax-exempt advance refunding was allowed before 1985). The 2017 Act did not restrict using "current refundings" with tax-exempt bonds (i.e., refunding within 90 days of the call date).

[3] The coupon rate (e.g., 5%) determines a bond's semi-annual interest payment to investors (i.e., 2.5% of the par amount every six months for a bond with a 5% coupon). Municipal bonds with maturities greater than ten years are typically callable in 10 years from issuance at 100% of the par amount. This paper describes these bonds as "5% bonds."

[4] An investor must pay a premium price for the bond to receive a coupon rate higher than current interest rates.

[5] The de minimis tax treatment for municipal bonds determines whether the gain resulting from purchasing a bond at a discount is taxed as ordinary income or capital gain. Due to the "de minimis market effect," bonds purchased near par experience larger than expected declines in prices when interest rates rise (see Kalotay and Fennell [2022] for an example and more detailed explanation of this bond pricing phenomenon).

[6] A make-whole call allows issuers to retire bonds before their final maturity and/or the conventional call date. The make-whole price is intended to compensate the investor for the early call and is usually equal to the present value of the foregone coupon payments.

[7] While universities, hospitals, and other non-profit organizations also actively used the taxable advance refunding strategy, the top ten largest transactions only include government entities. In addition, governments represent the entire sample of transactions we use in this paper. As such, going forward, our language will only refer to "state and local governments," recognizing that our results and recommendations likely apply to all types of tax-exempt borrowers.

[8] Option-adjusted TIC adjusts the proceeds in calculating TIC to account for the refunding option on the callable bonds. This likely results in a lower cost of borrowing, reflecting the high likelihood that the callable bonds will be redeemed before maturity.

[9] Since the discount rate is the taxable rate, the present value of the taxable refunding bonds is simply the sale price of the bond issue.

[10] There is insufficient information regarding the legality and economics of these types of financings.

[11] The optionless yield curve for each counterfactual refunding was adjusted for issuers not rated AAA by computing the yield spread between the AAA MMD yield at each maturity and the AA or A MMD yield, dependent on the issuer's actual credit rating. MMD is the municipal market data yield curve that includes yields on 5% coupon rate bonds non-callable before ten years and callable ten years after. It is a widely referenced yield curve to determine the pricing of primary market municipal bond issuances.

[12] Between the taxable advance refunding and the counterfactual tax-exempt refunding, no material rating changes were made for any of the issuers in our sample.

[13] While our sample is certainly not generalizable in statistical inference, it reflects a good cross-section of government issuers, including some of the largest and presumably financially most sophisticated issuers in the United States.

[14] We leave it to the interested reader to determine who benefited from this enormous waste.

Disclosure Statement

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References

Ang, A, Green, R. C., Longstaff, F. A., & Xing, Y. (2017). Advancing refunding of municipal bonds. *Journal of Finance*, *72*(4), 1645-1681. https://doi.org/10.1111/jofi.12506
Bagley, J., Vieira, M., Allers, K., & Hamlin, T. (2021). *2020 municipal bond market in review*. Municipal Securities Rulemaking Board
Braun, M. (2023, July 14). How states and cities lost billions refinancing their debt early. *Bloomberg.*https://www.bloomberg.com/news/articles/2023-07-14/cities-lost-billions-refunding-municipal-bonds-with-pandemic-rates
Boyce, W. M., & Kalotay, A. J. (1979). Optimum bond calling and refunding. *Interfaces*, *9*(5), 36-49. https://doi.org/10.1287/inte.9.5.36
Dyl. E. A., & Joehnk, M. D. (1976). Refunding tax-exempt bonds. *Financial Management*, *5*(2), 59-66. https://doi.org/10.2307/3665181
Fabozzi, F. (2021). *The handbook of fixed income securities.* McGraw Hill.
Finnerty, J, Kalotay, A., & Farrell, F. (1988). *Evaluating bond refunding opportunities*. Ballinger Publishing Company.
Government Finance Officers Association. (2019). *Best practices: Refunding municipal bonds*. https://www.gfoa.org/materials/refunding-municipal-bonds
Joehnk, M. D., & Dyl, E. A. (1979). A practical framework for evaluating municipal bond refunding decisions. *State and Local Government Review*, *11*(1), 10-21.
Johnson, C. L., Luby, M. J., & Moldogaziev, T. T. (2021). *State and local financial instruments: Policy changes and management practices* (2nd ed.). Edward Elgar Publishing Limited.
Kalotay, A. (2007, January/February). The right discount rate could save your life. *Financial Engineering News*.
Kalotay, A. (2011, May 23). You pay for your options: Why not use them wisely? *GFOA Today*.
Kalotay, A. (2012a, January 27). The allure of 5% bonds: Coupon levitation creates magical savings. *The Bond Buyer*. https://www.bondbuyer.com/news/the-allure-of-5-bonds-coupon-levitation-creates-magical-savings
Kalotay. A. (2012b). Introducing TIC+ — Rethinking TIC calculation. *IPREO The Muni IC Newsletter.*
Kalotay, A. (2017). Creating a live yield curve in the illiquid muni market. *Journal of Fixed Income*, *27*(1), 84-91. https://doi.org/10.3904/jfi.2017.27.1.084
Kalotay, A. (2018). Life without advance refunding. *Municipal Finance Journal*, *39*(3), 61-70.
Kalotay, A. (2019, November 8). Are taxable advance refundings leaving money on the table? *The Bond Buyer*. https://www.bondbuyer.com/opinion/are-taxable-advance-refundings-leaving-money-on-the-table
Kalotay, A. (2020, March 4). There is hidden value for investors in callable taxables. *The Bond Buyer*. https://www.bondbuyer.com/opinion/hidden-value-for-investors-in-callable-taxables
Kalotay, A. (2021). Taxable advance refundings: A critical examination. *Municipal Finance Journal*, *41*(4), 49-59.
Kalotay, A. (2022). Call options on tax-exempt bonds are too costly. *Journal of Fixed Income*, *32*(4), 77-82. https://doi.org/10.3905/jfi.2022.1.152
Kalotay, A., & Davidson, G. (2021). Par munis: Sub-par performance. *Journal of Fixed Income*, *31*(2), 35-47. https://doi.org/10.3905/jfi.2021.1.119
Kalotay, A., & Dorigan, M. P. (2008). What makes the municipal yield curve rise? *Journal of Fixed Income*, *18*(3), 1-7.

Kalotay, A., & Fennell, P. (2022, March 7). Potential disclosure issues with discount munis. *The Bond Buyer*. https://www.bondbuyer.com/opinion/potential-disclosure-issues-with-discount-munis

Kalotay, A., & May, W. (1998). The timing of advance refunding of tax-exempt municipal bonds. *Municipal Finance Journal*, *19*(3), 1-15.

Kalotay, A., & Raineri, L. (2016). Don't waste a free lunch: Managing the advance refunding option. *Journal of Applied Corporate Finance*, *28*(4), 118-123. https://doi.org/10.1111/jacf.12210

Kalotay, A., & Tuckman, B. (1999). Subsidized borrowing and the discount rate. *Municipal Finance Journal*, *19*(4), 38-45.

Kalotay, A., Yang, D., & Fabozzi, F. (2007). Refunding efficiency: A generalized approach. *Applied Financial Economic Letters*, *3*(3), 141-146. https://doi.org/10.1080/17446540600771076

Khang, K., Will, N., & Ferrera, J. (2023, August 9). Munis, fed policy, and negative convexity. *Vanguard.* https://corporate.vanguard.com/content/corporatesite/us/en/corp/articles/munis-fed-policy-negative-convexity.html

Luby, M. J. (2012). The use of financial derivatives in state and local government bond refinancings: Playing with fire or prudent debt management. *Journal of Public Budgeting, Accounting & Financial Management*, *24*(1), 1-31. https://doi.org/10.1108/JPBAFM-24-01-2012-B001

Luby, M. J. (2014). Not all refinancings are created equal: A framework for assessing state and local government debt refinancing practices. *State and Local Government Review*, *46*(1), 52-62. https://doi.org/10.1177/0160323X13520434

Moldogaziev, T. T., & Luby, M. J. (2012). State and local government bond refinancing and the factors associated with the refunding decision. *Public Finance Review*, *40*(5), 614-642. https://doi.org/10.1177/1091142111430954

Poterba, J. M. (1986). Explaining the yield spread between taxable and tax-exempt bonds: The role of expected tax policy. In H. S. Rosen (Ed.), *Studies in state and local public finance* (pp. 5-52). University of Chicago Press. https://doi.org/10.7208/9780226726250-003

Reichardt, C. S. (2022). The counterfactual definition of a program effect. *American Journal of Evaluation*, *43*(2), 156-308. https://doi.org/10.1177/1098214020975485

Tuckman, B., & Serrat, A. (2022). *Fixed income securities: Tools for today's markets* (4th ed.). Wiley.

Vijayakumar, J. (1995). An empirical analysis of the factors influencing call decisions of local government bonds. *Journal of Accounting and Public Policy*, *14*(3), 203-231. https://doi.org/10.1016/0278-4254(95)00031-9

Weiss, M. J., Bloom, H. S., & Brock, T. (2014). A conceptual framework for studying the sources of variation in program effects. Journal of Policy Analysis and Management, *33*(3), 778-808. https://doi.org/10.1002/pam.21760

Zhang, W. D., & Li, J. (2004). The value of the advance refunding option and the refunding efficiency of tax-exempt municipal bonds." *Municipal Finance Journal*, *25*(1), 17-31.

Research Article

PUBLIC FINANCE JOURNAL

Decoding the Relationship Between Economic Growth and Fiscal Health:
Insights from Local Governments in North Carolina

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This article explores the relationship between local economic development and local government fiscal health, emphasizing the critical role of fiscal policy in determining long-term success. Using data from 2017 to 2022 for all counties in North Carolina, we apply Granger causality analysis to examine the relationship between a county's economic growth and its fiscal condition. Our findings show that fiscal health significantly influences local economic growth, indicating a unidirectional causality where better fiscal health can facilitate economic development. These observations add much-needed empirical evidence to the continuing literature on the importance of economic growth and the related fiscal policy choices.

Keywords: Economic Growth, Fiscal Health, Local Governments

Fiscal health is an area of research that should be prioritized as it is critical for ensuring local governments' long-term viability and resilience. Understanding the dynamics of fiscal health is critical for sustaining strong financial administration practices, especially in light of worldwide economic uncertainties and potential future financial challenges (McDonald et al., 2024). Fiscal health refers to the government's capacity to deliver public services while meeting current and future obligations (Maher et al., 2020). Research has primarily focused on analyzing the information related to fiscal conditions centered on solvency (Nollenberger et al., 2003). Financial indicators, assessed through solvency measures, are used to evaluate the ability of public administrations to fulfill their financial obligations to providers. Likewise, one of the challenges confronting local governments revolves around their ability to fulfill their basic level of service commitments and obligations (Jacob & Hendrick, 2012).

In this context, scholars have found interest in the interlinkages between a local government's fiscal health and its economic growth, with fiscal policy having an essential function in determining the long-term success of these governments (Hendrick, 2011; Miller & Russek, 1997; Schneider, 1992). Understanding the constantly shifting relationship between

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economic indicators and fiscal conditions is important because it allows local governments to make rational and informed choices that encourage economic growth while maintaining financial stability (Pasichnyi, 2017). Economic indicators such as GDP, unemployment rates, and sources of revenue provide essential data about a community's economic health and future growth trajectory. Governments can establish strategies that promote sustainable growth, manage resources efficiently, and limit financial risks by examining these indicators alongside fiscal conditions such as budget balances, debt levels, and expenditure patterns (Chugunov et al., 2021). However, to date, only a limited number of studies have focused on examining how the fiscal health of local governments and their determining factors, such as economic growth, are related. Especially the extent to which fiscal health influences and is influenced by economic growth at the municipal level remains unanswered (Easterly & Rebelo, 1993; Valickova et al., 2015; Van Cauwenberge et al., 2016). Therefore, further research on this topic is warranted.

This paper aims to assess the relationship between the fiscal health and economic growth of local governments, specifically in North Carolina counties. Such variables are measured through county-level GDP and the fiscal condition of North Carolina counties using Brown's 10-point test over the period of 2017-2022. Brown's 10-point test, a widely recognized method to measure local government fiscal health, offers a structured approach for examining numerous fiscal variables (Maher & Nollenberger, 2009). This method allows local government finance officials to assess their governments' relative fiscal condition over time, allowing for more informed decision-making and strategic planning (Rivenbark & Roenigk, 2011). Our findings demonstrate that fiscal health strongly predicts economic growth, implying that improving fiscal management might result in large financial benefits. However, the opposite was not found, indicating that economic growth does not always mean that there is improved fiscal health. This study adds to the existing literature by giving empirical evidence on the causality between a county's economic growth and fiscal health, which provides valuable insights for policymakers and practitioners. This study offers financial officers a helpful and approved tool for tracking and maintaining the local government's fiscal health over time.

Background

Fiscal health and economic growth are essential components influencing local governments' and communities' economic landscape and well-being (Miller & Russek, 1997; Schneider, 1992). Fiscal health is defined as the financial stability of local governments, as evaluated by measures such as revenue stability and debt levels (Honadle et al., 2003). In contrast, economic growth, measured by GDP growth, job creation, and overall prosperity, highlights the local economy's expansion and prosperity (Everett et al., 2010). This section will look at the relationship between fiscal health and economic growth, their impact on one another, and what it means for governance and policies.

What is Fiscal Health?

Fiscal health is a broad notion that is an important indication of a local government's financial sustainability and stability (McDonald & Maher, 2020). It represents a government's fiscal management capabilities, including its capacity to satisfy financial obligations, deliver critical services, and respond to financial crises (McDonald et al., 2024). Maintaining financial stability

or ensuring strong economic health involves multiple elements. First, income stability is important to ensure fiscal health since it entails determining the dependability and sustainability of income sources such as taxes, fees, and grants (Jacob & Hendrik, 2012). A consistent income stream from such sources is required to fund government operations, investments, and public services, ensuring stability and dependability in financial planning. Second, monitoring debt levels compared to the government's ability to repay is critical for determining fiscal sustainability, as it entails assessing the volume of borrowing, debt conditions, and the long-term consequences of debt for financing infrastructure, public projects, and services (Maher et al., 2023). Guaranteeing revenue stability and monitoring debt levels enable them to negotiate fiscal issues, encourage economic development, and invest in infrastructure, public services, and community well-being, all of which contribute to their community's overall prosperity and well-being (Justice & Scorsone, 2012). By focusing on fiscal health and following sound fiscal management practices, local governments may lay a strong financial foundation that supports long-term growth, creates economic resilience, and improves citizens' quality of life (Chung & Williams, 2021).

Economic Growth

Economic growth is a frequently discussed subject among scholars of public budgeting (Idrisov & Sinelnikov-Murylev, 2013). At its heart, economic growth is often considered a process marked by expansion, suggesting a quantitative increase in economic activity within a specific region or jurisdiction (Everett et al., 2010). Real Gross Domestic Product (GDP) is a widely used measure that reflects economic growth (Hobijn & Steindel, 2009). Real GDP, often known as the inflation-adjusted measure of a country's economic output, is also used at the local government level to determine its economic growth and development (Landefeld et al., 2008). In detail, real GDP is a comprehensive and standardized estimator of the total market value of all products and services produced within a region's borders, adjusted for inflation impacts (Bureau of Economic Analysis, 2023). This adjustment accounts for fluctuations in nominal GDP, which can be influenced by inflation or deflation, resulting in a more realistic portrayal of long-term economic growth (Mankiw, 2021). The importance of real GDP as a measure of economic growth has been well-recognized in economic literature and research. According to Hobijn and Steindel (2009), real GDP is a fundamental indication of regional economic success and prosperity. Real GDP changes represent economic activity swings, capturing local economic expansions and declines (Stewart, 2009). A rise in real GDP signifies growth, expansion, and higher economic activity, whereas a fall implies recession, decline, and decreased economic activity (Ramey & Zubairy, 2018).

