The value of administrative data

Administrative data is information collected by government departments and other organisations, usually during the delivery of a service, for the purposes of registration, transaction and record keeping. Although it is collected primarily for administrative and not research purposes, administrative data can be incredibly valuable for research. Thomas Piketty’s *Capital in the Twenty-First Century* electrified the world, and his research on income and wealth inequality was based on administrative data. Administrative tax data can reveal much that we wouldn’t otherwise be able to know. For example, access to administrative tax data allowed Fairfield and Jorratt¹ to conduct a major re-estimation of income inequality in Chile, demonstrating not only that income is highly concentrated, but also that the top 1 per cent face a very modest effective tax burden.

Administrative tax data has several advantages when it comes to researching questions relating to taxation, inequality, and labour markets. First, it is much more disaggregated than macroeconomic data on tax payments and income, and therefore allows researchers to quantify things like compliance gaps and the burdens for each taxpayer, as well as identify the variations among them. Second, administrative data

records often represent the longest available time series for many countries, and are available for every year, as opposed to surveys that might be available in intervals or just for a specific point in time. Third, 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 it is often underreported. Surveys also typically don’t include information on how much tax is paid by each individual, so researchers have to impute likely tax payments based on a proxy for income and assume full compliance with all the provisions of tax laws, which is a strong assumption to make.² Administrative data can solve these problems because it includes information on declared incomes and actual tax payments, with no need for proxies.

Still, there has been virtually no use of administrative tax data for research in Africa. One might think this is because the revenue authorities control the data and have thus far not seen value in using it for research. This would imply that the revenue authorities are the obstacle. However, the International Centre for Tax and Development (ICTD)’s experience suggests the very opposite. By connecting with African revenue authority officials, the ICTD came to understand their concerns. Many worried about breaching confidentiality rules by granting outside researchers access to the data, while those who had shared data often felt exploited by the institutions and researchers who published papers or reports without appropriately involving or crediting the revenue authority or its staff.

In contrast, the ICTD has found that partnering with revenue authorities, and working closely with their staff members to access, understand, and analyse the data, has been crucial to producing impactful research. In working with the revenue authorities of Ethiopia, Uganda, and Rwanda, the ICTD has embraced the ‘Engaged Excellence’ strategy of the Institute of Development Studies (where the ICTD is based), including its four strategic pillars: co-constructing knowledge, delivering high-quality research, mobilising impact-oriented evidence, and building enduring partnerships.³ The ICTD’s partnerships with these revenue authorities have led to pioneering work, which benefited enormously from the knowledge and expertise of revenue authority staff and, in turn, assisted them in becoming better researchers by using their data to improve both policy and practice. The sections that follow describe each of the three partnerships as case studies, before concluding with a set of principles for productive partnerships between researchers and practitioners in government agencies.

Researching effective corporate tax rates in Ethiopia

ICTD Research Director Giulia Mascagni conducted her doctoral research in Ethiopia, and worked there as an Associate Economic Affairs Officer with the UN Economic Commission for Africa and also as a researcher with the Ethiopian Development Research Institute (EDRI). More recently, she has begun advising the Ethiopian Ministry of Finance. Her connections and experience in Ethiopia were instrumental to the establishment of a collaborative research project involving the ICTD, EDRI, and the Ethiopian Revenue and Customs Authority (ERCA).

The Ethiopian government’s 2015-2020 Growth and Transformation Plan sets economic growth as a top priority, with a strong focus on industrialisation and manufacturing. While recent growth has been strong, manufacturing has progressed slowly, contributing only 5 per cent to Ethiopia’s GDP. Therefore, ERCA was interested in finding out whether the tax burden is a significant constraint on enterprise and investment, and if the tax system bears down unfairly and inefficiently on some firms rather than others. Using ERCA’s data on corporate tax returns from 2012-2014, the team calculated ‘effective tax rates’ (the proportion of corporate income collected in taxes) for different sizes and types of firms. The study findings were significant, both for the research community and for the Ethiopian government.

Previous research based on surveys in Uganda found that middle-sized firms suffered the biggest squeeze, and this became a widespread view. However, ERCA’s data told a different story: that small firms in fact face the highest effective tax rates, and middle-sized firms the lowest. The researchers believe that this is because large firms are highly visible, and thus cannot push their tax planning too far. In fact, the largest 10 per cent of firms generate 90 per cent of total corporate income taxes, and so they face much scrutiny from the government.

