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**TAKING STATE-CAPACITY RESEARCH
TO THE FIELD: INSIGHTS FROM
COLLABORATIONS WITH TAX
AUTHORITIES**

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Abstract

No modern state can exist in the long term without effective taxation. Recent research emerging from close collaboration of academics with tax authorities has shed new light on how states can build such tax capacity. Using both randomized and natural experiments, these partnerships have not only opened access to new types of data, but have also stimulated new perspectives and research questions. While much of research in public finance had historically assumed that a tax in the law is a tax that is collected, exciting new research takes an empirical look inside the black box of tax administration. It addresses issues ranging from the role of information and digitalization, to taxpayer behavior or the link between taxation and citizens' relationship to the state. This paper provides a brief overview of some of this research, as well as practical advice for those interested in implementing research in partnership with tax authorities or other large public entities.

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Taking State-Capacity Research to the Field: Insights from Collaborations with Tax Authorities*

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March 2019

No modern state can exist in the long term without effective taxation. Recent research emerging from close collaboration of academics with tax authorities has shed new light on how states can build such tax capacity. Using both randomized and natural experiments, these partnerships have not only opened access to new types of data, but have also stimulated new perspectives and research questions. While much of research in public finance had historically assumed that a tax in the law is a tax that is collected, exciting new research takes an empirical look inside the black box of tax administration. It addresses issues ranging from the role of information and digitalization, to taxpayer behavior or the link between taxation and citizens' relationship to the state. This paper provides a brief overview of some of this research, as well as practical advice for those interested in implementing research in partnership with tax authorities or other large public entities.

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1. Introduction

Strengthening state capacity and the ability to effectively and fairly collect taxes is a key priority for many governments around the world. Modern states execute a broad range of roles, ranging from assuring security, rule of law, and infrastructure to providing services in the areas of education and health, or social programs. In order to be able to effectively implement these policies, countries need to acquire the ability to enforce compliance with tax obligations. A growing literature in economics stresses the importance of such state capacity for the development of a functioning state and a functioning economy (e.g. Besley and Persson 2009, 2013).

Four key considerations provide impetus for policy makers and researchers to focus increasingly on tax capacity and domestic resource mobilisation, particularly in low- and middle-income countries: 1) Obtaining funding for government services and infrastructure investments. 2) Reducing distortions in the economy between different types of firms and economic activities, which can have negative impacts both on economic efficiency and societal fairness. 3) Strengthening and improving the relationship between citizens and the state. 4) Reducing dependence on international aid and donors.

While much of the research in public finance has historically assumed that a tax in the law directly leads to a tax in the treasury, in practice there can be a wide gap between those two (see Slemrod, 2007 and 2018). Tax evasion is a fundamental challenge for developing countries, where the informal sector often accounts for a substantial share of the economy. Even in the US, evasion is estimated to be 16-18% (Internal Revenue Service, 2016), and among high net worth individuals, it can be particularly high, even in rich countries with strong monitoring systems (Alstadsæter et al., 2018).

Through close partnerships of researchers with tax authorities, a recent strand of literature has focused more closely on understanding this gap and ways to reduce it. These collaborations have infused the public finance literature not only with a new wealth of data but also with a fresh set of questions, based on the exchange of ideas with the policy partners. One key topic that has gained prominence relates to the information extraction problem that tax authorities face. A major obstacle to converting a tax in the law into a tax in the treasury is the ability of the authorities to obtain reliable information about the amount of taxes that are due. Lack of such information is thought to be a major reason why tax collection as a share of GDP was historically much lower than in today's highly developed countries. This paper discusses some recent research on this question, both historically for rich countries and currently for emerging economies.

Access to information is a crucial and necessary, but not sufficient element of fiscal capacity. Other elements such as legal enforcement capacity, political constraints, corruption, citizen tax morale, and taxpayers' ease and ability to comply also play a crucial role. All these issues today represent active and exciting areas of research, many of which are being studied in close collaboration with authorities around the world. This paper provides an overview of some of these recent research projects and situates them both in a historical and practical perspective.