The economy (i.e., economic growth) and fiscal health are inextricably linked and constantly changing (Hendrick, 2011). A government's fiscal health is critical to encouraging economic growth (Easterly & Rebelo, 1993). Governments that preserve fiscal health by managing debt effectively and guaranteeing income stability are better positioned to invest strategically in public infrastructure, technology, and human capital (Miller & Russek, 1997). These investments increase the economy's productivity and have the potential to attract private investment, which is critical for long-term economic growth (Hendrick, 2011). Local governments often see greater tax revenues and stronger fiscal positions during economic booms caused by increased consumer spending, company profits, and property values (Gorina et al., 2018). This infusion of revenue boosts a government's fiscal capability, allowing for better

service delivery without increasing debt levels (Afonso and Jalles, 2016). Such an environment promotes increased economic confidence and investment. Economic downturns, on the other hand, can put pressure on fiscal health by lowering tax collections while boosting spending on social services and unemployment benefits (Afonso & Jalles, 2016). Economic factors, such as GDP growth, unemployment, inflation, and interest rates, impact fiscal health by influencing income streams, expenditures, and financial planning (Afonso & Sousa, 2012).

Furthermore, a region's economic structure and diversification are important factors in improving fiscal resilience and stability (Kim & Warner, 2016). In such instances, governments may need to increase borrowing, raise taxes, or reduce public spending to meet fiscal obligations. These policies have the potential to hinder economic recovery, highlighting how fiscal health and economic success are inextricably linked, with each having a considerable impact on the other.

To summarize, the economy considerably impacts fiscal health through economic cycles, economic diversification, and external variables. Understanding these processes and their interdependence is crucial for local government officials, policymakers, and stakeholders involved in fiscal oversight. This understanding enables them to effectively navigate economic challenges and make informed choices that support long-term economic growth and development. Understanding how fiscal health and economic growth are related allows these key stakeholders to build policies that address immediate economic challenges while also laying the groundwork for long-term development at the local level.

While fiscal health and economic growth are intrinsically interconnected, they influence local governments differently (Honadle et al., 2003). Fiscal health is primarily concerned with local governments' financial stability and sustainability (Justice & Scorsone, 2012). It evaluates the government's capacity to manage its finances successfully by looking at issues such as revenue management, spending control, debt management, and the establishment of financial reserves (Volkerink & De Han, 2001). The goal of ensuring financial sustainability is to ensure that the government can meet its financial responsibilities, provide important services, and handle economic problems without jeopardizing its fiscal integrity. In contrast, economic growth is focused on increasing the overall size and development of the local economy (Idrisov & Sinelnikov-Murylev, 2013). Its objective is to increase economic activity, promote business development, and attract investment to foster innovation, provide job opportunities, raise living standards, and boost economic prosperity (Jones, 2016).

Furthermore, the indicators and metrics used to evaluate and monitor fiscal health and economic progress vary greatly (McDonald, 2019). The Brown ten-point test is a commonly used approach to assess fiscal health, including revenue stability, expenditure management, debt levels, and reserves (Hendrick, 2004). Such measurements provide information about the local government's financial management procedures and capacity to maintain fiscal sustainability. This method has been developed, evolved, and complemented by scholars in public budgeting communities (Maher & Nollenberger, 2009; McDonald, 2018). In contrast, Todaro and Smith (2020) state that economic growth is often quantified using GDP growth, employment rates, corporate investment, and consumer spending metrics. These indicators represent the local economy's general performance, activity, and health. Moreover, comparing fiscal health and economic growth across jurisdictions can be difficult due to disparities in measurement methodology, data availability, local contexts, and external factors. As a result, when assessing and comparing fiscal health and economic growth metrics, scholars should consider such aspects to ensure both internal and external validity.

The relationship between fiscal health and economic growth is dynamic, with each influencing the other in a nuanced way (Riera-Crichton et al., 2015). On the one hand, a fiscally sound local government can help drive economic growth by fostering a stable financial climate that attracts business investment, encourages entrepreneurship, and increases economic activity (Potter, 2005). Local governments can improve their fiscal discipline and resilience by practicing smart financial management, effective expenditure control, and strategic investments in infrastructure and public services, all of which contribute to job creation, prosperity, and overall economic development (Hackler, 2011). Economic growth, on the other hand, is critical to improving fiscal health because it boosts consumer spending, creates new job possibilities, and creates more tax revenue (Ramey & Zubairy, 2018). Such advantages enhance a local government's ability to maintain financial stability, meet financial obligations, and successfully handle economic problems (Reinhart & Rogoff, 2014). As a result, the relationship between fiscal health and economic growth is defined by mutual reinforcement and feedback loops, mutually influencing and supporting each other in repeated cycles (Khan et al., 2021). Fiscal health may provide a strong financial basis for economic growth, while economic progress creates the resources and revenues required to support and improve revenues, resulting in a mutually beneficial relationship that supports long-term development and prosperity.

However, the majority of research exploring the links between fiscal health and economic development has predominantly concentrated on national and regional levels, with fewer studies focusing on the local level, particularly the degree to which fiscal health impacts and is impacted by economic growth (Easterly & Rebelo, 1993; Valickova et al., 2015; Van Cauwenberge, 2016). Based on the discussion above, we hypothesize that an improvement in a government's fiscal health leads to an improvement in its economic growth. We also hypothesize the inverse, that economic growth can lead to fiscal health, demonstrating a bidirectional causality between the two in the United States.

Data and Methods

This study focuses on 100 counties in North Carolina from 2017 to 2022. The dataset initially consisted of 600 observations, representing annual data points for each county spanning six years. For the study utilizing a two-year lag to assess the effects of fiscal health on GDP growth and vice versa, the effective sample was adjusted to 400 observations to accommodate the lag structure required for the accuracy of our methodologies.

To test our hypotheses, we need data on the measurement of fiscal health and the economic condition of the counties. To measure fiscal health, we turned to Brown's 10-point test. This test provides a thorough and uniform method by computing ten ratios using financial information. Data for the calculations were extracted from the annual financial reports of the counties, as provided by North Carolina's Department of State Treasurer.

We calculated Brown's ten-point test based on the process established by Brown (1993) and updated by Maher and Nollenberger (2009). Brown's ten-point test offers a comprehensive evaluation of fiscal health by assessing ten distinct ratios that reflect various aspects of financial stability and management at the county level. These ratios encompass income generation, revenue diversification, local tax reliance, spending control, revenue-expenditure equilibrium, revenue stability, liquidity, debt management, debt sustainability, per capita debt, and debt service burden. Each ratio is ranked based on quartiles, with higher scores indicating stronger

Table 1. Brown's Ten-point Test Measurement

Ratio	Description	Dimension	Unit	Points assigned to each quartile				Sum
				0-25 *(a)*	25-50 *(b)*	50-75 *(c)*	75-100 *(d)*	(a+ b + c+ d)
Ratio 1	Total revenues/population	Revenue	Dollars	-1	0	1	2	Sum ratio 1
Ratio 2	Total intergovernmental revenues/total revenues	Revenue	Percentage	-1	0	1	2	Sum ratio 2
Ratio 3	Property tax, or own source tax revenues/total revenues	Revenue	Percentage	-1	0	1	2	Sum ratio 3
Ratio 4	Operating expenditure/ total expenditures	Expenditure	Percentage	-1	0	1	2	Sum ratio 4
Ratio 5	Total revenues/total expenditures	Operating position	Ratio	-1	0	1	2	Sum ratio 5
Ratio 6	Unreserved balance/total revenues	Operating position	Ratio	-1	0	1	2	Sum ratio 6
Ratio 7	Cash investments/debt service expenditure	Operating position	Ratio	-1	0	1	2	Sum ratio 7
Ratio 8	Total general obligation debt/general fund revenues	Debt	Percentage	-1	0	1	2	Sum ratio 8
Ratio 9	Total general obligation debt/population	Debt	Dollars	-1	0	1	2	Sum ratio 9
Ratio 10	Debt service expenditure/total revenue	Debt	Percentage	-1	0	1	2	Sum ratio 10

Note: Adapted from Brown (1993) and Maher & Nollenberger (2009)

Table 2. Variable Names and Descriptive Statistics

Variable Name	Definition	Mean	S.D.	Min	Max	Source
Fiscal Health	Brown's ten-point test score of a country, ranging from -20 to +20	5.448	4.486	-7	17	a
Economic Growth	Total real GDP of a county in dollars	6,414,034	16,400,000	115,545	152,000,000	b

Note: a=County Annual Financial Information Report (AFIR) by North Carolina's Department of State Treasurer; b=County gross domestic product (GDP) from Bureau of Economic Analysis

fiscal health (Brown, 1993). By computing these ratios for North Carolina counties from 2017 to 2022, an aggregate score is generated to provide a holistic assessment. This approach allows for a detailed examination of fiscal health, highlighting areas of strength and potential concerns across counties. Table 1 provides an overview of the 10-point test.

To account for economic growth's role in our study, we used real county GDP, as measured by the Bureau of Economic Analysis. Table 2 provides descriptive statistics for the data.

Our approach to estimating the relationship between fiscal health and economic growth relies upon Granger causality. Granger causality is a statistical test used to see whether the historical data of one time series contributes to forecasting the future values of another variable in addition to what can already be predicted solely from the past values of that variable (Barrett et al., 2010). Unlike correlation analysis, which only identifies connections between variables, Granger causality analysis provides a more in-depth understanding of causality by investigating whether changes in one variable precede and anticipate changes in another. This time perspective is critical for disentangling complex linkages, such as those between economic growth and fiscal health, where the direction of influence is not always obvious. Furthermore, Granger causality research acknowledges the concept of bidirectional causality, recognizing that the relationship between economic growth and fiscal health might act in both directions. Like the chicken and the egg problem, this flexibility allows us to depict the relationship's intricate dynamics, including feedback loops and mutual effects throughout time (Thurman & Fisher, 1988).

We use Granger causality analysis to determine if changes in economic growth (measured by real county GDP) can predict changes in fiscal health (measured by Brown's score) for each North Carolina county and vice versa. This method allows us to determine the bi-directionality and degree of the causal relationship between these two variables to understand the pattern of economic growth and fiscal health, providing useful information for policymakers. Our study uses this test to investigate how fiscal health indicators from prior years (years *t-2* and *t-1*) affect GDP growth in succeeding periods. This approach enables us to capture the delayed effects of fiscal health on economic outcomes, reflecting a forward-looking perspective consistent with economic theories that imply that the benefits of fiscal policy manifest over time rather than immediately.

Before performing the Granger causality analysis, we run the Vector Autoregression (VAR) model, which accurately predicts how different variables interact and change over time. VAR model was used to examine the dynamic relationship between the variables, accounting for the impact of lagged values of fiscal health and GDP growth on one another. By running a VAR model first, we prepare for a more informed and statistically correct Granger causality analysis. This method increases the dependability of our findings and provides a thorough picture of how the variables interact with one another throughout time. We can account for each county's distinctive characteristics and causal relationships by calculating distinct VAR models. This method ensures that our study is adapted to each county's unique dynamics, resulting in a more accurate and comprehensive understanding of the relationship between economic growth and fiscal health.

By evaluating these tests, we may identify the temporal patterns that drive the relationship between economic growth and fiscal health. If economic growth causes fiscal health, then measures focused on promoting economic growth may have a favorable influence on county fiscal health. Conversely, if fiscal health causes economic growth, then sustaining strong fiscal policies may result in fiscal advantages. Understanding these relationships gives useful information for policymakers and stakeholders promoting sustainable development and financial resilience in North Carolina counties.

Table 3. Granger Causality Model Output

Variable Pair	Chi-Squared	P-value	Granger Causality
GDP → Fiscal Health	0.184	0.668	No
Fiscal Health → GDP	2.732	0.098	Yes*

* Indicates statistical significance at p <0.10

Results and Discussion

Our analysis focuses on the bidirectional causal relationship between fiscal health and economic growth. We lagged the effect by two years as fiscal policies and their impact on economic indicators often manifest over long periods of time, and a two-year timeframe is consistent with local government budget cycles, allowing us to capture the entire effect of fiscal adjustments on economic growth. This lag period also corresponds to the time it takes for policy implementations to impact the economy, ensuring that our analysis considers the gradual nature of these economic changes and provides a more accurate picture of the dynamic relationship between fiscal health and economic growth.

The Granger causality tests provided noteworthy findings, as outlined in Table 3. It demonstrated that causality between fiscal health (i.e., Brown's score) and real GDP is statistically significant at 0.1 with a chi-squared value of 2.732 and a p-value of 0.098. This indicates that these past two-year values of fiscal health have statistically significant predictive power on changes to a county's GDP. In comparison, there is no indication that a county's GDP Granger causes fiscal health, as demonstrated by a low chi-squared value (0.184) and a high p-value (0.668). This means that the past two years' values of total real GDP-based economic growth may not predict changes in fiscal health, as measured by the Brown ten-point test, within our study's time span and context. According to this analysis, there is evidence to suggest that past values of fiscal health Cause changes in GDP, but there is no significant evidence to support the reverse relationship.

These findings emphasize the importance of promoting fiscal health to support and improve economic prosperity. However, the lack of a statistically meaningful association on the reverse relationship between fiscal health and economic growth calls for further investigation and thoughtful consideration in policy-making. The bidirectional relationship between economic growth and fiscal health has far-reaching consequences for policymakers and stakeholders alike. While fiscal health is not necessarily an immediate indicator of economic growth, it can drive long-term economic prosperity. This highlights the importance of a collaborative approach that blends sound budgetary management techniques and economic development initiatives. The Granger causality findings underline the significance of fiscal health as a possible driver of budgetary health in North Carolina counties.

The findings highlight the need to address government fiscal health as an addition and a cornerstone of economic development initiatives. By aligning fiscal health initiatives with broader economic goals, policymakers can forge a path toward sustainable economic growth and prosperity in North Carolina counties. This strategy views excellent government fiscal management as a critical investment in economic development rather than traditional techniques that rely primarily on subsidies and favorable to business incentives. This method provides long-term fiscal stability and economic strength, emphasizing the need for solid legislative practices in promoting economic growth.

The relationship between economic growth and fiscal health is characterized by dualism, impacting policy on multiple levels. Economic growth enhances fiscal health by generating additional revenues and relies on robust fiscal management to sustain such growth. This dualism underlines the importance of a holistic approach in policy-making that seamlessly integrates economic development with sound fiscal management practices. The absence of a statistically significant causality between GDP and Brown's score implies that immediate economic growth may not always lead to short-term swings in fiscal health. Policymakers should have a long-term view when developing economic and budgetary policies. Strategies that prioritize short-term economic gains over long-term fiscal implications may result in unsustainable fiscal practices and stifle long-term economic growth.

Conclusion

This study offers insight into the bidirectional relationship between economic growth and fiscal health. The Granger causality test yielded noteworthy results, where fiscal health appeared to have a causal effect on economic growth. On the other hand, economic growth does not drive fiscal health. These findings imply that while fiscal health may drive improvements in economic growth over time, the effect of economic growth on fiscal health may be less significant in the short run or need more time to show its impact.

Our findings have consequences beyond academic discourse, including real-world policy-making and governance. First, this paper adds to the expanding body of research on the relationship between economic growth and fiscal health at the local government level. It contributes vital insights into evidence-based decision-making and policy formation by applying rigorous analytical methodologies and tapping into robust data sources. Second, in a real-world context, understanding the relationship between economic growth and fiscal health is critical for policymakers and stakeholders working to promote long-term development, prosperity, and sustainability in their communities.