On the other hand, small firms do not have the capacity and resources to comply with ERCA’s procedural requirements, let alone fully exploit the system. Keeping the necessary records and producing full books of accounts is very difficult for small firms, and they are not able to afford accountants who could help them legally minimise their tax bills. High compliance costs were exacerbated by the fact that tax thresholds had not been changed in Ethiopia for 13 years, and so many small firms entered the tax net due to inflation.

While small firms pay more tax than is formally required, medium-sized firms pay the least. The researchers posit that this is because they are not as scrutinised as the largest firms, but have the capacity that small firms lack to minimise their tax bills, and so inflate their expenses to achieve this. The data backs this up, as medium-sized firms have the highest ratio of expenses to turnover, around 40 per cent.

Another important finding of the study was that one of the sectors facing the highest tax

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5 Gauthier and Reinikka’s study differs from the ICTD research in terms of data, methods, and sample. The impact of these differences on the comparability of results is discussed in Mascagni and Mengistu (2016).


7 Ibid.
burden is manufacturing, which is at odds with the government’s strategy to promote the sector. The research findings were reported in the Ethiopian media, and stimulated debate within the government on the practical policy implications. Recognising the need to revise the tax thresholds for both businesses and employees in order to account for inflation and reduce the burden on the smallest firms, the government recently amended the law based on further analysis done by Dr Mascagni and the Ministry of Finance.

In the past, ERCA has not put much emphasis on research, and it has limited analytical capacity. However, working closely with EDRI and ICTD researchers over the course of this project, it has come to appreciate how it can utilise the information it collects to inform policy in a very practical way. ERCA has requested further research collaboration and capacity building for its staff from the ICTD, and the Centre is enthusiastic about strengthening the partnership and following up with joint research on effective tax rates on trade taxes.

Researched taxing high net worth individuals in Uganda

The Uganda Revenue Authority (URA) was aware that its collection and enforcement efforts were concentrated on corporate entities at the expense of individuals, and that many wealthy, or high net worth, individuals (HNWIs) were under-declaring their incomes and evading paying tax. Therefore, the URA wanted to gain a better understanding of the tax behaviours of HNWIs in Uganda in order to design a better administration framework for taxing them. The URA submitted a proposal to the ICTD, requesting funding and research guidance for the project. The ICTD approved the grant and hired Dr Jalia Kangave to provide research guidance to the team in Kampala for a period of three months. Dr Kangave is a Ugandan with a background in law and extensive experience in taxation, including working for Pricewaterhouse Coopers in Uganda as a tax consultant and serving as the Principal of the East African School of Taxation in Uganda. She is now a research fellow at IDS and ICTD’s Capacity Building Manager.

Dr Kangave worked with members of the URA’s Research Planning and Development division: Ronald Waiswa from risk management and modelling, Susan Nakato from corporate performance reporting, and Patrick Lumala Zzimbe from research statistics and policy analysis. Each member of the team brought a unique skillset to the project, while the Assistant Commissioner Milly Nalukwago provided strong leadership support.

The study employed various methods including reviews of primary and secondary literature, data analysis, and interviews with key informants. The literature review covered academic and newspaper articles, lifestyle magazines, parliamentary hansards and domestic laws. This was key for understanding the definition of HNWIs as a category and gaining insights about taxing and engaging with this group from the experiences of other jurisdictions. Dr Kangave advised the URA team members on methodology for data matching exercises, which they carried out.
out using the URA’s internal data sets. This allowed the team to identify potential HNWIs, as well as the strengths and weaknesses of the administrative system. The team also conducted interviews with key informants, which was greatly aided by the Assistant Commissioner sending individual emails to the commissioners, managers, and officers to request their participation in the study. She also arranged official introductory letters for participants outside the URA such as officials from the Ministry of Finance, local government, national and commercial banks, employees of the ‘Big Four’ audit firms, tax lawyers and academics.

The research established that there are HNWIs in Uganda, both in the public and private sector, who engage more in tax evasion than aggressive tax planning, and tend to invest their earnings in real estate. For example, in examining lawyers from top commercial firms, they found that out of 60, only 13 had paid personal income tax in 2013. They also found 12 people who had paid more than £14,000 in customs duties in 2014 without paying any income tax. Investigating a group of 71 high-ranking government officials owning large business assets (like hotels, schools and media houses), they found that only one had paid personal income tax between 2011 and 2014. Further, the companies the officials were associated with were largely non-compliant, with 47 out of 56 not paying any corporate income tax in 2013.

