

POLICY BRIEF

Deploying artificial intelligence and data analytics to support intergovernmental fiscal relations

1. INTRODUCTION

As governments increasingly embrace advanced analytics and cautiously explore greater use of artificial intelligence – including generative AI – new possibilities are emerging to strengthen fiscal oversight and collaboration across all levels of the public sector, and with subnational governments in particular.¹ One particularly compelling example is Indonesia’s “AI as a Financial Advisor” (AIFA) system, which uses machine learning techniques to standardise municipal budgetary and financial data reporting to the national government in real-time, and offers an easy-to-use interface to monitor and compare subnational government performance. Among the notable features is the AIFA system’s ability to help local governments benchmark their own expenditures and their efficiency relative to comparable municipalities, while also enabling the central government to monitor subnational governments’ compliance with national guidelines and regulations.

However, employing these powerful new tools also raises important questions about privacy, security, data reliability, fairness, accountability and even the future balance of power between national and subnational bodies.² There are important distinctions in the capabilities between artificial intelligence – characterised by more autonomous systems capable of learning – versus data analytics employing traditional statistical and quantitative techniques. Yet in the public sector and other applications, these boundaries can often blur. As governments explore innovative applications, they must carefully weigh risks and benefits.

This brief will explore emerging practices using AI and advanced analytics to monitor subnational budgets, assess risks and inform policymaking. We can consider questions around transparency, bias, disparate impacts and effects on decentralisation. And we also discuss what type of policies, governance mechanisms and safeguards are needed to employ these tools responsibly in intergovernmental fiscal relations – touching on guidelines developed in the OECD AI Principles (OECD, 2023). By sharing multiple evidence-based perspectives, we aim to find consensus on how AI and analytics can support fiscal federalism, sound public financial management and data-driven policymaking across all levels of government, if thoughtfully implemented with adequate oversight. But we must also have an open debate about potential pitfalls, limitations, and effects on the evolving relationship between national and subnational authorities.

¹ This brief was prepared by Sean Dougherty, senior advisor for the Network on Fiscal Relations across Levels of Government, with inputs from Delphine Moretti, lead for the SBO financial management and reporting working party and Tatiana Mota, advisor to the Network, as well as Indonesia’s Ministry of Finance. We acknowledge test use of Bard, ChatGPT4 and Claude-2.

² See for instance, <https://oecd.cogito.blog/2023/07/06/will-ai-undo-decentralisation/>.

2. PUBLIC SECTOR USE CASES

This brief also builds upon previous discussion in the Fiscal Network around the opportunities and challenges of digitalisation in intergovernmental fiscal relations (de Mello and Ter-Minassian, 2020). AI tools, equipped with advanced algorithms, offer unprecedented efficiency in processing vast amounts of fiscal data, enabling governments at all levels to enhance their financial management and oversight capabilities. AI-enabled systems can help strengthen budgetary execution, tax enforcement, improve targeting of social spending, support infrastructure, detect fraud, streamline procurement and enhance the delivery of services from healthcare to general administration. Prior OECD work has called for greater co-operation across levels of government to support subnational governments in harnessing these technologies, and at the same time making use of more comprehensive accounting practices (OECD, 2021; Irwin and Moretti, 2020). When thoughtfully implemented, AI and advanced analytics offer immense potential to bolster oversight, inclusion and productivity across the public sector.

AI and advanced analytics are likely being applied across a wide range of public sector use cases to support fiscal federalism and sound public financial management. However, a review of cases from the latest financial management and reporting questionnaire identified only seven OECD countries that had documented experience, and many of these were for process automation that did not make use of "AI". Nevertheless, a search using Google's "Bard" AI engine identified dozens of country use cases. However, many were hallucinated or imagined rather than real, while others were impossible to confirm or verify, despite highly specific information generated by the AI search tool, with seeming confidence.