The wide range of Brown scores across North Carolina counties highlights the necessity for special policy interventions suited to each county's unique fiscal challenges and prospects. While some counties may need assistance boosting revenue through economic development projects, others may benefit from strategies that improve fiscal discipline and spending management. Recognizing these disparities in economic health is essential for legislators because it enables them to craft tailored policies that successfully address each county's unique demands. For example, counties with lower Brown scores may benefit from capacity-building initiatives aimed at improving local government budgetary management abilities. In contrast, those with higher scores may focus on leveraging their fiscal health to attract investments and boost economic growth. Recognizing the bidirectional nature of this link enables policymakers to develop targeted interventions and policies that use fiscal health management to promote economic opportunities and vice versa.

Since we found the dynamic relationship between fiscal health and economic growth, we see value in exploring the causality over more time-series data. With only six years of data being used for the study, it might not be long enough to see the impact of economic growth on fiscal health. Moreover, it is also invaluable to expand this analysis to other states or areas to see if similar patterns develop in various settings. Additionally, investigating the influence of external economic forces, governance effectiveness, and policy decisions in shaping the relationship

between economic growth and fiscal health may yield new insights into this intricate relationship. Future research could investigate other variables, such as the effect of population dynamics and declining fiscal health on economic development. This new layer of study may provide more detailed insights into the complicated interactions that define regional economic landscapes.

Disclosure Statement

The authors declare that they have no conflicts of interest related to the research, authorship, or publication of this article.

References

Afonso, A., & Jalles, J. T. (2016). Economic performance, government size, and institutional quality. *Empirica*, *43*(1), 83-109. https://doi.org/10.1007/s10663-015-9294-2

Afonso, A., & Sousa, R. M. (2012). The macroeconomic effects of fiscal policy. *Applied Economics*, *44*(34), 4439-4454. https://doi.org/10.1080/00036846.2011.591732

Barnett, L., & Seth, A. K. (2015). Granger causality for state-space models. *Physical Review E*, *91*(4), 040101. https://doi.org/10.1103/PhysRevE.91.040101

Barrett, A. B., Barnett, L., & Seth, A. K. (2010). Multivariate Granger causality and generalized variance. *Physical Review E*, *81*(4), 041907. https://doi.org/10.1103/PhysRevE.81.041907

Brown, K. W. (1993). The 10-point test of financial condition: Toward an easy-to-use assessment tool for smaller cities. *Government Finance Review*, *9*(6), 21-26.

Chung, I. H., & Williams, D. (2021). Local governments' responses to the fiscal stress label: The case of New York. *Local Government Studies*, *47*(5), 808-835. https://doi.org/10.1080/03003930.2020.1797693

Chugunov, I., Pasichnyi, M., Koroviy, V., Kaneva, T., & Nikitishin, A. (2021). Fiscal and monetary policy of economic development. *European Journal of Sustainable Development*, *10*(1), 42-52. https://doi.org/10.14207/ejsd.2021.v10n1p42

Dritsakis, N., & Adamopoulos, A. (2004). Financial development and economic growth in Greece: An empirical investigation with Granger causality analysis. *International Economic Journal*, *18*(4), 547-559. https://doi.org/10.1080/1016873042000299981

Easterly, W., & Rebelo, S. (1993). Fiscal policy and economic growth. *Journal of Monetary Economics*, *32*(3), 417-458. https://doi.org/10.1016/0304-3932(93)90025-B

Everett, T., Ishwaran, M., Ansaloni, G. P., & Rubin, A. (2010, March). *Economic growth and the environment* (MPRA Paper No. 23585). Munich Personal RePEc Archive. https://mpra.ub.uni-muenchen.de/23585/

Gorina, E., Maher, C., & Joffe, M. (2018). Local fiscal distress: Measurement and prediction. *Public Budgeting & Finance*, *38*(1), 72-94. https://doi.org/10.1111/pbaf.12165

Hackler, D. (2011). *Innovation and entrepreneurship in cities: Unlocking future local economic growth and fiscal capacity* (Working Paper No. 2015055). Social Science Research Network. https://doi.org/10.2139/ssrn.2015055

Hendrick, R. (2004). Assessing and measuring the fiscal health of local governments: Focus on

Chicago suburban municipalities. *Urban Affairs Review*, *40*(1), 78-114. https://doi.org/10.1177/1078087404268076
Hendrick, R. M. (2011). *Managing the fiscal metropolis: The financial policies, practices, and health of suburban municipalities*. Georgetown University Press.
Hobijn, B., & Steindel, C. (2009). Do alternative measures of GDP affect its interpretation? *Current Issues in Economics and Finance*, *15*(7), 1-7. https://doi.org/10.2139/ssrn.1518445
Honadle, B. W., Cigler, B., & Costa, J. M. (2003). *Fiscal health for local governments*. Elsevier.
Idrisov, G., & Sinelnikov-Murylev, S. G. (2013). *Budget policy and economic growth* (Working Paper No. 2367933). Social Science Research Network. https://doi.org/10.2139/ssrn.2367933
Jacob, B., & Hendrick, R. (2012). Assessing the financial condition of local governments. In H. Levine, J. B. Justice, & E. A. Scorsone (Eds.), *Handbook of local government fiscal health* (pp. 11-40). Jones & Bartlett.
Jones, C. (2016). The facts of economic growth. In J. B. Taylor & H. Uhlig, (Eds.), *Handbook of macroeconomics* (Vol. 2, pp. 3-69). Elsevier.
Justice, J. B., & Scorsone, E. A. (2012). Measuring and predicting local government fiscal stress. In H. Levine, J. B. Justice, & E. A. Scorsone (Eds.), *Handbook of local government fiscal health* (pp. 43-74). Jones & Bartlett.
Khan, I., Hou, F., Irfan, M., Zakari, A., & Le, H. P. (2021). Does energy trilemma a driver of economic growth? The roles of energy use, population growth, and financial development. *Renewable and Sustainable Energy Reviews*, *146*, 111157. https://doi.org/10.1016/j.rser.2021.111157
Kim, Y., & Warner, M. E. (2016). Pragmatic municipalism: Local government service delivery after the great recession. *Public Administration*, *94*(3), 789-805. https://doi.org/10.1111/padm.12267
Landefeld, J. S., Seskin, E. P., & Fraumeni, B. M. (2008). Taking the pulse of the economy: Measuring GDP. *Journal of Economic Perspectives*, *22*(2), 193-216. https://doi.org/10.1257/jep.22.2.193
Maher, C. S., & Nollenberger, K. (2009). Revisiting Kenneth Brown's 10-point test. *Government Finance Review*, *25*(5), 61-66.
Maher, C. S., Oh, J. W., & Liao, W.-J. (2020). Assessing fiscal distress in small county governments. *Journal of Public Budgeting, Accounting & Financial Management*, *32*(4), 691-711. https://doi.org/10.1108/JPBAFM-02-2020-0016
Mankiw, N. G. (2021). *Principles of economics*. Cengage Learning.
McDonald, B. D. (2018). Local governance and the issue of fiscal health. *State and Local Government Review*, *50*(1), 46-55. https://doi.org/10.1177/0160323X18765919
McDonald, B. D. (2019). The challenges and implications of fiscal health. *South Carolina Journal of International Law and Business*, *15*(20), 78-99.
McDonald, B. D., & Maher, C. S. (2020). Do we really need another municipal fiscal health analysis? Assessing the effectiveness of fiscal health systems. *Public Finance and Management*, *19*(4), 270-296. https://doi-org/10.1177/152397212001900402
McDonald, B. D., Larson, S. E., Maher, C. S., Kavanagh, S., Hunter, K. W., Goodman, C. B., Minkowitz, H., McCandless, S. A., Afshan, S., Jordan, M. M., et al. (2024). Establishing an agenda for public budgeting and finance research. *Public Finance Journal*, *1*(1), 9-28. https://doi.org/10.59469/pfj.2024.15

Miller, S. M., & Russek, F. S. (1997). Fiscal structures and economic growth at the state and local level. *Public Finance Review, 25*(2), 213-237. https://doi.org/10.1177/109114219702500204

Nollenberger, K., Groves, S. M., & Valente, M. G. (2003). *Evaluating financial condition: A handbook for local government* (4th ed.). ICMA.

Pasichnyi, M. (2017). Empirical study of the fiscal policy impact on economic growth. *Problems and Perspectives in Management*, *15*(3), 316-322.

Potter, J. (2005). Entrepreneurship policy at local level: Rationale, design and delivery. *Local Economy*, *20*(1), 104-110. https://doi.org/10.1080/0269094042000326689

Ramey, V. A., & Zubairy, S. (2018). Government spending multipliers in good times and in bad: Evidence from US historical data. *Journal of Political Economy*, *126*(2), 850-901. https://doi.org/10.1086/696277

Reinhart, C. M., & Rogoff, K. S. (2014). Recovery from financial crises: Evidence from 100 episodes. *American Economic Review*, *104*(5), 50-55. https://doi.org/10.1257/aer.104.5.50

Riera-Crichton, D., Vegh, C. A., & Vuletin, G. (2015). Procyclical and countercyclical fiscal multipliers: Evidence from OECD countries. *Journal of International Money and Finance*, *52*, 15-31. https://doi.org/10.1016/j.jimonfin.2014.11.011

Rivenbark, W. C., & Roenigk, D. J. (2011). Implementation of financial condition analysis in local government. *Public Administration Quarterly*, *35*(2), 241-267.

Schneider, M. (1992). Undermining the growth machine: The missing link between local economic development and fiscal payoffs. *The Journal of Politics*, *54*(1), 214-230. https://doi.org/10.2307/2131651

Shojaie, A., & Fox, E. B. (2022). Granger Causality: A review and recent advances. *Annual Review of Statistics and Its Application*, *9*(1), 289-319. https://doi.org/10.1146/annurev-statistics-040120-010930

Stewart, L. S. M. (2009). Examining factors that impact Mississippi counties' unreserved fund balance during relative resource abundance and relative resource scarcity. *Public Budgeting & Finance*, *29*(4), 45-73. https://doi.org/10.1111/j.1540-5850.2009.00942.x

Thurman, W. N., & Fisher, M. E. (1988). Chickens, eggs, and causality, or which came first? *American Journal of Agricultural Economics*, *70*(2), 237-238. https://doi.org/10.2307/1242062

Todaro, M. P., & Smith, S. C. (2020). *Economic development*. Pearson UK.

Valickova, P., Havranek, T., & Horvath, R. (2015). Financial development and economic growth: A meta-analysis. *Journal of Economic Surveys*, *29*(3), 506-526. https://doi.org/10.1111/joes.12068

Van Cauwenberge, P., Beyne, P., & Vander Bauwhede, H. (2016). An empirical investigation of the influence of municipal fiscal policy on firm growth. *Environment and Planning C: Government and Policy*, *34*(8), 1825-1842. https://doi.org/10.1177/0263774X16642767

Volkerink, B., & de Haan, J. (2001). Fragmented government effects on fiscal policy: New evidence. *Public Choice*, *109*(3), 221-242. https://doi.org/10.1023/A:1013048518308

Research Article

PUBLIC FINANCE JOURNAL

What are Cash-Balance Pension Plans and How Do They Compare?

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We offer a comprehensive explanation of cash-balance pension plans in the public sector, including a comparison to defined-benefit and defined-contribution plans. Comparisons are made with respect to design, management, costs, and long-term viability. Three important aspects of pension fund management are discussed: pension benefits and contributions, pension governance and reasons for cash-balance plan adoption, and pension funding. Four unique cases – Nebraska Public Employees Retirement System (NPERS), Kansas Public Employees Retirement System (KPERS), Kentucky Public Pensions Authority (KPPA), and Texas Municipal Retirement System (TMRS) – help to illustrate these three important points.

Keywords: Cash-Balance, Financial Sustainability; Pension Systems, Public Pension

In recent decades, the private sector has pivoted from traditional defined benefit (DB) pension systems to defined contribution (DC) and cash-balance (CB) plans (Clark & Schieber, 2004). In the public sector, DB plans remain the most prominent, however, since the economic crisis of 2007-2009 affected pension investment and funding levels, an increasing number of state and local governments began offering hybrid pension plans or DC plans. While there are concerns about the financial burden of government-sponsored DB plans, there are equal concerns about the adequacy of retirement savings for those under DC plans. Admitting those concerns, the CB plan – a hybrid model combining DC and DB plan features – is getting increased attention (Biggs, 2011; Ghilarducci & Weller, 2007; Johnson & Steuerle, 2004).

Appreciating that each pension design has unique characteristics, this study highlights the major features of public pension plans and then describes the CB pension design. This paper aims to address the following questions: (1) what are CB plans and how are they different from a DB or a DC plan; (2) what are the reasons state and local governments decide to adopt CB pension plans; (3) what are the implications of a CB pension plan on government financial

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management (investment risk, governance, funding) and employee benefits; and (4) what are the key factors in need of consideration for those considering a CB plan?

The study's contributions to the current pension management literature and practices are two-fold. First, this study sheds light on the reasons for the adoption of CB plans in the public sector. Currently, the few studies on CB plans in the public sector have been mostly descriptive (Biggs, 2011; Elliott & Moore, 2000; Johnson & Steuerle, 2004; Weller, 2005) and most studies of CB plans in the private sector are somewhat dated (Clark & Schieber, 2004; Coronado & Copeland, 2004; Purcell, 2005; Rappaport et al., 1997; Zall, 2002). The current CB literature does not discuss why some governments switched to a CB plan and how this change affected government pension plan management. Second, through a review of the literature and case-study analysis, the study discusses the consequences of migrating to a CB plan for both government employers and their employees.

The paper proceeds as follows: The next section describes CB plans and compares their features to DB and DC plans. The following section then offers four case studies that help illustrate the structure of CB plans, reasons for their adoption, plan design (contribution and benefits), financial management (investment returns and funding status), and key takeaways. Finally, the paper concludes with a discussion of the factors that need to be considered if converting to a CB plan.

Background

Defined Benefit vs Defined Contribution Plans

DB plans have been a staple of public-sector employment (Frank et al., 2012). State and local governments sponsor more than 5,400 systems that provide pension benefits for more than 21 million government workers (U.S. Census Bureau, 2017). In DB plans, pension benefits are defined based on a set formula that considers an employee's age, tenure, and average highest salary attained (Munnell et al., 2007). DB plans are a back-loaded system, meaning that the benefits accrued each year increase once workers have moved past the early decades of their careers and closer to retirement (Biggs, 2011). DB plans are also annuity plans, in which beneficiaries can receive pension benefits for the rest of their life upon retirement. Given their design, DB plans have been considered a key to the recruitment and retention of employees (Lewis & Frank, 2002). Employers, including state and local governments, bear the major responsibility of funding and managing these pension plans. Since pension benefits are guaranteed regardless of investment return, governments must ensure that the pension systems have sufficient funding, especially during economic downturns and low-return investment periods.

DC plans are similar to 401(k)'s; under this system, contributions are defined for both employers and employees. The two biggest differences between a DC and DB plan are that (1) employees are responsible for choosing their own investments and hence the total amount of benefits upon retirement, and (2) employees often receive pension benefits as a lump-sum payment. All pension benefits under a DC pension system are vested immediately and are not tied down to their employers. The portability of DC plans can be more attractive to younger and mobility workers (Cong et al., 2015). However, investment risk and insufficient retirement funds are concerns for employees under DC plans since not all public employees have the required knowledge to successfully manage their investment portfolios (Munnell, Aubry, & Quinby,

2011). Additionally, some DC plans do not offer annuities as an option at retirement, which can result in retirees withdrawing too much or too little from their retirement accounts. In other words, besides investment/market risks, employees under the DC plan also have to manage longevity risk (Abashidze et al., 2021; Aubry & Wandrei, 2021; Mitchell & Mulvey, 2004).