After the findings were presented to the URA management, they decided to establish a HNWI Unit with five staff members. In its first year of operation, the new unit collected over £4 million in additional revenue by identifying and engaging with HNWIs, upgrading software systems to flag compliance issues (such as mismatches between customs and domestic tax information), and putting a greater focus on taxing property rental income.

Dr Kangave assisted the URA team members in writing up the results as an ICTD Working Paper, which was reviewed by the senior management of the URA as well as internal and external peer reviewers from ICTD. At the ICTD’s Annual Centre Meeting in February 2016, URA researcher Ronald Waiswa presented the study and its findings, and in September the URA’s Commissioner of Domestic Taxes, Henry Saka, also presented it at the African Tax Research Network Congress, elaborating on how the findings have been translated into practice.

By working together very closely, the URA researchers and Dr Kangave were able to learn from each other and co-construct new knowledge very effectively. The URA researchers strengthened their skills in proposal writing, textual analysis, data interpretation, interviewing, writing, and presenting. Working closely with the team at the URA allowed Dr Kangave to better understand its operations and establish relationships with employees in different departments, while controlled access to the URA’s administrative data was crucial for the quality of the findings as well as their practical impact.

The UK’s Department for International Development (DFID), which funds the ICTD, hailed the project as a ‘fantastic’ example of value for money and highlighted it as ‘high

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Ibid.


impact’ in its first Research Review. The ICTD’s CEO Mick Moore noted that this project represented the first time a research problem was presented by African researchers from a revenue authority and carried out by the same researchers. The project clearly demonstrated the value of working in partnership, and the URA and ICTD will continue to work together in the future. Further, the research received wide media coverage throughout Africa, prompting public debate on the extent to which HNWIs are taxed. Since then, other revenue authorities in Africa have expressed interest in learning about how the research and implementation on taxing HNWIs was done, and are considering replicating the work in their own countries.

Researching tax compliance and progressivity in Rwanda
The collaboration with the Rwanda Revenue Authority (RRA) came about through contact between the African Tax Administration Forum (ATAF)’s Research Director Nara Monkam, the RRA’s Deputy Commissioner for Research and Planning Agnes Kanyangeyo, and the ICTD’s Research Director Giulia Mascagni. These women were interested in using administrative tax data to conduct experimental research, something that had not yet been done on the African continent. The RRA’s Deputy Commissioner General Pascal Ruganintwali had previously participated in the ICTD’s first short course on Tax and Development, and so was familiar with the Centre and its work. These connections and high-level support from within the RRA ensured the successful implementation of Africa’s first large-scale tax experiment.

Tax experiments are the most reliable way for revenue authorities to discover how to improve tax compliance. This is because it is difficult to get honest answers about dishonest behaviour through surveys, so although these can help to better understand taxpayer perceptions, they don’t accurately reflect taxpayer behaviour when it comes to the real consequences of tax evasion and avoidance. The existing literature offers insights into the drivers of tax compliance, but the experiments have mostly taken place in Europe and the United States, with no evidence from low-income countries due to the high degree of research capacity and commitment that is required. Thus, this project represents the start of investigating these questions in the African context, as well as providing guidance to the RRA on how to target their compliance strategies to raise the maximum amount of taxes in the most cost-effective way.

Before beginning the experiment, the

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14 An opinion piece titled ‘Why African Governments Should Tax the Rich’ by ICTD Research Officer Rhiannon McCluskey received over 30,000 hits on The Conversation Africa and was republished on almost 20 news sites including The East African, The Herald (Zimbabwe), Sowetan Live, IOL, SABC, the Southern Times, Moneyweb (South Africa), AllAfrica, Business Daily Africa, Latest Nigerian News, Ghana Web, EconoTimes, the Huffington Post, Quartz Africa, Ventures Africa, and the Somaliland Press. An interview was broadcast on two South African radio stations with over a million listeners.
researchers used the RRA’s administrative data to conduct a comprehensive analysis of the Rwandan tax system, including quantifying audit probabilities, compliance gaps, and tax burdens, for which there were previously little evidence. They found that Rwanda’s tax revenue is highly reliant on large taxpayers located in Kigali, and that many taxpayers declare non-positive income; they also found evidence that noncompliance is substantial.16 By calculating effective tax rates, the researchers also found that the tax system is less progressive in practice than 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.17