The paper is structured as follows. Section 2 discusses some stylized facts about taxation around the world and over time. Section 3 delves more in depth into one aspect that has made the historic increase in tax collection possible: access to information for the tax authority about taxable activities in the economy. Section 4 includes a review of some of the research conducted with tax authorities on a range of related topics.¹ Section 5 provides some practical advice on building and maintaining fruitful research collaborations with tax authorities, based on personal interviews as well as responses from an anonymous online survey with experienced academics. Section 6 concludes.

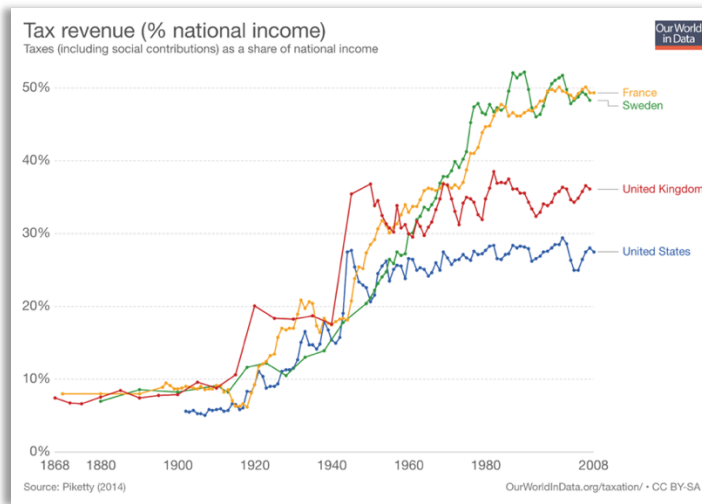
2. Some Facts about Taxation around the World

In today's rich countries, the state fulfills a large variety of functions that go far beyond what it did a century ago. The state builds and maintains advanced public infrastructures, manages a wide reaching set of social programs such as in the areas of health and education, implements substantial economic redistribution, and oversees regulation of complex industries. A century ago, states did not have the capacity or resources to take on all these roles.

Figure 1 shows tax revenue as a share of GDP in four of today's rich countries over the last century and a half. In all of these countries, tax revenue as a share of GDP was near or below 10% until the early 20th century. This is a similar share to that of today's low-income countries.

Figure 1

¹ Due to space constraints, this review focuses on research collaborations relating to topics of mutual interest between academics and tax authorities. We therefore do not include research conducted with tax authorities on issues unrelated to taxation and public finance or studies that rely on standardized tax data available through private institutions or national statistical offices.

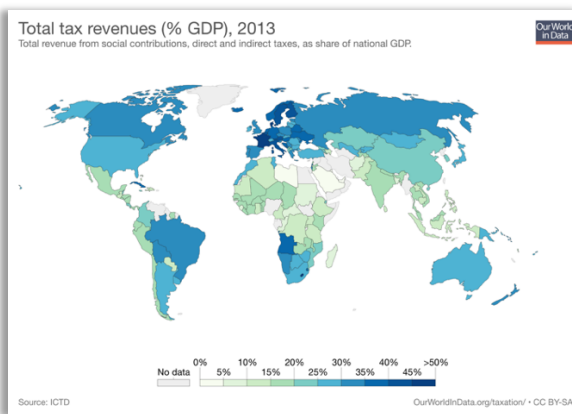


Source: Ortiz-Ospina and Roser (2018)

Lower tax collection a century ago was not merely a political choice. Countries simply lacked the capacity to collect significantly more taxes (e.g. Kleven et al., 2016). Throughout the 20th century, some countries acquired a much higher tax collection capacity and most high-income countries today have shares of tax/GDP between 25% and 50%.

Figure 2 shows today's tax collection as a share of GDP around the world. Countries with lower incomes per capita generally tend to have a smaller tax/GDP ratio. Combining a low GDP per person with less taxes collected as a share of GDP means the tax revenues of these states are much lower than those in rich countries.