Cash-Balance Plan

CB plans calculate and pay retirement benefits similar to a DC plan, yet the plans are administered, funded, and invested similar to a DB plan (Biggs, 2011; Elliott & Moore, 2000; Johnson & Steuerle, 2004; Purcell, 2005; Weller, 2005). CB plans' assets are usually pooled and professionally invested, as with DB plans. Employers that offer CB plans are responsible for investing the plan assets and, therefore, bear the risk of investment gains and losses (Cahill & Soto, 2003). Conversely, unlike DB plans, retirement benefits for CB participants are based on contribution amounts and guaranteed credits at a rate specified by their employer (Brainard & Brown, 2018a, 2018b). Upon retirement, employees under the CB plan can choose a lump sum distribution option or elect to buy an annuity, depending on the plan design. While CB participants have their accounts, they are "notional," meaning that CB plan participants do not manage or invest their assets like DC participants. Finally, CB plans offer portability to employees, similar to DC plans (Biggs, 2011; Elliott & Moore, 2000). Table 1 summarizes the main differences among traditional DB, DC, and CB plans.

Cash Balance Plans

Arguments Favoring Cash Balance Plans

Arguments favoring CB plans include cost predictability, mobility, and risk-sharing. A shift to CB plans is often driven by a need to redesign compensation packages, facilitate liability management, and attract a mobile workforce (Elliott & Moore, 2000). The benefit determination process based on an explicit guaranteed rate of return in CB plans makes them easier to understand, administer, and manage (Biggs, 2011; Zall, 2002).

As a replacement for some DB plans, CB plans can provide more predictable funding requirements and reduce the plans' vulnerability caused by volatile investment returns (Fuchsman et al., 2023; Pew Charitable Trusts, 2014; Schieber, 2007). By specifying employees' credited interest rates and, therefore, future pension benefits, CB plans allow governments to better control pension costs and experience less fluctuation in employer contributions (Elliott & Moore, 2000; Ghilarducci & Weller, 2007; Purcell, 2005). Additionally, unlike traditional DB plans, where benefit accruals are often back-loaded and spike near retirement, CB plan benefits accrue as a constant percentage of salary over an employee's career, leading to a smoother and more predictable benefits accumulation pattern (Cahill & Soto, 2003; Purcell, 2005). Along with responsible funding strategies, this consistent accrual pattern can result in a more stable and predictable pension funding environment (Munnell & Soto, 2004).

Risk-sharing mechanism can also make CB plans more attractive, especially during market volatility. Evidence suggests that CB plan conversion can reduce the risk/uncertainty of managing the pension system because the plan design allows the sharing of financial market risks between employers and employees (Mitchell & Mulvey, 2004; Pew Charitable Trusts, 2014). Since CB plans have more predictable contribution rates for employers and employees

Table 1. Defined Benefit, Defined Contribution, and Cash balance Pension Plans

	Traditional DB	Traditional DC	Cash Balance
Primarily responsible for ensuring pension benefits upon retirement	Employers	Employees	Employers
Determination of pension benefit amount	Benefit formulation (benefit multiplier x YOS x FAS). The benefits can be adjusted for COLA.	Depending on contributions (EE and ER), and investment return	Depending on contributions (EE and ER), and pre-determined credited interest rate
Benefit growth	Backloaded – slow at the start, rises sharply towards retirement	Depending on employee contributions and investment	Steady accumulation based on contribution and guaranteed credit rate
Benefit payment	Benefits are paid as lifetime guaranteed annuity	Benefits are paid as a lump sum	Allow lump sum distribution of benefits or have options to convert to annuity
Contributions	Fixed contribution rates for employees; employer contributions are determined using the sets of actuarial assumptions.	Fixed employee and employer contribution rates.	Fixed employee and employer contribution rates.
Management of assets	Pooled and professionally managed	Dependent on employee	Pooled and professionally managed
Investment risk is primarily borne by	Employers	Employees	Employers
Longevity risk of pension payment	Since the payment is an annuity, there is little longevity risk for employees	Employees face both investment and longevity risks in managing their pension benefits	Employees face longevity risk. Some pension plans offer annuities.

Note: YOS: years of service; FAS: final average salary; COLA: Cost-of-Living Adjustments; ER: Employer; EE: Employee

and only guarantee a minimum investment return that is typically lower than the expected investment returns of DB plans, CB plans can reduce employers' investment risk. Furthermore, as the credit interest rate is fixed, employers may also retain some short-term investment gains if the rate of return on those investments is higher than the promised credit interest rate (Cahill & Soto, 2003).

CB plans are also more portable than traditional DB plans. Carrying accrued benefits across jobs in the form of lump-sum distributions can make CB plans favorable to mobile employees (Biggs 2011; Lazonick, Ghilarducci, & Weller, 2007; Rodriguez & Grillo-Chope, 2007; Zall, 2002). Both Schrager (2009) and Haverstick et al. (2010) found that younger workers who experience higher job turnover and wage variability often prefer highly mobile pension benefits, such as DC or CB plans. Studies also indicate that younger workers, who are more likely to change jobs, can also accrue higher pension wealth under CB plans when compared to traditional DB plans (Weller & Ghilarducci, 2007). This portability also removes barriers for mid-career employees to leave and can prevent scenarios where employees feel compelled to stay in positions out of fear of benefit losses (Biggs, 2011).

Concerns with Conversion to Cash Balance Plans

CB plans can also present challenges and concerns that impact employers and employees. A key issue when converting from traditional DB plans to CB plans is the reduction of benefits for workers with longer tenure. The elimination of early retirement benefits, for instance, can lead to significant financial losses for long-service workers (Clark & Schieber, 2004; Weller, 2005). Without grandfathering benefits or offering transition credits, some workers can lose up to 50 percent of their expected benefits during a DB-CB conversion (GAO, 2005; Varnhagen, 2007). For instance, a typical married 40-year-old male employee could lose up to $1,500 per year in retirement benefits, which translates to approximately $28,000 in lifetime losses during a CB plan conversion (Madland, 2007; VanDerhei & Copeland, 2004). The interest credit in CB plans is usually lower than the actual market returns in a DB plan, potentially making the final accrual benefits for employees under a CB plan lower than if they were under a DB plan (Brainard & Brown, 2018a).

CB plans can also create more challenges for workers to accumulate pension wealth. Specifically, "wear-away" – a period during which participants do not earn additional benefits – can occur due to the plan's design, elimination of early retirement benefits, and/or interest rate fluctuations. This phenomenon often arises when the initial account balance in a CB plan is set lower than the present value of already accrued benefits. This leads to periods where employees do not accrue new benefits until the notional account balance catches up (Weller, 2005). Furthermore, some studies have found that CB plans typically have longer vesting periods compared to 401(k) plans, which can often result in many workers not vesting (General Accountability Office, 2005; Varnhagen, 2007). The General Accountability Office estimates that nearly 40 percent of workers never vest under a CB plan (General Accountability Office, 2005).

While CB plans offer employees greater flexibility, research suggests that many beneficiaries prefer lump sum distributions over annuities when given a choice. These behaviors can increase the risk of retirees outliving their savings and produce asset leakage, where retirement savings are used for non-retirement expenses (Brown, 1999; General Accountability Office, 2000; Weller, 2005). Finally, while some studies suggest that CB plan conversions can reduce overall pension costs for employers, the actual impact can vary. For instance, one study found that average pension costs fell by only one percent following a shift to CB plans, and over one-third of plan sponsors adopted changes that increased pension expenditures (Mitchell & Mulvey, 2004).

In summary, the literature on public sector CB plans offers three propositions:

- *Proposition 1*: CB plan benefits do not reward senior or long-term employees with the level of benefit security and generosity as DB plans, which can raise the issue of worker retention. Employees under CB plans have a higher probability of longevity risk. Conversely, CB plans provide more portable pension benefits that can help attract mobile workers.
- *Proposition 2*: On the funding side, CB plans provide state and local governments with more predictable contribution costs and less variability in funding levels caused by investment losses or [demographic, economic, or actuarial] assumption changes.
- *Proposition 3*: Compared to DC pension plans, CB plans can reduce employee investment risk since the assets are pooled and professionals often manage the investments. On the government side, there is less investment risk because the guaranteed credit rate is often lower than the assumed rate of returns. Additionally, for local governments with limited administrative capacity, a multiple-employer pension system can help reduce administrative burdens since they are often administered by state pension systems or a pooled management of participating governments.

Methodology

Case studies of three state plans (Nebraska, Kansas, and Kentucky) and a local plan (Texas Municipalities) were conducted to examine the current structure of CB plans in the public sector and highlight the key decisions that lead to their adoption. One of the advantages of case study research in comparison to a quantitative (large-N) study is its ability to directly observe slow-moving variables (time-invariant variables or unobserved information that are likely to be absorbed in a fixed-effect model) or independent variables that are hard to quantify (Honig, 2019). This characteristic makes case-study analysis an effective research strategy for studying nuances in CB plans where the adoption processes were typically prolonged and context-dependent. Considering its ability to explain the complexity of public pension governances and the endogenous effects of those changes to pension plan's financial management, the case study research method was applied by previous studies to analyze the institutional context and path dependence of pension governance (Cong et al., 2017; Matkin, Chen, & Khalid, 2019). Following Yin's (2014) recommended steps for case-study research, multiple sources of data were collected: (1) annual comprehensive financial reports (ACFRs) from pension systems regarding CB plans' financial data including contributions, funding ratios, and investment return; (2) legislative reports and studies conducted by pension systems, which contains information on the decisions to adopt CB plans; (3) pension task force report (if available) and reports from pension oversight authority (pension review board); and (4) relevant independent reports published by think tanks, research institutes, and research articles.

Case Studies

Nebraska Public Employees Retirement Systems

Table 2. NPERS Membership and Assets

Plans	Membership				Total Assets**
	Active	Inactive	Retirees	Totals	
State DC	1,489	1,086	-	2,575	$723,757,960
State CB	16,036	10,769	2,757	29,562	$2,215,351,467
County DC	601	477	-	1,078	$225,181,225
County CB	7,425	4,620	999	13,044	$751,436,685
School – DB*	43,853	29,064	28,854	101,717	$15,229,692,564
Judges - DB	146	2	208	356	$235,106,994
Patrol - DB	389	48	517	954	$528,686,000

Source: NPERS (2024b)

*Since the school plan has the most membership and the largest asset size and is relatively more comparable than the other two DB plans, we use school-DB plan statistics for the rest of the analysis when comparing them to the state and county-CB plans.

** Market value as of 2023.

Table 3. NPERS Plan Contributions and Vesting

Plans	Employer Contribution	Employee Contribution	Vesting Period
State DC or CB	156% of EE contribution (~7.5%)	4.8%	3 years
County DC or CB	150% of EE contribution (~6.75%)	4.5%	3 years
Schools - DB	101% of EE contribution (~9.87%)	9.78%	5 years

Source: NPERS (2024b)

Prior to 2003, the Nebraska Public Employees Retirement Systems (NPERS) consisted of three DB plans for school, judges, and state patrol employees, and two DC plans for state and county employees. The legislature passed LB687 on April 19, 2002, to approve the conversion of two states' DC plans to CB plans (NPERS, 2024a.). The CB plan applies to all state and county new hires since January 1, 2003, and those previously hired under the DC plan and who opted into the CB plan. A key justification for the DC-CB transition in Nebraska was the retention and attraction of workers (Biggs, 2011; Chambers, 2015). The Benefit Review Study of the Nebraska Retirement Systems in 2000 found that the state's DC pension benefits were low compared to other government plans in the region, and the investment rates among DC plans were lower than DB plans (Buck Consultants, 2000). Another pronounced reason is the outperformance of the DB plan compared to the DC plan. The average investment rate among DC plans from 1983 to 1999 was 6 percent, which was much lower than the 11% average investment returns of the state DB plan (Buck Consultants, 2000). Table 2 provides the composition of plan memberships for the state-administered pension plans as of 2023.

In terms of pension design, pension benefits under the NPERS-CB plan depend on fixed contributions by the employees and employer, as shown in Table 3, and the pre-determined credited interest rate of 5 percent set by NPERS. CB pension benefit growth accumulates until

Table 4. NPERS Investment Returns – DB and CB plans

	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
NPERS Investment Returns	13.7%	8.3%	6.7%	2.4%	29.9%	-8.6%	9.9%

Source: NPERS (2024b)

Table 5. Cash Balance Plan Returns and Interest Credit Rates, 2023

	1-Year	3-Year	5-Year	10-Year
Average Returns	14.6%	5.6%	9.5%	7.5%
Benchmark	15.3%	3.8%	9.0%	7.1%
Interest Credit rate	5.7%	5.2%	5.1%	5.1%

Source: Nebraska Investment Council (2023)

retirement, and participants can either purchase an annuity or be paid a lump sum at retirement or at the time of termination. Also, employer and employee contributions are made "pre-tax."

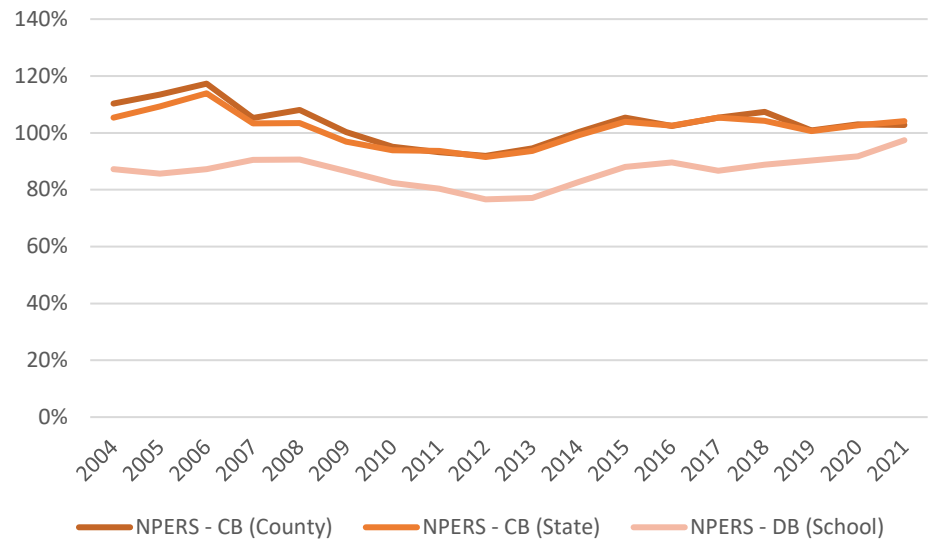
Participants in the NPERS-CB plan receive an "interest credit rate" (rate of return) based on the federal mid-term rate plus 1.5 percent. When the federal mid-term rate falls below 3.5 percent, accounts receive a 5 percent minimum interest credit rate. All employee and employer contributions are held in a trust fund. Professional fund managers invest in this trust fund under the direction of the Nebraska Investment Council. For CB plans, asset allocations mirror the investment strategies of DB Plans for schools, judges, and state patrols. As shown in Tables 4 and 5 below, the annual investment returns for the CB plans (and DB alike) fluctuated over the ten years, with the average investment return at 7.5 percent, which was still higher than the state-guaranteed credit rate.

NPERS–CB plan has been fully funded for most years since 2004 (except some years after the 2007-2008 recession), as shown in Figure 1. As of January 2021, NPERS reported that the funding ratio was 102.74 percent for the county's CB plan and 104.09% for the State's CB plan (NPERS, 2022b). Since its inception, these CB plans have mostly maintained 100 percent funding status, except for the years 2010 – 2013, when the funding ratios fell to 95.1 percent, 93.2 percent, 91.9 percent, and 94.5 percent for the County CB plan and 93.9 percent, 93.6 percent, 91.5 percent, and 93.6 percent for the State CB plan, respectively. As for the NPERS–DB School plan, the funding status shows a funded ratio of at least 80% except for the years 2012 and 2013, when the funding level was 76.6% and 77.1%, respectively. As of July 2021, the DB plan reported an almost fully funded ratio of 97.4% (NPERS, 2022a).