The research team then designed 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 taxpayers would voluntarily correct their tax declarations. The experiment used a sample of 2,000 taxpayers, stratified by size, location, and risk of evasion and avoidance. The sample was randomly assigned to the treatment group (which received a letter) or control group (no letter). The letters, written in English, French, and Kinyarwanda, offered taxpayers information about Rwandan tax law, which provides for sanctions of up to 60 per cent if underreported income is discovered through an audit, but much lower (about 10 per cent) if taxpayers voluntarily revise their declarations. Almost 600 personalised letters were successfully 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; when they did, their revisions were more than 200 per cent higher than the control group revisions.18 This experiment demonstrated that information letters can be an effective way to increase compliance by encouraging taxpayers to declare previously unreported income. The pilot also uncovered some practical issues in implementing this type of study in the African context, which led to innovations within the RRA. For example, the RRA adopted systems to automatically personalise messages to taxpayers, and fully digitised the process of letter preparation.

Building on the lessons learned from the pilot, the larger experiment sought to evaluate the effectiveness of different messages and delivery methods in increasing compliance. The team

17 Ibid.
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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 13,000 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. While small taxpayers were still quite responsive to deterrence messages, their contribution to the public purse is relatively small, and in general, Rwandan taxpayers responded more to friendly messages, either gentle reminders of deadlines or information related to the importance of tax revenues to finance public services. 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. The effectiveness of these cheaper channels, as well as non-deterrence strategies, is good news for low-income countries where limited financial and human resources constrains enforcement efforts. This is clearly evidenced by the fact that the experiment generated almost US$9 million in additional revenue for the RRA.

Conducting these experiments necessitated the involvement of many RRA staff and departments. While the RRA’s Head of Research Denis Mukama and his team were the closest collaborators, the study was approved by the Commissioner General’s Office and the Legal and Board Secretariat Department, the data was provided by the Information Technology Department, and letters were prepared and delivered by auditors in the Domestic Tax Department. The Taxpayer Service Department responded to enquiries, while various relevant departments took charge of improving processes highlighted by the project, such as new processes for keeping taxpayer contact information up to date, automatically personalising communications, and expanding the functionality of the SMS platform.

Before the study began, the Research Directors of ICTD and ATAF made two visits to the RRA to meet the staff, share the research ideas, and solicit their feedback on the design of the experiments. This not only established personal connections and buy-in from RRA staff, but also provided the researchers with invaluable insights into the Rwandan tax system and crucial input on the design and implementation of the experiments. The researchers from ATAF and the ICTD visited the RRA in Kigali several more times during the implementation of the study, seeking feedback at each stage, and working hand-in-hand with the RRA research team. They also provided training to RRA staff through workshops on proposal writing, experimental design, and the use of statistical software. RRA research staff also authored a paper based on interviews with authority staff and taxpayers in the treatment groups, which provides a more in-depth exploration of taxpayers’ reactions to the messages than can be measured by econometric analysis. The paper is being peer reviewed and will soon be published as an ICTD Working Paper.

In November 2016, the researchers presented


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their results to the senior management of the RRA, who are eager to put the findings into practice. The RRA Commissioner General praised the research’s contribution to informing the authority’s communications strategies to encourage voluntary compliance, which “is at the core of the RRA’s customer-oriented approach”. The research findings were also highlighted in the Rwandan press and described as ‘high-impact’ in DFID’s Research Review.

The project has also built an enduring partnership between the ICTD and the RRA, who continue to collaborate based on a memorandum of understanding that facilitates 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. The ICTD and ATAF also hope that the success of this research project will encourage more researchers and revenue authorities to engage in the rigorous evaluation of tax policies using administrative data, including through experiments.