Those that we *could* fully confirm with authorities and/or published sources include the following:

- **Monitoring subnational finances in Indonesia:** The Indonesian Ministry of Finance is using AI to standardise municipal budget and financial reporting, enabling central authorities to track real-time fiscal performance of subnational entities. The government has developed an AI-powered system called the Indonesia "AIFA" system, mentioned at the outset (Wisesa, 2023). AIFA uses a variety of data sources, including municipal budgets, financial statements and performance reports, to track real-time subnational fiscal performance. This allows central authorities to identify early risks and provide better-informed policy responses, as well as to provide local governments with benchmarking and guidance on their spending.
- **Improving supervision of expenditure in France:** The French government is incorporating AI into the monitoring of local authorities' finances. The DGFP provides regular financial reports, aiming to understand the financial conditions of all local authorities. This process is supported by a transition to digital interactions between local authorities and the accounting public officers managing their accounts. A notable aspect of this initiative is the development of an early warning system intended to identify local authorities potentially facing financial difficulties, which is being enhanced using AI tools, in a move towards more data-driven monitoring methods.
- **Procurement oversight in Brazil:** The Brazilian government is using robotic process automation and AI to mine procurement databases to flag risky contracts for auditors to then carefully review. This AI-powered system is called 'Alice' (Odilla, 2023). Alice uses a variety of data sources, including procurement

contracts, vendor information and performance data, to identify risky contracts. This allows auditors to focus more of their attention on high-risk contracts and prevent misuse of funds. Regional and local governments can leverage its capabilities to improve their own procurement processes.

- **Policy advice in the OECD:** in a trial effort for this meeting, the OECD Fiscal Network trained a GPT chatbot called the "Fiscal Federalism Advisor" to use the databases and collected works of the OECD's Network on Fiscal Relations to provide autonomous virtual policy

advice. So far this tool is presented for illustrative purposes only, but it shows the potential for providing customised policy advice and data analysis.

This sample AI tool can be accessed at the following link:

<https://chat.openai.com/g/g-wcv8BRTW3-fiscal-federalism-advisor>.

The common thread is AI augmenting human analysis and oversight capacities in fiscal governance. But fully realising this potential requires addressing transparency, bias, and other AI risks, as discussed in the next section.

3. RISKS AND OPPORTUNITIES

The adoption of AI and analytic tools in intergovernmental fiscal relations is rapidly transforming the landscape of fiscal oversight and intergovernmental collaboration. It offers a range of potential benefits, including improved efficiency and effectiveness of public administration, enhanced transparency and accountability, standardisation of financial reporting processes, together with better decision-making. However, it also poses certain potential risks, such as privacy concerns, bias and discrimination, as well as ethical issues (OECD, 2023). Policymakers should carefully consider these risks and develop safeguards to mitigate them before deploying AI in this domain.

The use of AI and analytic tools in intergovernmental fiscal relations offers a range of potential benefits, including:

- **Better decision-making:** AI can be used to analyse large amounts of data to identify trends and patterns, which can help policymakers make more informed decisions about tax policy and other fiscal matters.
- **Enhanced transparency and accountability:** AI can be used to track and monitor the use of public funds, which can help to improve transparency and accountability in government spending. AI can also be used to identify and prevent fraud and corruption.

- **Improved efficiency and effectiveness of public administration:** AI can be used to standardise and automate many manual tasks involved in public administration, such as data entry and verification, freeing up officials to focus on more complex tasks. AI can also be used to identify and audit high-risk taxpayers, which can help to improve tax compliance and revenue collection.

However, the use of AI and analytic tools in intergovernmental fiscal relations also poses potential risks, including:

- **Privacy concerns:** AI systems that collect and analyse large amounts of personal data raise concerns about privacy and confidentiality. It is important to implement safeguards to protect the privacy of taxpayers and others, notably to protect the integrity of confidential personal data.
- **Bias and discrimination:** AI systems can be biased if they are trained on data that is not representative of the population. This can lead to discrimination against certain groups of people. It is important to develop AI systems that are fair and unbiased.
- **Ethical issues:** The use of AI in intergovernmental fiscal relations raises several ethical issues, such as the

potential for job displacement and use for surveillance purposes. It is important to carefully consider the ethical implications of using AI before deploying it in the public space.

- *Accuracy of information:* While AI is proficient in aggregating and analysing fiscal data, its ability to discern the nuanced context, relevance and even the accuracy of this data is limited.