Kansas Public Retirement Systems

Kansas Public Retirement Systems (KPERS) is the state-administered pension plan for state, school, and local government employees. KPERS offers members three tiers, with Tiers I and II being DB plans and Tier III being a CB plan. Following the 2008 recession, investment losses significantly weakened the financial health of KPERS trust funds. The funded ratios decreased from 71 percent in 2007 to 59 percent in 2008 and fluctuated around 60 percent during 2008-2011 to the lowest point of 56 percent in 2012. In 2012, the state legislature created KPERS tier III (the CB plan, effective on January 1, 2015) and adopted other benefit cuts to the existing DB

Figure 1. NPERS Funded Ratio, 2004-2021



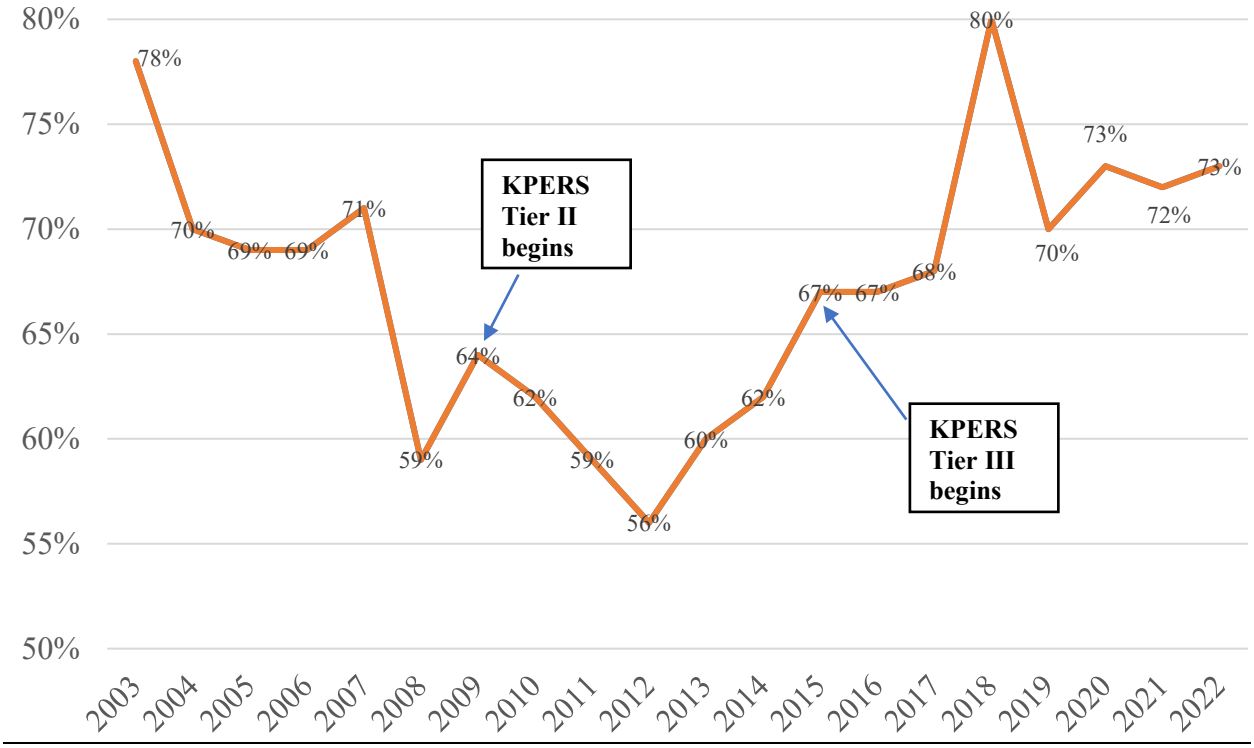
Source: NPERS (2022a, 2022b)

Table 6. KPERS Plan Description

Plans	**Tier I (hired before July 1, 2009)**	**Tier II (hired July 1, 2009, to December 31, 2014)**	**Tier III (hired January 1, 2015 and after)**
Total Active member	60,995	29,542	1,078
EE contribution	Originally 4%, increased to 5% in 2014, and to 6% in 2015	6%	6%
ER contribution			3-6% depending on YOS
Benefit multiplier	1.75% with 2% COLA before 2014 After 2014, benefit multiplier increased to 1.85% (eliminated COLA)		
Credited rate			Guaranteed rate of 4% (plus additional dividend or shared interest)
Vesting requirement	5 years		
Normal retirement requirement	normal retirement age of 65 with 5 YOS or 60 with 30 YOS		

Source: KPERS (2024)

Figure 2. KPERS Funded Ratio, 2003-2022



Source: KPERS (2021)

Table 7. KPERS Investment Returns

FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
6.7%	0.5%	8.9%	14.4%	-2.6%	17.5%	11.5%	16.1%	-9.4%	11.1%

Source: KPERS (2024)

pension plans by suspending COLA and increasing employee contribution (KSLPA, 2024). Table 6 compares pension benefits, contributions, and retirement eligibility among three tiers.

The KPERS – Tier III (CB plan) implementation, which went into effect in 2015, was intended to reduce the state's financial costs and help replenish the state's pension trust fund. On the investment side, KPERS did not separate investment for the DB plans (Tier I & II) and the CB plan (Tier III). While the system's investment returns have fluctuated over the years as shown in Table 7, it achieved a 25-year average return of 6.9% in 2023 (KPERS, 2024). As for the current funding status, since the changes made by the legislature, the KPERS funded ratio has increased by six percentage points, from 67 percent in 2015 to 73 percent in 2022, as shown in Figure 2. However, it is not clear how the CB plan contributed to these increases (Wu, Renick, & Scott, 2021).

The introduction of the Tier III–CB plan reduced retirement benefits for employees. In the 2024 audited report, the state legislature found that in comparison to other tiers, KPERS Tier III requires higher employee contributions and shares more costs and financial risks while employees receive lower benefits (KSLPA, 2024). The study's simulation also showed that the

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replacement ratio for an employee under KPERS III was only 54 percent, which is 15 percentage points lower than the ratio for an employee with similar employment conditions. At the same time, the cost share is much higher for employees under KPERS Tier III (roughly around two-thirds of the total benefit is shared by employee contributions and the investment return on those contributions, and around one-third is shared by employer contributions and the investment return on those contributions), which is opposite to the cost-share proportion for KPERS Tier II employees (two-third shared by employer contributions and investment returns, and one-third shared by employees contributions and investment returns).

Pension benefits for Tier III–CB plan members are also dependent on fixed contributions by the employees and employer and the pre-determined credited interest rate of 4 percent, as shown in Table 6 above. Members of the Tier III CB plan can earn above 4 percent through dividends, which only occurs if the 5-year average return exceeds 6 percent. A legislative report showed that pension types (DB or CB plan) did not affect the ability of governments to hire new employees. However, the report found that DB plans were more likely to help retain workers, as employees under Tier I and II often have higher levels of satisfaction with their pension benefits compared to those covered under Tier III (Wu et al., 2021).

Kentucky Public Pensions Authority

Kentucky Public Pensions Authority (KPPA) is the state-administered pension plan and consists of three systems – CERS for county employees, KERS for general state employees, and SPRS for state police. For this analysis, we focus on the CERS and KERS since they comprise the majority of the plan members and are more replicable than the unique state police pension plans. CERS and KERS members are classified into three tiers, with Tiers I and II being DB plans and Tier III consisting of a CB plan.

Facing high levels of unfunded pension liabilities ($13.9 billion and a 50% system-wide 50% funded ratio in 2012 [Pew Charitable Trusts, 2013]), the 2012 General Assembly adopted House Resolution 162 to create the Task Force on Kentucky Public Pension. Among the recommendations concerning pension benefits, investment, and funding, the task force recommended the adoption of a hybrid CB plan for new participants in KERS, CERS, and SPRS. On April 4, 2013, the governor signed the pension reform legislature to overhaul Kentucky's pension systems to limit annual COLA's unless fully paid, increase employer contributions, and create a Tier III (CB plan) for workers hired on January 1, 2014. The CB plan was promised to provide a more predictable cost structure and address a range of issues, including fluctuation in investment returns or changes in demographic assumptions, salary growth, etc. (KPPA, 2023a). The comparison of pension benefits, contributions, and retirement requirements for the three tiers is listed in Table 8.

Regarding pension investment, KPAA did not separate its investments between the DB plans (Tier I & II) and the CB plan (Tier III). KPPA's investment returns have fluctuated over the past few years, though with a recent high of 25% in 2021 and a low of -5.7% in 2022 as shown in Table 9. KPPA's target asset allocation of CERS is included in Table 10, which is still higher than the guaranteed credit rate.

Figure 3 presents data on KERS and CERS-funded ratios over time. Kentucky pension system was fully funded in the early 2000. The market downturns of 2000 – 2002 and the 2007 – 2008 recession caused some major declines in pension funding ratios; however, decreases in investment returns only explained 18.7% of the unfunded problem. The other contributing

Table 8. KPPA Plan Description

Plans	Tier I (DB plan, hired before September 1, 2008)	Tier II (DB plan, hired between September 1, 2008 to December 31, 2013)	Tier III (CB plan, hired on January 1, 2014)
Final compensation	5-year for non-hazardous, and 3-years for hazardous occupations		
EE contribution	KERS - Nonhazardous: 2.5% - 4% prior to August 1986, 5% up to now. Hazardous: 7% prior to July 15, 2000, 8% up to now CERS - Nonhazardous: 2.5% - 4.25% prior to August 1998, 5% up to now. Hazardous: 7% prior to August 1998, 8% up to now	8%	8%
ER contribution			
Benefit multiplier	KERS: 1.97-2% for non-hazardous and 2.50% for hazardous occupation CERS: 2 – 2.20% for non-hazardous and 2.50% for hazardous occupation	Same for both KERS and CERS - 1.10% to 2.00% for non-hazardous and 1.30 – 2.50 % for hazardous occupation, depending on the months of services	
Credited rate			Guaranteed rate of 4% (plus additional dividend or shared interest)
Vesting requirement	60 months of services (~ 5 years)		
Normal retirement requirement	For nonhazardous - normal retirement age of 65 with at least 1 month of credited service; or any ages with 27 or more YOS For hazardous - normal retirement age of 55 with at least 1 month of hazardous credited service; or any ages with 20 or more YOS Allow early retirement with reduced benefits	For nonhazardous - normal retirement age of 65 with 5 YOS; or age 57 if met the Rule of 87 For hazardous - normal retirement age of 60 with 5 YOS; or any ages with 25 or more YOS Allow early retirement with reduced benefits	For nonhazardous - normal retirement age of 65 with 5 YOS; or age 57 if met the Rule of 87 For hazardous - normal retirement age of 60 with 5 YOS; or any ages with 25 or more YOS Not allow early retirement with reduced benefits

Source: KPPA (2022)

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Table 9. KPPA Investment Returns

	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
KPPA System-wide	13.47%	8.57%	5.83%	1.15%	25.00%	-5.73%	9.54%

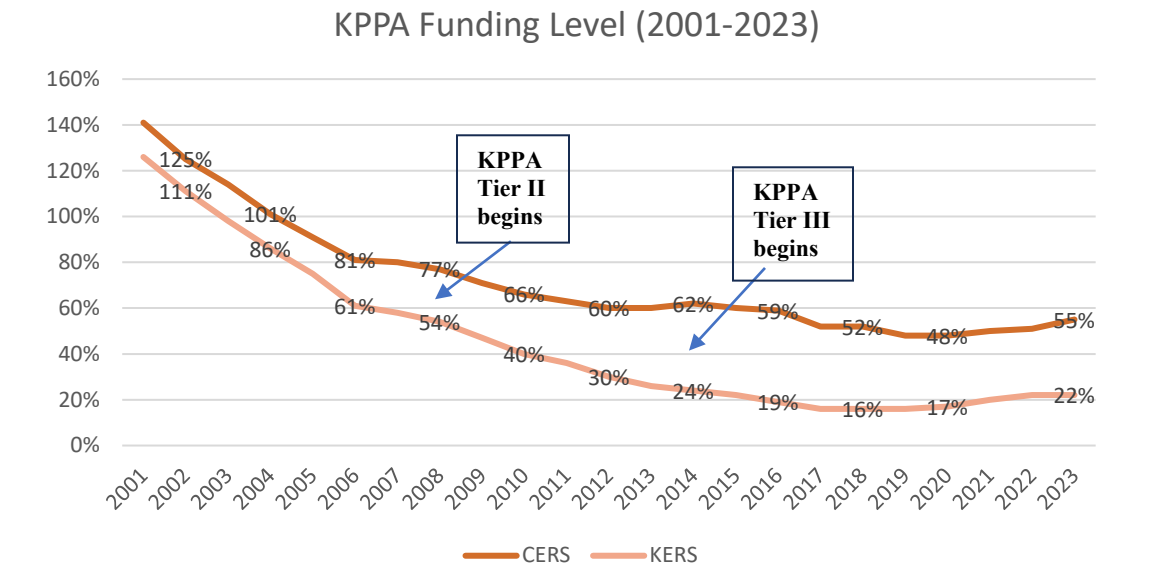
Source: KPPA (2023)

Table 10. KPPA Average Returns, 2023

Average Returns	1-year	3-year	5-year	10-year
KPPA System-wide	9.54%	8.88%	6.68%	7.16%
Benchmark	8.88%	8.46%	6.41%	6.90%

Source: KPPA (2023)

Figure 3. KPPA Funded Ratio, 2001-2023



Source: PPD (2023)

factors, including funding shortfall for COLA (18.2%), decrease in employer contributions (17.4%), changes in assumptions and benefits (14.2%), assumptions not met (6.8%), and others (24.6%) (Pension Task Force, 2012; Pew Charitable Trusts, 2013). For instance, over the period between 2005 and 2012, when the investment return did not match the actuarial return assumption, it added $3.6 billion to unfunded pension liabilities. Besides, changes in demographics and salaries also added nearly $800 million to pension debt (Pew Charitable Trusts, 2013). The introduction of Tier II was insufficient to avert this decreasing funding trend. Hence, in addition to legislative actions of suspending COLA (until fully paid) and increasing state pension contribution, the introduction of the CB plan was considered as part of the major reforms in Kentucky pension systems to provide a more predictable cost structure and reduce the uncertainty caused by inaccurate assumptions in projecting pension cost. The KPPA-funded ratios for CERS and KERS somewhat stabilized from years 2016 to 2023 with some promising trends in funded ratio. However, it takes time for the pension systems to address these large

Table 11. TMRS Plan Description

Plans	Membership	Total Net Assets	Social Security Participation	EE Contribution	ER Contribution	Funded Ratio*
TRS – DB plan	953,295 actives 489,921 annuitants	$187,170,535,558	No	8.25%	9.48%	77.53%
ERS – DB plan	139,958 actives 124,504 annuitants	$34,049,730,384	No	9.08%	15.97%	70.8%
TMRS – CB plan	119,723 actives 80,608 annuitants	-	Yes	6.72%	14.42%	82.79%
TCDRS – CB plan	145,226 actives 82,031 annuitants	-	Yes	6.78%	12.31%	88.59%

Data source: Texas Pension Review Board (2022).
EE and ER Contributions for the CB plans can be differed for each participating city. The number shown here is the system reported average city rate.
*Funded ratio of 2023

funding gaps accumulated in the past.

