Summary Brief

AFRICAN TAX ADMINISTRATION FORUM
FORUM SUR L'ADMINISTRATION FISCALE AFRICAINE

Africa's First Large-Scale Tax Experiment: Researching Compliance in Rwanda

The Value of Administrative Data for Research

Administrative data is incredibly valuable for research on taxation for several reasons. It is much more disaggregated than macroeconomic data on tax payments and income, it often represents the longest available time series of data, and tax records capture income more accurately than any other source of data. With surveys, respondents often do not provide honest or accurate answers about their income, so data is often underreported, and researchers have to impute likely tax payments based on a proxy for income, assuming full compliance with tax laws. Administrative data solves these problems because it includes information on declared incomes and actual tax payments, with no need for proxies.

Administrative data has a few drawbacks: only data declared to the revenue authority is captured, so information about informal income is missing; it is not always possible to match different sources of income to the same taxpayer because they may have multiple taxpayer identification numbers;

and only the data recorded for tax assessment is available. For example, Rwanda does not record gender information in tax declarations. Still, there is much to be gained by using administrative data for tax research.

This has been demonstrated recently by research done using the Rwanda Revenue Authority (RRA)'s administrative data. Researchers from RRA, the International Centre for Tax and Development (ICTD), and the African Tax Administration Forum (ATAF) used the data to provide a comprehensive analysis of the Rwandan tax system, including quantifying audit probabilities, compliance gaps, and tax burdens, for which there was previously little evidence.

From the data, they found that Rwanda's tax revenue is highly reliant on large taxpayers located in Kigali, with about 85 corporations contributing more than half of total corporate income tax revenue, and 86% of revenue coming from taxpayers registered in Kigali. They found that many taxpayers declare non-positive income, and evidence that noncompliance is substantial, with low audit rates, particularly for small taxpayers located outside of Kigali. By calculating effective tax rates, the researchers found that the tax system is less progressive in practice that it appears on paper. This is because many small taxpayers choose to remain in the "lump-sum" regime, which is much simpler to comply with, rather than join the more complex "real" regime that would tax them based on their level of profit.

For more information on using administrative data and the analysis of Rwanda's tax system, see ICTD Working Paper 56: *Unlocking the Potential of Administrative Data: Tax Compliance and Progressivity in Rwanda*

The Value of Tax Experiments

The most reliable way for revenue authorities to discover how to improve tax compliance is to conduct large-scale research experiments. This is because it is difficult to get honest answers about dishonest behaviour through surveys, so although researchers have used surveys to better understand people's perceptions of tax compliance, these attitudes may not accurately reflect their actual behaviour when faced with the real consequences of tax evasion and avoidance.

In recent years, an increasing number of tax experiments have been conducted in high and middle-income countries. The existing literature offers insights into the compliance effects of deterrence, tax morale (the intrinsic motivation to pay taxes), the complexity of tax systems, and the compliance costs for taxpayers. However, most of these experiments have taken place in Europe and the US. None

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are yet available for any African or low-income country. This is partly due to the relatively recent modernisation and digitisation of tax administration in developing countries, as well as the high degree of commitment and research capacity that is required. As a result, there are many unanswered questions about whether the key findings of this literature hold in the African context. Moreover, by investigating the behavioural factors of tax paying, field experiments can provide crucial guidance to policymakers on how to target their compliance strategies in order to raise the maximum amount of taxes in the most cost-effective way.

For a review of the tax experiments literature, see ICTD Working Paper 46: *From the Lab to the Field: A Review of Tax Experiments*

Pilot Experiment on Voluntary Tax Compliance

About to undertake the first study of this kind in Africa, the RRA, in collaboration with ATAF and the ICTD, first carried out a pilot experiment to gather some initial insights on tax compliance and to test the process of message delivery. The pilot sought to examine the effect of an information letter on whether or not taxpayers would voluntarily correct their tax declarations. The experiment used a sample of 2,000 taxpayers, half of which were categorised as risky, and half as non-risky. These groups were stratified according to size, location, and previous revision behaviour, so that these aspects could all be taken into account in the analysis. The sample was randomly assigned to the treatment group (which received a letter) or control group (no letter). The letters, drafted in English, French, and Kinyarwanda, offered taxpayers information about Rwandan tax law, which provides for sanctions of up to 60% if underreported income is discovered through an audit, but much lower (about 10%) if taxpayers voluntarily revise their declarations. Almost 600 personalised letters were hand-delivered by RRA staff to taxpayers in the treatment group.