Figure 2



Source: Ortiz-Ospina and Roser (2018)

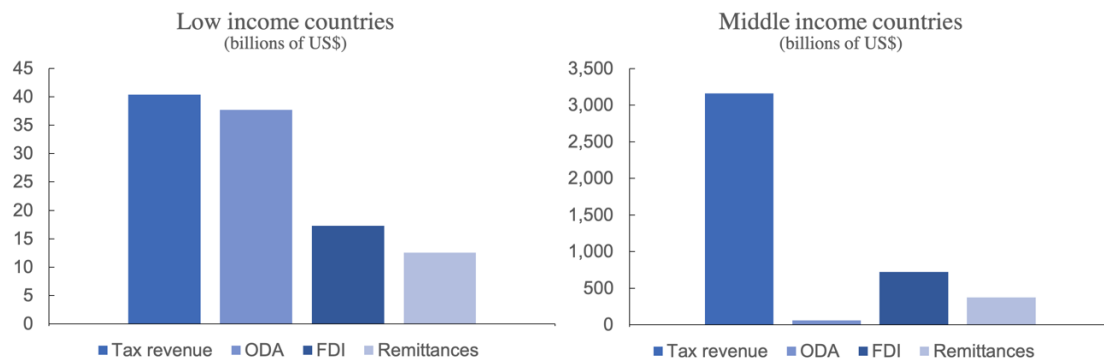
Strengthening tax capacity is therefore a key priority for many governments in low and middle-income countries. Four main reasons drive these efforts: First, as discussed above, many governments aim to build a larger tax base in order to raise money to fund infrastructure development and public services.

Second, the unequal tax enforcement that is prevalent in many low and middle-income countries can lead to large distortions in the economy between economic activities that are taxed, and other activities that effectively escape taxation through evasion (Skinner and Slemrod 1985). For a given size of government revenue, the burden on those who (have to) comply is correspondingly larger the less the rest of the population contributes. This can lead to very large tax rates for certain economic activities that are easier to tax (e.g. Gordon and Li, 2009). Overcoming these distortionary tax systems could therefore lead to substantial economic gains, as well as increase economic fairness.

Third, building a wider tax net may be a way to strengthen the ties and transform the relationship of citizens with the state (e.g. Tilly, 1985; Bates and Lien, 1985; Ross, 2004). A recent fascinating field experiment in the Democratic Republic of Congo tested this hypothesis (Weigel, 2019). Weigel worked closely with a Provincial Government to implement a randomized strategy of tax enforcement. In randomly selected neighborhoods, tax collectors went door-to-door to collect the property tax, while neighborhoods in the control group kept the baseline system that relied on self-declaration. This intervention substantially increased tax collection. Furthermore, citizens in the treated neighborhoods were also more likely to engage politically, both by attending townhall meetings with government officials and by submitting anonymous suggestions to the provincial government.

Finally, raising tax collection capacity also allows countries to reduce their dependence on aid or "official development assistance (ODA)". In some countries, aid is larger than the total amount of domestic tax collected, and in low-income countries overall these two types of income are of similar magnitude. In contrast, in middle-income countries tax revenues are on average over 50 times larger than international aid (Figure 3).

Figure 3: Tax revenues compared to other financial flows in low and middle-income countries



Source: World Bank (2011).

It is also worth noting that in both groups of countries tax revenues are on average significantly larger than foreign direct investment (FDI) flows or remittances paid by emigrants.

As states grow economically, aid tends to fall and tax revenues tend to grow. In this process, the state's investment in fiscal capacity and economic development can act as complements (Besley and Persson, 2009). It is therefore critical to ensure that the distribution of aid itself does not undermine the building of the state's capacity to collect and manage tax revenues, for example by bypassing the state (e.g. Kaldor, 1963; Djankov et al., 2008; Mascagni, 2016; Bizhan, 2017; Page and Pande, 2018). While bypassing the state in the disbursement of international aid may sometimes be easier for foreign donors in the short run, it has the potential to significantly undermine the building of state capacity.