There are a number of key considerations that policymakers should take into account when employing AI and analytic tools in intergovernmental fiscal relations, including:

- *The need for human oversight:* Human intervention is *crucial* in evaluating and verifying the information sourced by AI, specifically regarding the interpretation of the significance, credibility and context of the information. AI systems should not be allowed to make decisions without human oversight. Humans should be “in the loop” to ensure AI is used responsibly and ethically.
- *The importance of transparency:* Policymakers should be transparent about how AI is being used in intergovernmental fiscal relations. This will help to build public trust and confidence in its use.
- *The need for accountability:* Policymakers should be accountable for the use of AI in intergovernmental fiscal relations. This includes being held responsible for any negative impacts that AI may have. As AI continues to evolve and becomes more

integrated into policymaking, managers must safeguard against the dissemination of inaccuracies and misconceptions.

At the same time, there are some use cases of AI that policymakers should avoid in intergovernmental fiscal relations, including:

- *Overly mechanical approaches:* Maintaining human-in-the-loop oversight is critical, and AI should not be used to automate decision-making processes that require human judgment and discretion.
- *Problematic contexts:* AI applications in areas that raise ethical concerns, such as surveillance or predictive policing, need careful scrutiny to avoid misuse and threats from automated systems.
- *Avoid replacing humans:* The responsibility for ensuring the integrity and accuracy of fiscal data in the age of AI rests with public sector professionals. AI should complement, not replace, human expertise and empathy, particularly in the public sector.

There is also a risk that policymakers will miss out on the potential benefits of AI if they do not adopt it quickly enough in a responsible and ethical manner (see Korinek, 2024). AI has the potential to revolutionise intergovernmental fiscal relations and other areas of public services, but it is important to use it carefully to avoid unintended negative consequences. Promising regulatory frameworks are currently being developed to guide AI adoption.³

³ See <https://www.whitehouse.gov/omb/briefing-room/2023/11/01/omb-releases-implementation-guidance-following-president-bidens-executive-order-on->

[artificial-intelligence/](https://www.whitehouse.gov/omb/briefing-room/2023/11/01/omb-releases-implementation-guidance-following-president-bidens-executive-order-on-artificial-intelligence/) and for other cases, refer to <https://oecd.ai/en/dashboards/overview>.

Points for discussion

- What are the leading public finance use cases – current and future – in your countries?
- How do we weigh the opportunities against the challenges that the technologies present?
- What safeguards are needed before deployment, and what implementation challenges exist?
- How can we deploy/employ AI responsibly, with sufficient human involvement and supervision?
- How can the OECD Secretariat build on its prior work on subnational accounting practices to provide support to Fiscal Network members in this area?

REFERENCES

- de Mello, L. and T. Ter-Minassian (2020), “Digitalisation challenges and opportunities for subnational governments”, *OECD Working Papers on Fiscal Federalism*, No. 31, <http://oe.cd/il/FFwp31>.
- Irwin, T. and D. Moretti (2020), “Can subnational accounting give an early warning of fiscal risks?” *OECD Journal on Budgeting*, Vol. 2020(2), <https://doi.org/10.1787/be73a937-en>.
- Korinek, A. (2024), “Large Language Models in Economic Research: Use Cases and Implications for Economists”, *Journal of Economic Literature*, forthcoming.
- Odilla, F. (2023), “Bots against corruption: Exploring the benefits and limitations of AI-based anti-corruption technology”, *Crime, Law and Social Change*, Vol. 80, <https://link.springer.com/article/10.1007/s10611-023-10091-0>.
- OECD (2021), *Fiscal Federalism 2022*, OECD Publishing, Paris, <http://oe.cd/il/FiscalFederalism>.
- OECD (2023), “The state of implementation of the OECD AI Principles four years on”, *OECD Artificial Intelligence Papers*, October, <https://doi.org/10.1787/835641c9-en>.
- Wisesa, A.R. (2023), “Artificial Intelligence Innovation as Financial Advisor”, *Swatantra*, Vol. 20(1), <https://jurnal.umj.ac.id/index.php/SWATANTRA/article/viewFile/15611/8230>.

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