While the funding for KPPA has improved, concerns have been expressed about employee pension benefits. A report on KPPA by Urban Studies in 2014 compared employees' benefits under DB and CB plans using simulations of non-hazardous employees (5% EE contribution and 4% ER contribution) (Johnson & Southgate, 2014). The analysis found that state and county employees' benefits varied under the CB and DB plans depending on their age of entry into their position and years of service. Employees who were hired at a relatively young age and remained in government for no more than 25 years accumulated equal to or, in some cases, more benefits in the CB plan. However, those with more years of service or those hired at older ages accumulated more benefits under the traditional DB plan (Johnson & Southgate, 2014).

Texas Municipal Retirement System

Texas Municipal Retirement System (TMRS) is a CB pension plan established in 1947 and serves city employees throughout Texas. While there are 99 public pension plans in Texas, the four state-wide pension systems, including two DB plans - Teacher Retirement System (TRS) and the Employee Retirement System (ERS), and two CB plans – Texas Municipal Retirement Systems (TMRS) and Texas County and District Retirement System (TCDRS), accounted for 89 percent of the total membership (Jansen et al., 2021). The composition of plan memberships as of 2019 is listed in Table 11.

Table 12. TMRS Member Contribution

	Number of Participating Cities
Member contribution	
Member contribution rate – 3%	3
Member contribution rate – 5%	318
Member contribution rate – 6%	99
Member contribution rate – 7%	514
City match	
1:1 Match	166
1.5:1 Match	106
2:1 Match	662

Source: TMRS (2023)

Table 13. TMRS Investment Returns

Average Returns	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023
TMRS	13.82%	-2.38%	14.68%	7.55%	12.92%	-7.63%	11.64%

Source: TMRS (2023)

Table 14. TMRS Average Returns

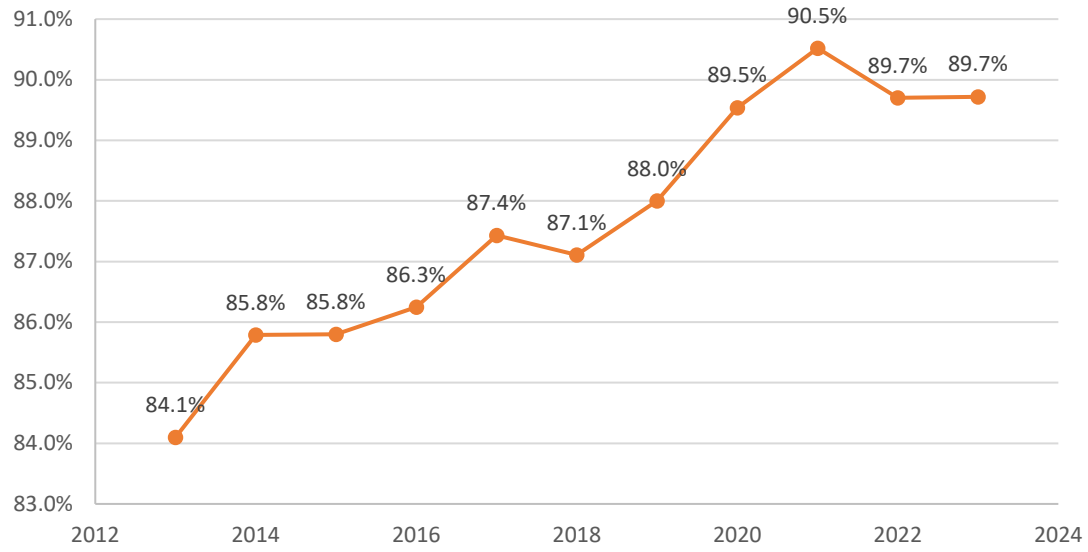
Average Returns 2023	1-year	3-year	5-year	10-year	Actuarial Investment Return Assumption
TMRS	11.64%	5.29%	7.79%	6.15%	6.75%

Source: TMRS (2023)

TMRS is a multiple-employer retirement system in which member cities can choose their benefit options and plan design and modify their benefits. Participating cities are required to pay 100 percent of their required contributions. Depending on each member city's plan option, TMRS calculates the actuarial contributions and provides funding status updates for each member city. TMRS started with eight participating cities and has grown to 936 participating Texas cities (TMRS, 2023a). Depending on the city's retirement plan provision, eligible members contribute between three and seven percent of payroll. The city matches at a chosen rate (1:1, 1.5:1, or 2:1). The pension contribution breakdown is shown in Table 12.

As shown above, pension benefits depend on fixed contributions by the employees and employer and the pre-determined credited interest rate of 5 percent – any investment gains or losses go to the government employer. CB pension benefit growth accumulates until retirement and a lifetime annuity is paid at retirement. Most member cities set a vesting period of 5 years (894 cities). Depending on the city's plan provision, a typical member is eligible to retire at the age of 60 with five years of service or at any age with 20 or 25 years of service. While the plan's investment returns have fluctuated over the years as shown in Table 13, the plan's 10-year average investment return was 6.15 percent, higher than the guaranteed credit rate (see Table 14). Over the last ten years, the plan's funded ratios ranged from 84 to 89 percent (see Figure 4).

Figure 4. TMRS Funded Ratio, 2012-2022



Source: PPD (2023)

Discussion

This analysis examined CB plans with the aim of shedding light on a pension plan that is receiving greater attention in the public sector. The analysis focused on plans in four states – Nebraska, Kansas, Kentucky, and Texas. For Nebraska, conversion to the CB plan was motivated by workforce recruitment and retention needs. Additionally, state policymakers recognized that the professionally managed investment (as it has always been for the state-administered DB plans) outperformed the investment returns among DC plans (managed by individual employees). In the case of Kansas and Kentucky, the adoption of CB plans was largely motivated by financial burdens caused by DB plans. Texas has managed CB plans for decades.

Compared to DB plans, CB plans can produce a more predictable cost structure for state and local governments and potentially contribute to an increase in funding levels at the expense of pension benefit reductions to employees. The adoption of CB plans in KS and KY was part of state pension reforms aimed at reducing pension unfunded liabilities and stabilizing pension funding.

The TMRS was designed as a multi-employer CB pension plan in which each city can choose its pension options within the system framework. The system grew in popularity and now includes more than 900 cities. The system maintains a relatively stable funding ratio (around 80 to 90 percent funded), and long-term investment returns tend to meet or surpass the credited rates. In both TMRS and NPERS-County plans, we also found some support for the advantages of the multi-employer pension systems in addressing some of the pension governance issues (Chen & Munnell, 2024; Ghilarducci & Weller, 2007). Either system is administered by the state like NPERS or administered by an appointed representative from participating cities like TMRS, where the multiemployer pension system reduces administrative burdens on cities and counties while increasing their investment capacity (i.e., asset size, professional management).

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In terms of pension benefit adequacy, our analysis found that compared to those employed under DB plans, those hired under CB plans received lower pension benefits. This effect is more pronounced for older workers and those with longer tenure. Studies in Kansas and Kentucky highlighted this concern about workforce retention. They suggested that employees hired under CB plans felt that their pension benefits were not as generous as their co-workers who were hired under DB plans. This raises concerns over pension equity among different generations of the workforce. Nevertheless, there is evidence from the four case studies that CB plans do not significantly affect state and local governments' recruitment. In either case, these findings do not bode well for Nebraska if employee recruitment and retention were a key goal for the plan's creation.

Conclusion

Researchers and practitioners alike have a keen interest in long-term liabilities in general and pensions in particular. Pension plans can be important employee recruitment and retention tools but are also costly obligations that can be challenging to manage. Traditionally, government officials only have a choice between DB and DC plans. An alternative that generates interest is the CB plan, which incorporates elements of these other plans.

This paper sought to answer the following questions: (1) what are CB plans, and how are they different from a DB or a DC plan; (2) what are the reasons state and local governments decide to adopt CB pension plans; (3) what are the implications of a CB pension plan on government financial management (investment risk, governance, funding) and employee benefits; and (4) what are some keys factors for those considering a CB plan?

We provided a thorough explanation of CB plans and offered a comparative analysis of CB plans across four states. In most instances, CB plans were adopted to save money, improve the pension funding ratios, or both. The evidence from our analysis suggests that CB plans can help contribute to lowering unfunded pension liabilities. For Nebraska, the CB plan is nearly fully funded. In Kansas, the state's funding ratio improved from 67 percent in 2015 to 73 percent in 2022 (partially attributed to CB plan adoption). In the case of Kentucky, pension reforms, including the adoption of the CB plan, helped remedy funding levels that fell to less than 30 percent in 2012 (Pew Charitable Trusts, 2013, 2022). TMRS has maintained 80-90 percent funding ratios, with more cities in Texas joining the system. Nebraska policymakers were motivated to adopt a CB plan for employee retention and recruitment; however, there is limited evidence that the state's CB plan had an effect. For the states studied, the move from a DB plan to a CB plan often increased employees' dissatisfaction with pension benefits.

For entities considering CB pension plans, these plans provide more predictable costs and lower investment risks for government employers. However, they can increase employee retirement risks and reduce overall benefits. Key factors that should be considered when examining pension plan changes, such as CB plans, are as follows. First, consider the legal framework related to public employees' benefits and the legacy costs of current pension plans (while considering CB plan conversion). Nebraska was a unique circumstance because prior to the creation of the CB plan, NPERS offered a DC plan to state and county employees, so there were no legacy costs moving toward the current CB plan. For those entities operating a DB plan with pension liabilities owed to their retirees and workers, it is critical to consider how the pension conversion (from DB to CB) affects the funding structure of those pension liabilities.

Additionally, the legal environment around pension benefits alternation, the scope of the law, and the power of public unions are noteworthy. In some states, pension benefits may be protected under state constitutions (e.g., Illinois) or state statutes; any changes to pension benefits can trigger judiciary actions.

The analysis is not without its limitations. One such limitation of this study is its generalizability since it is based on only four plans in different states. The challenge is further complicated by the unique design of pension systems/plans, which was evident when considering CB plans. Each plan had different eligibility levels, benefits, employee requirements, etc. Comparative analysis is further complicated by most governments' recent adoption of the CB plans. With the exception of Texas, whose plan was created in 1947, most were created within the past 20 years, affecting detailed examination of events over long periods. Therefore, it is still too early to confirm the overall impact of the CB plan on pension funding and governance. Additionally, the impacts of the CB plan on the public sector workforce are still unclear, partially because the relationship between pension benefits and workers' recruitment/retention can be moderated by different factors (i.e., education, skills, subfield, etc.) and the local labor market. More recent reports have indicated various factors, including low pay and hazardous working environments (e.g., correction and emergency workers), that contribute to current challenges with public sector recruitment and retention (Lavigna, 2023; Mission Square Retirement, 2024).

While the study provided unique features of those pension systems, the lack of statistical power and ability to control for other confounding factors can make it challenging to demonstrate any causal relation between the adoption of CB plans and public sector recruitment and retention. Despite these limitations, this study is one of the few thorough examinations of CB plans and is beneficial to readers given its comparative analysis case-study design. Since pension management depends on various institutional, legal, and governance factors, the advantage of our study and analysis approach is the ability to critically examine details often overlooked in other empirical analyses or fixed effect models.

Disclosure Statement

The authors declare that they have no conflicts of interest related to the research, authorship, or publication of this article.

References

Abashidze, N., Clark, R. L., Hammond, R. G., Ritter, B. M., & Vanderweide, D. (2021). Annuity pricing in public pension plans: Importance of interest rates. *Journal of Pension Economics & Finance*, *20*(1), 27-48. https://doi.org/10.1017/S1474747219000271

Aubry, J.-P., & Wandrei, K. (2021). *Do all state and local workers receive an annuity in retirement?* (Issue Brief 79). Center for Retirement Research, Boston College.

Biggs, A. G. (2011). *Public sector pensions in Nebraska: Are cash balance plans the answer?* (Working Paper No. 2239140). Social Science Research Network. https://papers.ssrn.com/abstract=2239140

Brainard, K., & Brown, A. (2018a). In-depth: Risk sharing in public retirement plans. *National Association of State Retirement Administrators*. https://www.nasra.org/sharedriskpaper

Brainard, K., & Brown, A. (2018b). Significant reforms to state retirement systems. *National Association of State Retirement Administrators*. https://www.nasra.org/content.asp?admin=Y&contentid=219

Brown, M. K. (1999). *Race, money, and the American welfare state*. Cornell University Press.

Buck Consultants. (2000). Benefit review study of the Nebraska retirement systems. *National Association of State Retirement Administrators*. https://www.nasra.org/Files/Topical%20Reports/Defined%20Contribution%20Plans/Nebraskastudy.pdf

Cahill, K. E., & Soto, M. (2003). *How do cash balance plans affect the pension landscape?* (Work Paper No. 14). Center for Retirement Research, Boston College.

Chambers, P. (2015, August 5). *Defined contribution and cash balance plans*. NCSL Legislative Summit. Seattle, Washington.

Chen, A., & Munnell, A. H. (2024). A multiple employer plans primer: Exploring their potential to close the coverage gap. Center for Retirement Research, Boston College. https://crr.bc.edu/wp-content/uploads/2024/01/A-Multiple-Employer-Plans-Primer_Exploring-Their-Potential-to-Close-the-Coverage-Gap.pdf

Clark, R. L., & Schieber, S. J. (2004). Adopting cash balance pension plans: Implications and issues. *Journal of Pension Economics & Finance*, *3*(3), 271-295. https://doi.org/10.1017/S1474747204001738

Cong, Y., Frank, H. A., Gianakis, G., & Guo, H. (2015). Critical issues in the transition from the defined benefit to the defined contribution pension model: Perceptions from Florida municipal finance and human resource directors. *Review of Public Personnel Administration*, *35*(4), 333-351. https://doi.org/10.1177/0734371X14533572

Cong, Y., Neshkova, M. I., & Frank, H. A. (2017). Path dependence in pension policy: The case of Florida local governments. *Public Budgeting & Finance*, *37*(4), 92-110. https://doi.org/10.1111/pbaf.12172

Coronado, J. L., & Copeland, P. C. (2004). Cash balance pension plan conversions and the new economy. *Journal of Pension Economics and Finance*, *3*(3), 297-314. https://doi.org/10.1017/S1474747204001684

Elliott, K. R., & Moore, J. (2000). Cash balance pension plans: The new wave. *Compensation and Working Conditions*, *5*(2), 3-12.

Frank, H., Gianakis, G., & Neshkova, M. I. (2012). Critical questions for the transition to defined contribution pension systems in the public sector. *American Review of Public Administration*, *42*(4), 375-399. https://doi.org/10.1177/0275074011406712

Fuchsman, D., Hengerer, D., Moody, J., & Randazzo, A. (2023). *The actuarial sources of the rise in unfunded liabilities in America's defined benefit plans in the 21st century* (Working Paper No. 23-01). Sinquefield Center for Applied Economic Research.

Government Accountability Office. (2000). *Cash balance plans: Implications for retirement income*. Government Accountability Office.

Government Accountability Office. (2005). *Recent experiences of large defined benefit plans illustrate weaknesses in funding rules* (Report No. GAO-05-294). Government Accountability Office.

Ghilarducci, T., & Weller, C. E. (2007). *Employee pensions: Policies, problems, and possibilities*. Cornell University Press.

Haverstick, K., Munnell, A. H., Sanzenbacher, G., & Soto, M. (2010). Pension type, tenure, and job mobility. *Journal of Pension Economics & Finance*, *9*(4), 609-625. https://doi.org/10.1017/S1474747209990321

Honig, D. (2019). Case study design and analysis as a complementary empirical strategy to econometric analysis in the study of public agencies: Deploying mutually supportive mixed methods. *Journal of Public Administration Research and Theory*, *29*(2), 299-317. https://doi.org/10.1093/jopart/muy049

Jansen, D. W., Liu, L., Navarro, C. I., & Rettenmaier, A. J. (2021). *Texas pension woes* (Policy Study No. 2103). Private Enterprise Research Center.

Johnson, R. W., & Southgate, B. G. (2014). How will state and county government employees fare under Kentucky's new cash balance pension plan? *The Urban Institute*.

