

Q&A: Machine-learning model tracks trends in public finance research

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What are the leading topics in public finance and budgeting, how have they changed, and what future topics should be more closely researched by professionals and practitioners?

Can Chen and two of his former doctoral students, Shiyang Xiao at Syracuse University and Boyuan Zhao at Florida International University, used a [machine-learning](#) technique—structural topic

modeling (STM)—to identify these themes and their dynamics over the past 40 years for an [article](#) recently published in the journal *Public Budgeting & Finance*.

Using the STM, Chen and his colleagues identified 15 latent topics in the areas of public budgeting, public finance and public [financial management](#) from the titles and abstracts of 1,028 articles published in the journal from 1981 to 2020. They compared these topics against those covered by standard exams for Certified Public Finance Officers (CPFO) and found much overlap. However, some topics that were mentioned less often may hint at some underexplored research agendas in PB&F.

Chen, an associate professor of public management and policy in the Andrew Young School of Policy Studies, directs the college's Ph.D. programs in [public policy](#). After presenting this research at the Next Generation Public Finance conference hosted by Georgia State University, he received helpful feedback and comments he gratefully acknowledges. In the Q&A that follows, Chen reveals more about the journal, the findings and his motivation for conducting the study with his colleagues.

What inspired you to do this study?

The journal was 40 years old, so we wanted to do something to celebrate its anniversary, a review of the journal's history. Another reason is that the methodology we used, machine learning, was new to this publication. Traditionally, the articles were manually reviewed. We used technology to do a smart review.

And more importantly, doctoral students sometimes will come to me and ask whether I understand what the big trends are in the field. They must specialize in their first year, so they ask me about the overall landscape

of public budgeting and finance: What are the major recent topics in this field? With this study we could look back 40 years and, more importantly for doctoral students, through its recent history to determine trends.

Where did you get the idea to use machine learning and text mining to find the trends and themes?

When I came to Georgia State, AYSPS was promoting its Digital Landscape Initiative, using [big data](#) for analytics. So, I thought, "Oh, great! This is a great methodology, and the school wants us to use it."

Other fields use machine learning to help analyze big data sets—engineering, science and technologies—but to our understanding, ours is one of the first research efforts to introduce machine-learning and text-mining methodology into the field of public budgeting and finance. This is what we're all about, using ideas from other disciplines and applying it to our discipline.

What key trends did your research reveal?

The first and most important thing I should mention is practitioners. The journal was founded to promote a knowledge exchange between practitioners and scholars. We found that, historically, we're seeing less and less of this exchange on the part of practitioners publishing in the journal. We need to promote more engagement with practitioners. And we need to have the doctoral students better understand the practitioner's point of view regarding the field.

Our findings have important implications for helping scholars, practitioners and students of government budgeting and finance keep sight of the overall landscape of this literature. It's useful in helping them

gain a deeper understanding of the areas of research and form collaborations among researchers with various specializations.

This research can be useful for doctoral students and others in promoting new study topics. We need to look forward and do more research on public budgeting and finance in relation to big challenges in the future, such as health care, technology and climate change. These are important areas we can research in relation to public finance and budgeting to help society address these challenges.

Why is your analysis important? Who will it impact?

First, it's very important to have students, practitioners and scholars know both the big picture and the evolution of the field. It's even more important to think about the future direction of this public budgeting and finance research and the areas we need to spend more time studying in the future.

Also, many practitioners were writing academic papers in the early history of the journal and of public budgeting and finance. Now, it's super hard to find these folks—the practitioners—writing and getting published. But this is a very practical field, so scholars need to think about how to write articles that better represent the field and the practice, and to work with practitioners to promote this knowledge exchange.

More information: Can Chen et al, Machine learning meets the Journal of Public Budgeting and Finance: Topics and trends over 40 years, *Public Budgeting & Finance* (2023). [DOI: 10.1111/pbaf.12348](https://doi.org/10.1111/pbaf.12348)

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