3. Building Tax Capacity: Information Is King

One of the key challenges in tax administration is that, to impose any tax, the state needs information about the taxable transactions taking place in the economy. This is particularly difficult in less developed economies, where many firms are not registered, and even among registered firms a substantial share of transactions remains informal. Governments in less developed countries therefore tend to have much less information about taxable transactions (e.g. Gordon and Li, 2009 and Kleven et al., 2016).

Historical perspective

This information extraction problem is one of the main reasons why today's rich countries also used to have tax systems that focused on those economic activities that were easiest to observe. Much of taxation used to be collected in the form of tariffs or tolls (e.g. Hinrichs 1966, Cagé and Gadenne, 2018). One notable example are the Danish "Sound Dues". Taking advantage of the fact that trade through the

Sound Strait was both easy to monitor and hard to substitute away from, these tolls, collected from ships that passed through the Strait, made up about 2/3 of Danish state income in 16th-17th centuries.

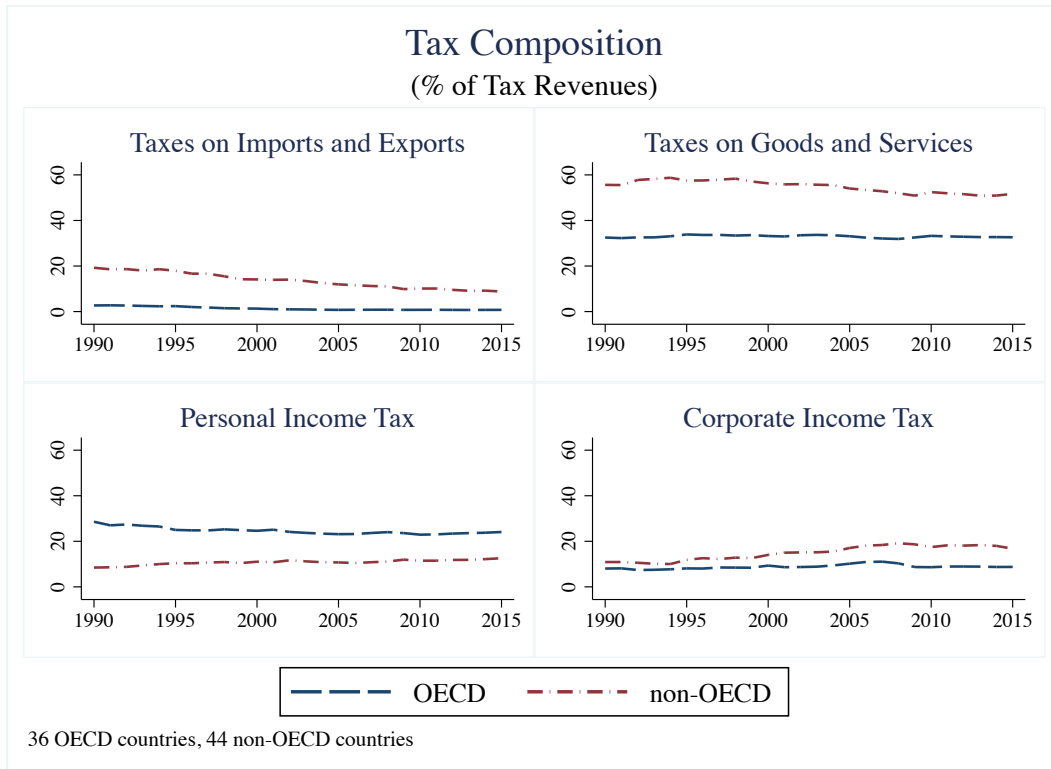
Figure 4



Note: Historic image of the Sound Strait, from “Liber Quartus: Urbium Praecipuarum Totius Mundi” (Braun and Hogenberg, 1617)

While today’s rich countries have vastly broadened their tax base, in developing countries the tax structures often still reflect this limited access to information (Gordon & Li 2009). Compared to OECD countries, low and middle-income countries tend to have a higher share of taxes collected in the form of tariffs on imports or exports, although the difference has fallen over time. This reflects mostly the persistent decline of tariff revenues that has taken place in developing countries (Cagé and Gadenne, 2018). They also tend to collect more taxes from firms, rather than from individuals, since collecting information from a smaller number of firms tends to be less challenging than monitoring the much larger number of individuals in an economy (e.g. Kopczuk and Slemrod, 2006; Slemrod, 2008). Figure 5 illustrates these tendencies for a number of OECD vs non-OECD countries.