Johnson, R. W., & Steuerle, E. (2004). Promoting work at older ages: The role of hybrid pension plans in an aging population. *Journal of Pension Economics & Finance*, *3*(3), 315-337. https://doi.org/10.1017/S147474720040017 4X

Kansas Public Employees Retirement System. (2024). *KPERS Fast Facts*. https://www.kpers.org/pdf/KPERSFastFacts.pdf

Kentucky Public Pensions Authority. (2022). *Summary plan description*. https://www.kyret.ky.gov/Publications/Books/Summary%20Plan%20Description.pdf

Kentucky Public Pensions Authority. (2023a). *About KPPA*. https://www.kyret.ky.gov/About/Pages/default.aspx

Kentucky Public Pensions Authority. (2023b). *Annual comprehensive financial report*. https://www.kyret.ky.gov/Publications/Books/2023%20Annual%20Report.pdf

Kansas Legislative Division of Post Audit. (2024). Reviewing the KPERS 3 Retirement Plan. https://www.kslpa.gov/audit-report-library/reviewing-the-kpers-3-retirement-plan/

Lavigna, R. J. (2023, March 2). A road map for dealing with government's workforce crisis. *Governing*. https://www.governing.com/work/a-road-map-for-dealing-with-governments-workforce-crisis

Lazonick, W., Ghilarducci, T., & Weller, C. (2007). Economic institutional change and employer pensions. In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 29-68). Labor and Employment Relations Association

Lewis, G. B., & Frank, S. A. (2002). Who wants to work for the government? *Public Administration Review*, *62*(4), 395-404. https://doi.org/10.1111/0033-3352.00193

Madland, D. (2007). The politics of pension cuts. In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 187-214). Labor and Employment Relations Association

Matkin, D. S. T., Chen, G., & Khalid, H. (2019). The governance of public pensions: An institutional framework. *Administration & Society*, *51*(1), 91-119. https://doi.org/10.1177/0095399715621945

McGrath, A. C. (2004). Pension law: Cash balance pension plans are not inherently age discriminatory: Cooper v. IBM personal pension plan defies a strong history of support for the cash balance design. *Oklahoma Law Review*, *57*(2), 429-463.

Mission Square Retirement. (2024, July 23). Recruitment challenges easing for state and local governments. https://www.missionsq.org/about-us/news-and-updates/media-inquiries/news-20240722-recruitmentchallengeseasing.html

Mitchell, O. S., & Mulvey, J. (2004). Potential implications of mandating choice in corporate defined benefit plans. *Journal of Pension Economics & Finance*, *3*(3), 339-354. https://doi.org/10.1017/S1474747204001805

Munnell, A. H., Aubry, J. P., & Quinby, L. (2011). Public pension funding in practice. *Journal of Pension Economics & Finance*, 10(2), 247-268. https://doi.org/10.1017/S1474747211000126

Munnell, A. H., Haverstick, K., & Soto, M. (2007). *Why have defined benefit plans survived in the public sector?* (Working Paper No. 2). Center for Retirement Research, Boston College.

Munnell, A. H., & Soto, M. (2004). The outlook for pension contributions and profits in the US. *Journal of Pension Economics & Finance*, *3*(1), 77-97. https://doi.org/10.1017/S1474747204001489

Nebraska Investment Council. (2023). Annual report. https://nic.nebraska.gov/sites/default/files/doc/2023%20Annual%20Report.pdf

Nebraska Public Employees Retirement Systems. (2022a). Actuarial valuation report. https://npers.ne.gov/SelfService/public/howto/publications/ActuarialReports/ActuarySchool2022.pdf

Nebraska Public Employees Retirement Systems. (2022b). Annual report. https://npers.ne.gov/SelfService/public/howto/publications/LegisReports/AnnualReport2022.pdf

Nebraska Public Employees Retirement Systems. (2024a). Plan overview. https://npers.ne.gov/SelfService/public/planInformation/state/statePlanInfo.jsp

Nebraska Public Employees Retirement Systems. (2024b). Annual report. https://npers.ne.gov/SelfService/public/howto/publications/LegisReports/AnnualReport2024.pdf

Pension Task Force. (2012). Report of the task force on Kentucky public pensions. *Kentucky Legislative Research Commission*. https://legislature.ky.gov/LRC/Publications/Research%20Memoranda/RM512.pdf

Pew Charitable Trusts. (2013). Kentucky's successful public pension reform. https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2013/09/27/kentuckys-successful-public-pension-reform

Pew Charitable Trusts. (2014). Public pension cash balance plans: A primer. www.pewtrusts.org/-/media/legacy/uploadedfiles/pcs_assets/2014/cashbalancebriefv7pdf.pdf

Pew Charitable Trusts. (2022). *Matrix assesses state pensions long-term fiscal health*. Pew Charitable Trusts.

Public Plans Data. (2023). Retirement system data: Kentucky Retirement Systems. https://publicplansdata.org/quick-facts/system/?system_id=37

Purcell, P. J. (2005). *Pension issues: Cash-balance plans* (Report No. RL30196). Congressional Research Service.

Rappaport, A. M., Young, M. L., Levell, C. A., & Blalock, B. A. (1997). Cash balance pension plans. In M. S. Gordon, O. S. Mitchell, & Marc M. Twinney (Eds.), *Positioning pensions for the twenty-first century* (pp. 29-44). University of Pennsylvania Press.

Rodriguez, E., & Grillo-Chope, L. (2007). How can defined contribution plans meet workers' needs? In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 123-142). Labor and Employment Relations Association

Schieber, S. J. (2007). Tales of the dodo bird and the Yellowstone wolf: Lessons for db pensions and the retirement ecosystem. In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 85-100). Labor and Employment Relations Association.

Schrager, A. (2009). The decline of defined benefit plans and job tenure. *Journal of Pension Economics & Finance*, *8*(3), 259-290. https://doi.org/10.1017/S1474747208003570

Texas Municipal Retirement System. (2023a). Actuarial valuation report. https://www.tmrs.com/uploads/files/general/down/Actuarial_Valuations/Final_TMRS_2023_valuation_report.pdf

Texas Municipal Retirement System. (2023b). Annual comprehensive financial report. https://www.tmrs.com/uploads/files/general/down/pubs/ACFR_2023/ACFR_2023.pdf

Texas Pension Review Board. (2022). Texas public pension data center. https://data.prb.texas.gov/datasets/dossier_actuarial_funded_ratio_338.csv

U.S. Census Bureau. (2017). *Annual survey of public pensions: State- and locally-administered defined benefit data summary report: 2016*. U.S. Department of Commerce.

VanDerhei, J., & Copeland, C. (2004). *ERISA At 30: The decline of private-sector defined benefit promises and annuity payments? What will it mean?* (Working Paper No. 550902). Social Science Research Network.

Varnhagen, M. (2007). U.S. federal pension policy: Its potential and pitfalls. In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 163-186). Labor and Employment Relations Association

Weller, C. (2005). *Ensuring retirement income security with cash balance plans*. Center for American Progress.

Weller, C., & Ghilarducci, T. (2007). Pension policy options: Meeting in the middle. In T. Ghilarducci & C. E. Weller (Eds.), *Employee pensions: Policies, problems & possibilities* (pp. 215-232). Labor and Employment Relations Association

Wu, S., Renick, M., & Scott, J. G. (2021). Kansas Public Employees Retirement System's retirement plans and history. *Kansas Legislative Research Department*. https://klrd.org/publications/briefing-book-2021/kansas-public-employees-retirement-systems-retirement-plans-and-history/

Yin, R. K. (2014). *Case study research: Design and methods*. Sage.

Zall, M. (2002). Cash balance plans. *Strategic Finance*, *83*(9), 29-31.

Book Review

PUBLIC FINANCE JOURNAL

The Black Tax:
150 Years of Theft, Exploitation, and Dispossession in America

Hunter Bacot[i,c]

Kahrl, A. W. (2024). *The Black tax: 150 years of theft, exploitation, and dispossession in America.* University of Chicago Press, 456 pp., $25.00 (cloth), ISBN: 978-0-2267-3059-2.

Keywords: Dispossession, History, Social Equity, Taxation

In *The Black Tax*, Andrew Kahrl (2024) demonstrates empirically that both the government and tax systems in the United States have worked to suppress the accumulation of wealth in the Black community specifically, but by situation, those who are disenfranchised or disadvantaged in the American capitalist economic system. This book depicts the grossly inequitable application and treatment of government policies under the law. The depiction of the historical plight of Blacks in America across the 20th century and into the 21st century is complemented with evidence from case examples, legal battles, court cases, and government policies that document measures taken against the Black community at large to prevent any access to, much less any accumulation of wealth. This wealth deprivation is accomplished through forced divestment and dispossession of property that is systematically and painstakingly depicted along a historical continuum chronicling the systemic manipulation and malfeasance of Blacks.

Tracking sequentially, this book tells a story about the underbelly of American urban life that prey on those experiencing misfortunes or hardship or who are disadvantaged and vulnerable. Throughout the book's five parts, which are enriched through his exquisitely authenticated research, Professor Kahrl chronicles the systemic racist actions of vile individuals supported by an equally abhorrent institutional apparatus designed to provide inequitable control to one group to impose a system of treachery on another and do so without reprisal amid universal protections well-crafted by accomplices in legislative and city halls across America. *The Black Tax* is a meticulously well-researched and documented presentation about societal transgressions against Blacks that demonstrates the gross fiscal repercussions on their rights and ability to accumulate wealth. As a historian, Kahrl develops in magnificent detail and depth the financial, legal, unethical, and immoral transgressions against Blacks that, as he brings to life with documented depictions, were pervasive across the country. Kahrl delineates with care and

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precision the racist practices by powerful political and capitalist elites who oppressed and victimized Black Americans then, and still do today through land/lien sales (land taking). Most egregious from this elucidation of these legal land grabs is the dismissal of Black efforts at redress, i.e., Blacks sought relief through proper means, i.e., court and lobbying for legislative changes, only to be repeatedly shut out – being disenfranchised, thus no voice – or repressed by laws enacted by Whites to victimize the disadvantaged. Unbelievably, these same outcomes continue to be experienced today by society's disadvantaged populations (see p 343, regarding contemporary research in Baltimore showing that for every two properties sold in majority Black neighborhoods, one was a tax sale). The various forms of racist torment, whether it be through the denial of equal access or inequitable distribution and disbursement of wealth, have established a socially accepted notion that Blacks are not entitled to basic accouterments of civic life or equitable service provision by local governments, nor do they deserve to be treated to legislative protections from unscrupulous behavior of individuals preying on their disadvantage or compromised circumstances (e.g., exclusion from education, employment, opportunity, voting, participation, etc.) complicated by adverse experiences (e.g., death, poor health, unemployment, etc.). As documented, denial and exclusion by design remanded Blacks to an existence controlled by Whites, perpetuating exclusionary policies across public and private institutions out of greed.

A litany of exemplary and gut-wrenching vignettes fills each chapter with vivid, harsh realities suffered by Blacks at the hands of the White establishment working within racist institutional settings. Though the inequitable financial treatment of Blacks is the central storyline, Kahrl reveals much more, as the book is an authenticated treatise of the harsh, violent repression Blacks suffer at the hands of the White America whose aggrandizement entitled them control and superiority; through this need to control and retain their superiority, White imposed policies and laws entrenched tremendous financial consequences and hardship on an entire population – Blacks. Most unconscionable is that these abhorrent actions perpetrated against Blacks are permitted through a federal, state, and local institutional scheme to oppress a race systematically. Though despicable, in addition to exposing these transgressions, the greatest outcome from this book is that it makes a tremendously compelling case for reparations to Blacks and their communities throughout the United States based on what has been stolen from them.

While the book is well-researched, the story of racist oppression through legal means by the unprincipled is thick and frequently difficult and depressing to wade through. Yet, traversing the Black experience through this lens of legal and institutional oppression is well worth it, not only for the read but also for the context to experience the guile embodied in these inequitable and scandalous public policies that promote racial and economic discrimination (still today). The book is so well presented that the reprehensible practices described – land dispossession without due process, sustaining current policies designed to ease the dispossession of land from the disadvantaged and racial/ethnic minorities, or having common sense legal remedies rejected under the guise of "it's the law" – engulf the reader as a coconspirator who feels the misery of its victims that are but a cog in a civic environment that uses these racist policies to promote the excision of property from people. In short, no matter the excuse served as justification for taking property, Kahrl provides an additional treatise on racist actions and institutions that demands reform to remedy civic ills that fully justify reparations for Blacks in the United States.

While those in public finance, history, civil rights, Black studies, local government management, and law, should find this work compelling across a host of interests, those

interested in urban political and economic systems and Black history/studies appear to be the target audiences that would most value the information and topic. However, given the richness of the details and the tracking of historical grievances, there is likely a broader audience. For example, given its current state of affairs, the real estate profession (agents, brokers, owners, and the real estate legal community) would benefit tremendously from the information in this book. Also, those interested in institutional racism should find the contents more than worthwhile. Those needing justification for the utility of diversity, equity, and inclusion policies and practices across both private and public spheres will find this book useful (and I am not proposing such justification is needed; the realities of today's politics epitomize such a need).

Moreover, historical geographers and cultural anthropologists can likely benefit from the robust information that directs research on the usurpation of land in personal lineages of urban neighborhoods or for further understanding racial land plundering and its generational effects on the acquisition and disposition of land, not to mention wealth. Finally, and likely most importantly, those serving as members of the National Association of County Collectors, Treasurers and Finance Officers (NACCTFO), those working in Register/Recorder of Deeds office across the country, and every state legislator across the United States would benefit on knowing the atrocious past of individual land usurpation and its consequences for Blacks in America. Being informed of matters surrounding land theft and the reasons and consequences of these situations may lead to changes in how those victimized are treated when faced with these circumstances involving their property. As a society, we all would benefit from Kahrl's book by being informed about how those victimized by such schemes suffer exponentially, as well as the debilitating effects of these local government policies that ultimately advance the separation of people, families, and communities from their property no matter the circumstances.

Disclosure Statement

The author declares that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

References

Kahrl, A. W. (2024). *The Black tax: 150 years of theft, exploitation, and dispossession in America.* University of Chicago Press.

Book Review

PUBLIC FINANCE JOURNAL

The Government Analytics Handbook:
Leveraging Data to Strengthen Public Administration

Adam Eckerd[i], Ron Carlee[ii,c]

Rogger, D., & Shushter C. (2023). *The government analytics handbook: Leveraging data to strengthen public administration.* World Bank Group, 785 pp., $0.00 (electronic), ISBN: 978-1-4648-1981-0.

Keywords: Administrative Data, Data Analytics, Performance, Research Methods

The Government Analytics Handbook, by Rogger and Shushter (2023) is targeted to students in public administration and data science and practitioners looking to develop an analytical culture in their government organizations. In this review, we offer the perspective of a traditional academic researcher and graduate-level methods instructor, Adam Eckerd, and that of Ron Carelee, a pracademic who has experience in multiple leadership roles with local governments in the United States.

Adam Eckerd's Review

Rugger and Schuster present a comprehensive primer on data analytics, tailored for the public sector and available for free download via the World Bank. The book is a practical guide, rich with a wide range of examples and techniques. It is structured into sections, with the first part, beyond the introduction, delving into fundamental themes like practical considerations for data collection and ethical concerns for measurement. The second major section provides real-world examples of data used in specific settings, such as human resources or expenditures, and using certain types of methods, such as machine learning or process analysis. The third and fourth sections are heavily focused on survey methods and collecting information from internal agency sources and citizen surveys, making it a valuable resource for practitioners in government organizations.