The letters were found to be effective in increasing voluntary compliance, reducing negative revisions (a way to avoid or evade taxes) and increasing the likelihood of positive revisions. This was especially the case for small taxpayers, who were more than five times more likely to revise their declarations than the small taxpayers in the control group, and when they did, their revisions were more than 200% higher than the control group revisions.

This experiment shows that information letters can be an effective way to increase compliance by encouraging taxpayers to declare previously unreported income. Furthermore, the pilot highlighted some practical aspects of implementing this type of study in an African country, which has already led to innovations in the way the RRA communicates with taxpayers. For example, as a result of this pilot, the RRA has adopted systems to personalise messages to taxpayers and fully digitised the process of letter preparation, as well as developed options for effectively delivering letters to taxpayers on a large scale.

For the full pilot experiment results, see ICTD Working Paper 57: *The Carrot and the Stick: Evidence on Voluntary Tax Compliance from a Pilot Field Experiment in Rwanda*

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Tax Experiment on Drivers of Compliance and Delivery Methods

Building on the lessons learned from the pilot, the main experiment of this research project sought to evaluate the effectiveness of different messages and delivery methods in increasing compliance. The team used nine treatments, testing three different messages and delivery methods. They tested a deterrence message (emphasising sanctions and penalties for non-compliance), a benefits message (illustrating how tax payments are used to pay for public services), and a reminder (simply informing taxpayers of the deadline). These were sent in both English and Kinyarwanda, either by letter, email, or SMS. Over 11,000 messages were sent in total.

The experiment's findings challenged some existing literature by showing that deterrence does not seem to be the most effective way to achieve compliance increases in Rwanda. Small taxpayers are still quite responsive to deterrence messages about being fined or prosecuted, but their contribution to the public purse is relatively small. In general, Rwandan taxpayers responded more to friendly messages, either gentle reminders of deadlines or information related to the importance of

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tax revenues to finance public services. The effectiveness of non-deterrence strategies is good news for low-income countries, where enforcement is severely limited by lack of financial and human resources. It is also very much in line with the RRA's vision of a modern tax authority that encourages voluntary compliance and embraces a customer-oriented approach.

The experiment also demonstrated the efficacy of non-traditional channels of communication, such as emails and SMS messages, in achieving substantial increases in declared taxes. Although the letters were effective, preparing and delivering them represents a large burden for overstretched tax administrations. The cheaper options of SMS and emails also proved to be highly effective, with emails even outperforming the hand-delivered letters. This represents a significant finding for low-income countries where limited resources mean governments must find cost-effective ways of achieving policy goals. This is evidenced by the fact that with relatively cheap communication strategies, the experiment generated almost 9 million USD (over 7 billion RWF) in additional revenue for the RRA.

This experiment highlights the importance of embedding rigorous evaluation in the design and implementation of new policies, so that governments can avoid wasting resources on less effective measures and focus on the ones that are most effective in achieving their goals. As this study demonstrates, if the revenue authority is committed, it is possible to conduct large-scale tax experiments in Africa. Hopefully the success of this study will encourage more researchers and revenue authorities to engage in the field of tax experiments and, more broadly, in the rigorous evaluation of tax policies using administrative data.

For the full results of this experiment, look out for forthcoming ICTD Working Paper *One size Does Not Fit All: A Field Experiment on the Drivers of Tax Compliance and Delivery Methods in Rwanda*

Improving Systems and Building Capacity

Through the process of conducting the experiments, the team identified some areas where improvement of administrative processes would make this type of intervention more efficient and scalable in the future. For example, the project catalysed more efficient solutions for keeping taxpayer contact information up to date and automatically personalising communications. The project also prompted the RRA to expand the functionality of its SMS platform.

In addition, collaborating with the ICTD and ATAF helped build research capacity within the RRA. This was partly through hands-on work in running the experiment, as well as training workshops organised through the collaboration on experimental design and proposal writing. The ICTD also provided training on the use of statistical software. Further, the RRA's Research and Planning Department wrote a companion paper, fully authored by RRA staff, which is being peer reviewed and will shortly be published as a working paper.