Figure 5: Composition of Tax Revenues in OECD vs. Non-OECD Countries



Note: These figures represent the unweighted averages of tax revenues of OECD and non-OECD countries as they appear in the OECD Global Revenue Statistics Database. Source: OECD (2018).

Many recent collaborations of researchers with tax authorities have therefore focused on evaluating mechanisms aimed at increasing the information to which the tax authority has access. One key source of information in this context is “third-party reporting” (e.g. Kopczuk and Slemrod 2006, Gordon & Li 2009, Kleven et al. 2016). Such reporting happens when an agent in the economy has an incentive to report information to the government that includes evidence of a tax obligation by another agent. This then creates a so-called paper trail of information that the government can use for tax enforcement.

A well-known example of such third-party reporting happens in the case of wages. Employers file their wage forms to the government in order to deduct the wages from their profit tax, which then leaves a paper trail about the employees’ incomes. As countries grow their sources of third-party reported information, their tax collection capacity tends to grow (e.g. Jensen, 2019). For today’s low and middle-income countries, this possibility has a lot of potential, but also some limitations. The onset of modern computational power and digitalization allows for cross-checking very large quantities of information,

which makes the existence of third-party information potentially much more powerful. On the other hand, as we will discuss below, building an effective web of third-party information and using it for tax enforcement has its own challenges.

Studying the Role of Information for VAT Enforcement in Chile

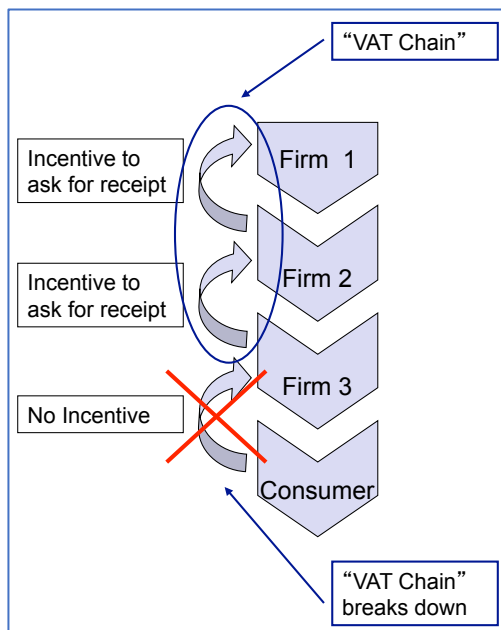
In a long-term collaboration with the Chilean tax authority, we studied the effectiveness of third-party information in the case of the Value Added Tax (VAT) through two large-scale randomized field experiments (Pomeranz 2015). At the time the pilots of these interventions were conducted, taxation was still thought by many to be an area where randomized field experiments were not applicable. Pioneering work by the Minnesota tax authority (Coleman, 1996) had implemented a randomized letter message experiment to study income tax compliance using normative appeals (Blumenthal et al., 2001) and deterrent messages (Slemrod et al., 2001). In collaboration with the Chilean tax authority (SII), we tried to take this method one step further and use it to evaluate the role of third-party information.

The VAT is paid by firms on the value-added portion of their sales, i.e. on sales minus input costs. It had long been thought to have a “self-enforcing” property by providing downstream client firms with an incentive to ask suppliers for a receipt, which they can use to deduct the input costs from the VAT. This creates an auditable paper trail along the production chain. Due in part to the claimed self-enforcing property of VAT, the number of countries that adopted a VAT has increased from 50 in 1990 to over 165 today (OECD, 2016). Yet rigorous evidence on the effectiveness of such a paper trail was scarce.