Principles for productive partnerships between researchers and government agencies

All good partnerships are built on strong foundations of respect and trust. In a previous study, the most critical element identified by researchers and practitioners for a successful collaboration was a strong relationship based on trust. Researchers can help build trust by showing genuine respect for practitioners’ work, being ready to listen and consider their input, and being accessible through the course of the project. In carrying out collaborative research, it is also important that the expectations, roles, and responsibilities of each partner are clearly laid out and agreed upon. In the three projects described above, a key factor was that each was proposed by the revenue authorities themselves to help them answer practical revenue-raising questions. Thus, there was strong buy-in from the top management of the revenue authorities, which greatly assisted with the implementation of the research. Further, the research projects were co-designed from the beginning, with the opportunity for revenue authority staff to provide feedback on the research proposals and plans.

Visiting the RRA not only helped establish personal connections and buy-in from the RRA staff, but also provided the researchers with invaluable insights into the Rwandan tax system and crucial input on the design and implementation of the experiments.

This meant that the projects were designed with the reality of the revenue authorities’ operations in mind, and raised awareness and ownership of the project among the staff.

Another important principle is the commitment to leverage each partner’s complementary skills and be open to mutual learning. While researchers typically have a better understanding of research design and methods, practitioners have more knowledge of the context in which the research is being conducted. As researchers don’t know what they don’t know about a given tax administration system, practitioners can help provide them with a more detailed and nuanced understanding of it, and contribute significantly to the study’s rigour and utility. Therefore, researchers should actively seek practitioners’ involvement from the first phase of developing the research design, rather than approaching them with a plan already in place. Researchers should, as much as possible, visit the revenue authority in order to gain direct experience of the setting, as well as to explain the research process to internal stakeholders. Engaging relevant members of the revenue authority should continue throughout the research process, with conversations and opportunities to provide feedback before implementation, when the first results are obtained, when the first draft has been written, and before publication.

It is also valuable to integrate capacity building activities into the research project. Many members of the research departments in African revenue authorities lack a strong background in research, and thus would benefit from training in research design, collecting, managing, analysing and interpreting data using qualitative and quantitative methods, and writing up and disseminating research findings. Capacity building can also help foster ownership within the revenue authority, as those benefiting may feel more invested in the research and accountable for how it is conducted and subsequently utilised.

Over the course of these projects, it became clear to those involved that working together effectively across institutions necessitates effective communication and patience. It is helpful for partners to have an understanding of each other’s constraints, both in terms of resources and especially time. A partner may take more than a few days to respond to an email – perhaps the researcher is busy teaching or writing another paper, or the revenue authority staff member is swamped by a project or working to a deadline. Often, researchers may have to wait for data from revenue authority staff whose schedules and priorities are not centred on the research. The important thing is for partners to be patient, and communicate clearly with each other so the various constraints are understood.

When research projects involve using administrative data, additional principles must be adhered to. First, when the revenue authority shares its data, it should anonymise it, explain what it means to the researchers, and be open about any possible issues with the data. The researchers should ensure the

security of the data, and commit to not using the data for any other purpose other than what was agreed unless permission is expressly given. If the researcher finds problems with the data, they should alert the revenue authority, as this may help improve data collection and management processes. If the researcher cleans the data, they should also consider giving the cleaned version back to the revenue authority.

On the final outputs of the research, it is important to be sensitive to timing, format, and credit. For example, if the research touches on a controversial reform, the revenue authority should be allowed to embargo publication until an agreed amount of time has passed. On format, it is vital to deliver tangible products that are not only academic, such as peer reviewed articles, but also materials that are accessible and useful to the practitioners or policymakers, such as a research brief with clear recommendations.26 The materials should appropriately credit all the partners involved, and preferably include the main research collaborators from the revenue authority as authors. These revenue authority authors should also be given the opportunity to present the research in forums such as presentations to senior management or research conferences when the opportunity arises.

In working with ERCA, URA, and RRA, the ICTD has exemplified IDS’ ‘Engaged Excellence’ approach: by co-constructing knowledge, delivering high-quality research, mobilising impact-oriented evidence, and building enduring partnerships. The collaborative projects helped the revenue authorities answer questions relevant to their work, catalysed improvements in administrative processes, built research capacity, and delivered robust findings that have and will continue to inform tax policy. This success demonstrates not only the value of using administrative data for research, but the profound benefits that can be gained by establishing strong collaborative partnerships between researchers and practitioners.26

Further reading


Credits

This ICTD Summary Brief was written by Rhiannon McCluskey, Research Officer at the Institute of Development Studies and Milly Naluwango Isingoma, Assistant Commissioner for Research, Planning and Development at the Uganda Revenue Authority.

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