The paper by RRA researchers provides a more in-depth look at taxpayers' reactions to the messages they received as part of the experiment. The researchers interviewed 36 RRA staff who have regular contact with taxpayers including auditors, receptionists, departmental secretaries and executive assistants to commissioners who receive and handle taxpayer correspondence, as well as 70 taxpayers from the experiments' treatment groups.

They found that the majority of taxpayers who contacted the RRA wanted to know the status of their account, in order to ensure they had not made any mistakes in their declarations and that they were compliant with the law. Although some taxpayers felt unfairly targeted by the messages, most appreciated the information and reminders of their tax obligations. Through the interviews, the researchers were also able to document stories of how taxpayers responded to the messages, beyond what

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can be measured in the econometric analysis. For example, there were some cases where the communications encouraged taxpayers to come clean and rectify their accounts. In one case, a recipient of a letter got in touch with the Commissioner General to explore the reasons for irregularities in his account, and this triggered a criminal investigation into a tax accountant who had misreported several clients' accounts.

Following this successful collaboration, the RRA plans to continue collaborating with the ICTD on the basis of a memorandum of understanding between the two institutions that will facilitate further research and capacity building activities. The research team is already discussing follow-up activities to explore in more detail some of the findings from the experiments, as well as new questions that emerged from the research. As part of their mandate, ATAF and ICTD are eager to support African revenue authorities in using their administrative data to conduct research as well as continuing to pioneer in the field of tax experiments.

For more details on taxpayers' reactions to the experiment, look out for forthcoming ICTD Working Paper *Communicating to Improve Compliance: Taxpayers' Feedback on Messages and Modes of Delivery in Rwanda*

Further reading

Giulia Mascagni (2016), *From the Lab to the Field: a Review of Tax Experiments*, ICTD Working Paper 46, Institute of Development Studies, Brighton (February).

Giulia Mascagni, Nara Monkam and Christopher Nell (2016), *Unlocking the Potential of Administrative Data in Africa: Tax Compliance and Progressivity in Rwanda*, ICTD Working Paper 56, Institute of Development Studies, Brighton (October).

Giulia Mascagni, Christopher Nell, Nara Monkam and Denis Mukama (2016), T*he Carrot and the Stick: Evidence on Voluntary Tax Compliance from a Pilot Field Experiment in Rwanda*, ICTD Working Paper 57 Institute of Development Studies, Brighton (October).

Giulia Mascagni, Christopher Nell, Nara Monkam (2016), *One Size Does Not Fit All: A Field Experiment on the Drivers of Tax Compliance and Delivery Methods in Rwanda*, ICTD Working Paper (forthcoming), Institute of Development Studies, Brighton.

Denis Mukama, John Karangwa and Naphtal Hakizimana (2016), Communicating to Improve Compliance: Taxpayers' Feedback on Messages and Modes of Delivery in Rwanda', ICTD Working Paper (forthcoming), Institute of Development Studies, Brighton.

Credits

This Summary Brief was written by **Rhiannon McCluskey**, Research Uptake and Communications Manager at ICTD. It summarises the main findings from the five working papers listed above that were produced in a partnership between the International Centre for Tax and Development (ICTD) and the African Tax Administration Forum (ATAF), in collaboration with the Rwanda Revenue Authority (RRA). ATAF is an international membership organisation of African revenue authorities and acts as a platform promoting cooperation, knowledge sharing and capacity building among African revenue authorities. ATAF is supported by the following developments partners: Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ); Department for International Development (DFID); Netherlands government; Norwegian Agency for Development (Norad); Swiss Economic Cooperation and Development (SECO); Ireland; Finland; Denmark; African Development Bank; Open Society of West Africa; and the William and Flora Hewlett Foundation. The International Centre for Tax and Development (ICTD) is a global policy research network that deals with the political economy of taxation policies and practices in relation to the poorer parts of the world and whose objectives are to generate and disseminate relevant knowledge to policymakers and to mobilise knowledge in ways that will widen and deepen public debate about taxation issues within poorer countries. ICTD is funded with UK aid from the UK Government and by the Norwegian Government. The views expressed herein and the related research papers do not necessarily reflect the views of the ATAF and the ICTD development partners and funders.

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