While some sections of the book may seem overly optimistic about the potential of data analytics in solving the challenges of public administration, the editors do a commendable job of acknowledging the practical limitations of public sector data analytics. The book is clearly instrumentalist in nature, as one would expect a data analytics text to be, but the authors and

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editors provide crucial cautions about overreliance on problematic or limited data. Bridges and Woolcock rightly identify the risk of symbolization—if what gets measured gets done, then it is imperative to measure the right things and ensure that data are not over-relied upon. Wittels provides a useful framework for collecting data ethically, in a manner that protects privacy while still enabling the collection of data to support decision-making, while Moynihan discusses the challenges of using performance information in decision-making. This cautionary advice, which is essential for anyone working with data in the public sector, helps them to navigate potential pitfalls and make informed decisions, making them feel prepared and aware of the challenges ahead.

This framing is useful. One might have expected a book on data analytics published by the World Bank to gloss over these crucial considerations about the realities of using data for public purposes. The editors do well to put these concerns ahead of the more expected content, methods, and data collection primers and nicely frame their instrumental "public administration production function" with important caveats.

Most of the chapters acknowledge the challenges of data analysis, including concerns about data completeness and validity, as well as the challenges of combining data from different sources in ways that they can be used together. One of the key arguments the editors make is their rationale for a heavy emphasis on survey data, particularly on internal staff survey data. They argue that survey data are the most practical means to address the data limitations inherent in administrative data; in essence, they argue that the unmeasurable can be assessed via perceptual input by public sector employees.

Whether one accepts that premise or not, the sections devoted to survey data collection provide a comprehensive primer for practitioners to use when making the decision to collect perceptual data. However, that premise is key to the usefulness of the book. The editors and authors do not ignore the concerns of using perceptual data, but the tools sections of the book are more of a how-to for gathering survey data about perceptions of government performance rather than a primer on data analytics in the public sector writ large. They should promote it as such; regardless of one's view of the relationship between employee perceptions and administrative effectiveness, the comprehensive review of internal survey data collection is useful.

Being a publication of the World Bank, the book also attempts to cast a wide net. Although their focus is on central governments, they attempt to offer advice that is as applicable to the national government of a large state as it is to a regional government in a developing nation. As is often the case with such efforts, the advice can either be so generic that it is not functionally useful or so tailored to specific cases that it is not relevant to most potential readers. This happens most obviously when looking at the book in total and recognizing that much of the advice is only useful for governments that have the extensive resources available to manage large-scale data management infrastructures. The editors acknowledge that few government entities would be able to handle data analytics on a large scale without significant investments in infrastructure, but they fail to note the implications. If the best route to improving public administration and government performance is large-scale data analytics, will improvement be another advantage that well-resourced societies have over poor ones?

I acknowledge this may not be the point of the book—which is clearly more focused on providing insights and tools to facilitate a data analytics infrastructure—but it is hard to ignore that elephant in the room. If I were a public administrator in a large central government with ample resources, I think I would find this book quite helpful for both the management challenges of data infrastructure and the actual collection and use of data. If I were a public administrator in

a poor country or subnational government, I might find the book frustrating, as much of the advice would be well beyond the capacity of my government.

But I am neither of those things, and as a university researcher and educator, I find the chapters in Part 2 (Foundational Themes in Government Analytics) most useful. I could see assigning these chapters as an important and necessary counterbalance to the data analytics cheerleaders who rarely caveat their calls for more data-driven administration with the practical reality of the challenges of unmeasurable outcomes, biased data, and problematic organizational incentives.

Ron Carlee's Review

In some respects, a comprehensive 785-page handbook seems like an anachronism, like the massive dictionary, thesaurus, or an encyclopedia that sat on our shelves. We no longer go to books when we need knowledge. We go to search engines or AI.

The Government Analytics Handbook, however, combines the comprehensiveness of a traditional reference book with the convenience of digital content. Published by the World Bank Group, it is available as a free digital download or for purchase as a paperback. The handbook is organized into five sections and 30 chapters. Each section on the website includes a video introduction. Readers can download the entire volume, individual sections, or individual chapters. Unfortunately, there is not a web version of the content that could be easily searched, revised, and updated (for an example, see the Zalta & Nodelman, 2024).

Editors Daniel Rogger and Christian Schuster are unapologetic promoters of public administration. They believe in the value of the administrative state, managed with professionalism and ethical conduct in the neutral pursuit of improving government performance through data analysis and sound judgement.

The handbook is a product of commitment and optimism. And it is massive. In the introductory video, Rogger says, "I don't think the idea is that anyone is going to read cover to cover. The idea is that you sort of read the overview, you get an understanding of how the book works, and then you dip into the chapter that matters for you" (see Rogger, 2024).

The editors provide this definition for the term data analytics: "It is the repurposing of administrative and survey data from within government to improve the way government functions. It uses microdata to diagnose the inputs, management practices, processes, outputs, or outcomes in public sector organizations, units inside such organizations, and/or public administration as a whole" (p. 4).

For professionals in governmental financial management, decision-making informed by data has long been the holy grail since modern computing power's inception. The ambitious effort in the Planning, Programming, Budgeting System (PPBS) in the federal Department of Defense in the 1960s was pioneering. As discussed in the handbook, data analytics go beyond optimizing investment in weaponry to improving decision-making across all areas of government service and the management thereof. The editors do not propose a single massive systems approach, such as PPBS, Management by Objectives (MBO), or Key Performance Indicators (KPI). Instead, they recommend repurposing existing data targeted to specific areas of improvement using whatever systems are available.

While the editors are quantitative analysts, they understand the importance of balancing quantitative analysis with qualitative judgment. Their goal in improving data analytics is to give

government managers the information they need to make sound decisions about service delivery and, in their words, "strengthen the quality of conversations about how to improve public administration" (p. 11).

The editors identify three barriers to better analytics, two of which the handbook seeks to address: evidence on how to do analytics and recommendations for how digital records can be repurposed for analytics. The third barrier, skill shortages, requires more than the handbook; however, the handbook can help with the development of staff. To fully understand and implement recommendations in the book, a government needs a team of technically competent data analysts who can take their digital information beyond its day-to-day operational uses. The effort requires professionals with curiosity and imagination to work alongside managers and policymakers.

The handbook is oriented at the national level, reflecting the natural focus of the World Bank. It is replete with global examples, as one would expect. Examining the handbook through the lens of a former local government practitioner in the U.S., it would be a valuable guide to any large local government that has modern information technology systems in human resource management, budgeting and financial management, and the various services of local government from utilities to public safety to human services. Any local government with a broadscale Enterprise Resource Planning (ERP) system is well situated to find value in the Handbook.

Three specific groups of professionals should review the handbook. The first group are professionals in governments that already have or are considering the creation of an office of performance measurement, strategy, innovation, or similar entity. Such offices have cross-cutting responsibilities to improve performance. Included in this group would be cities that are engaged with Bloomberg's "What Works Cities" (see Bloomberg Philanthropies, 2024). These are cities and counties that are already committed to doing more with their data and likely have the skill sets to use the handbook to compare and refine their data policies and practices.

Lacking a cross-cutting change office, the managers of enterprise systems (HR, Finance, IT) could benefit from collectively reviewing the book to explore how to better use their individual systems and opportunities for combining data. The third group are managers of large discreet services that use information technology systems in areas such as public safety, inspections, tax and revenue, health and human services, and others. Within large public agencies, professionals can explore ideas from the handbook on how to get more out of their operating systems.

The handbook could be particularly beneficial to local governments with open data portals. The "open government" data portal, Data.gov, lists 70 U.S. cities and counties with open data portals, as well as 48 states and 12 state agencies. Too often, open data portals contain downloadable datasets without context or meaning. Better sites provide data stories and enable online user analysis. Recommendations from the handbook could improve the utility of open data portals, further enhancing government transparency.

Finally, any entity engaged in employee surveys should review the handbook's extensive coverage of this topic. In my experience, organizations do not manage employee surveys well. Not only do they fail to get the full value from the investment, but sometimes surveys negatively impact the organization when managers get poor results without preparation or support for responding.

The handbook devotes one of its five sections and nine chapters to employee surveys. This material should be required reading before designing or launching an employee survey. Survey topics covered in the Handbook include survey mode, response rates, designing

questionnaires, questions that do not elicit a response, whether to frame questions from an individual or organization perspective, interpreting results, and comparing across organizations. The most cogent recommendation is to have a clear purpose and plan:

> Survey questions should aim at action from the beginning by asking about topics that staff and senior leaders find most challenging to the achievement of their mission. Designing questions with the chain of policy influence and action in mind prevents the survey process from being weakened at inception by a poor focus on what is important to public sector stakeholders. (p. 574).

Many years ago, Terrence McNally and I presented to a group of public library directors about how to effectively advocate for resources. In his presentation, McNally said, as I best remember, "Data without stories are just numbers. Stories without data are just anecdotes." I have never forgotten how powerful this truism is. Rogger and Shuster understand this, too. In fact, they begin the handbook with three powerful stories about how data analytics improved public administration in three different contexts around the globe.

Data really are only numbers. Data analytics, done well, develop and tell a story. Data analytics are complex, with many pitfalls. Done well, however, data analytics can help governments deliver on the promise of providing an efficient, effective, and equitable government. Rogger, Shuster, and their team of authors advance this work in their well-documented, easily accessible book.

Conclusion

The reviewers see the Handbook as a useful reference for both students and practitioners, applaud the World Bank for making such a useful reference freely available, and appreciate the recognition of the editors and authors that data analytics is a tool that must be used in context. While there are some concerns about the practicality of the ambitious data analytics infrastructure that Rogger and Shuster recommend, there is value in putting forth the effort to move in that direction.

Disclosure Statement

The author declares that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

References

Bloomberg Philanthropies (2024). What works cities certification. *Bloomberg*. https://www.bloomberg.org/government-innovation/strengthening-city-data-to-improve-lives/what-works-cities/

Rogger, D., & Shushter C. (2023). *The government analytics handbook: Leveraging data to strengthen public administration.* World Bank Group.

Rogger, D., & Shushter C. (2024). The government analytics handbook: Leveraging data to strengthen public administration. *Youtube*. https://www.youtube.com/watch?v=FyXwOEQD0js

Zalta, E. N., & Nodelman, U. (2024). *The Stanford encyclopedia of philosophy*. The Metaphysics Research Lab, Stanford University.

Book Review

PUBLIC FINANCE JOURNAL

Understanding Municipal Financial Health:
A Model for Local Governments in the USA

Craig L. Johnson[i,c]

Maher, C. S., Park, S., McDonald, B. D., & Deller, S. C. (2023). *Understanding municipal financial health: A model for local governments in the USA*. Routledge, 350 pp., $49.59 (paperback), ISBN: 978-1-0320-5542-8.

Keywords: Financial Health, Fiscal Stress, Local Government

Understanding Municipal Financial Health: A Model for Local Governments in the USA by Maher et al. (2023) is a much-needed, long overdue, well-written, scholarly treatment of analyzing municipal financial conditions practically and comprehensively. Though the data analysis is limited to cities, the general analytical framework can be applied, with the appropriate level of nuance, of course, to all sub-state levels of general government (towns, cities, counties, etc.).

In Chapter 1, the authors describe their systems view of municipal financial health. Their systems approach to financial condition analysis is insightful and comprehensive. They model an open system with inputs (socioeconomic conditions, institutional settings, external pressures, and internal structures), outputs (expenditures, revenues, and debt), policy decisions, outcomes (fiscal health measures), and a necessary feedback loop. It is not a closed system, only meant for a limited understanding of a particular problem from a particular stakeholder's perspective. The open systems approach is valuable for scholars, government officials, and students. This approach should be taught to the next generation of scholars and practitioners in colleges and universities.

The open systems approach gives the reader an appreciation for the complexity of how the entire system is supposed to work – compared to how it actually works. It requires one to understand and appreciate the complex interrelationship between inputs, including constraints and resources provided by higher levels of government, policy actions, stakeholder demands, outputs, and outcomes. The authors explore these interrelationships in Chapters 2-8.

In Chapter 2, the authors point to the traditional importance of evaluating the system based on effectiveness and efficiency. However, they miss the opportunity to add equity to the

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analytical framework and, therefore, the insights that could be gained from using an equity lens to analyze each aspect of the system throughout the book.

While the title of the book highlights "fiscal health," a substantial portion covers "fiscal stress," especially how governments have dealt with external shocks – like the Great Recession and the COVID-19 pandemic. These, I believe, are the most interesting parts of the book. They make a convincing argument for distinguishing fiscal stress from fiscal health and establishing it as a key financial condition analysis area. Stress is short-term liquidity focused – can the government pay its annual bills; whereas fiscal health is longer-term. They use Detroit as an example where the distinction mattered. The book's title could have included the phrase "fiscal stress," and I do not believe any reader would have complained about being misled.

Unlike the usual larger city targets of fiscal crisis analysis, the authors provide detailed case studies of small-to-medium-sized cities (chapters 9-13): Flint, Michigan; Wichita, Kansas; North Lauderdale, Florida; Havelock, North Carolina; Commerce, California. Cities spread across the country, with different problems, having different internal flaws and external constraints – but all can be analyzed and understood through the common framework provided by the authors.

They use case studies to illustrate their open systems approach, demonstrating how to use traditional indicators and measures parsimoniously. They use a set of tractable (in terms of time series and cross-sectional analysis) and informative input factors to analyze the broader environment and institutional setting, socioeconomic conditions, and outputs covering revenue and expenditure trends, operating position, and long-term liabilities, and they link such factors to outcomes and policy actions.

In addition, they expand the traditional analysis by incorporating interviews with government officials involved in making budget and finance decisions. Interviews for all but one city covers multiple periods, 2015 and 2021, enabling the authors to paint a picture of how city officials have responded to crises like the Great Recession and COVID-19 pandemic, as well how they made routine public policy decisions in better times, including how they have navigated external and internal structural constraints. The interviews give the reader a perspective on why decisions were made, not just what decisions were made but their impact. Another advantage of including interviews covering multiple periods is that it shows the importance of positive and stable relationships between government officials responsible for a city's financial condition – across and within the executive and legislative branches.

The authors' use of actual time series and cross-sectional data throughout the book is admirable. They build their model by tracing the historical development of measuring financial condition. It shows a thorough understanding of the scholarly literature, enabling them to cut through the noise of many correlated (and therefore) useless indicators and measures often found in the research literature (as shown in Appendix B). They knowledgeably limit the number of indicators and measures used in the case studies and make them more comparable across cities. This alone is a singularly important contribution to the field and should help increase future empirical research's reliability and validity.

Also, in Chapter 1 and Appendix A, they provide a valuable service by critiquing the advantages and limitations of several data sources—Census, GFOA (Government Finance Officers Association), and ACFR (Annual Comprehensive Financial Reports)—commonly used by researchers.

Understanding Municipal Financial Health: A Model for Local Governments in the USA, is an excellent addition to the literature on municipal finance. It reminds me of the contribution

made to local budgeting by Irene Rubin's (2019) *The Politics of Public Budgeting*. I would encourage the authors to develop a full-blown textbook in a future edition. While the book's discussion questions at the end of case study chapters are thoughtful and well-crafted to stimulate class discussion, undergraduate and graduate student learning deserves and requires more. Students of municipal financial analysis deserve analytical treatment like the 600-plus-page fiscal administration and corporate finance textbooks, with supplemental materials like practice problems, quizzes and exams, slideshows, data packages, and Excel spreadsheets. It may be a case of latent demand merely waiting for high-quality supply, which the authors of *Understanding Municipal Financial Health: A Model for Local Governments in the USA* richly supply.

Disclosure Statement

The author declares that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

References

Maher, C. S., Park, S., McDonald, B. D., & Deller, S. C. (2023). *Understanding municipal financial health: A model for local governments in the USA*. Routledge.

Rubin, I. S. (2019). *The politics of public budgeting: Getting and spending, borrowing and balancing.* CQ Press.

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