A big challenge was how to evaluate a policy, such as the VAT, which was already in place. It was not possible to exogenously vary who was subject to the VAT, nor was there a natural experiment of a policy change. We employed an “indirect use of randomization” (Khwaja & Mian, 2011), designing interventions that interacted with existing policies and allowed for testing of the underlying mechanisms.

Over a year-long phase of exploratory work and pilot testing with the research department of the tax authority, we developed two interventions. In the first, we studied how the VAT chain affects tax compliance nationwide. We exploited the fact that the “self-enforcement” of the VAT breaks down at the end of the production chain, since the final consumer does not have an incentive to ask for a receipt (see Figure 6).

Figure 6: The VAT Chain Creates a Paper Trail

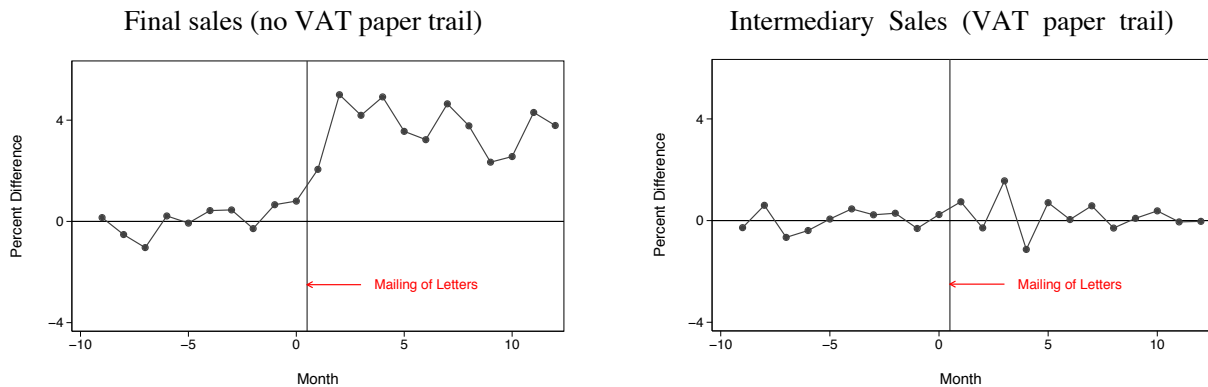


Note: This figure illustrates the differing incentives that firms face when making sales to other firms versus to final consumers.

The tax authority sent letters to over 100,000 randomly selected firms, informing them that they had been randomly selected for special scrutiny and might be audited. We analyzed whether the paper trail can act as a substitute for the audit probability by measuring whether increased tax enforcement had less impact where the paper trail was present. This was indeed the case: while there was a sharp increase in the reported sales to final consumers, firms did not noticeably change reported sales to other firms or input costs (see Figure 7).

All else equal, an audit can detect more infractions on transactions covered by a paper trail. The fact that firms nevertheless had a stronger response on transactions that do not generate a paper trail suggests that they had been evading more on these transaction prior to receipt of the letter.

Figure 7: Impacts Sales to Final Consumers vs. Sales to other Firms



Note: Percent difference between deterrence letter and control group in the probability of declaring more than in the same month of the previous year. From Pomeranz (2015, Appendix).

These results suggest that the VAT paper trail in inter-firm transactions had a pre-emptive deterrence effect. However, it still leaves open the possibility that firms had responded differently in these two types of transactions for other reasons, e.g. if they had understood the letter to focus more on final sales, or because it may be harder for them to change behaviors involving another firm.

We therefore designed a second intervention to observe the self-enforcement mechanism in action. In this experiment, we tested whether increasing enforcement on one firm leads to spillovers up the VAT chain. To do this, the tax authority selected 5,600 small firms suspected of tax evasion to be audited. Half of them were randomly selected to receive a pre-announcement of an upcoming audit, while the other half did not receive any advance notice.

In line with the prediction of the “self-enforcing” mechanism in the VAT, the audit announcement not only increased tax payments of the firms receiving the audit pre-announcement, but also of their suppliers. This suggests that firms expecting audits began demanding receipts from their suppliers as proof of their input costs. The demand for receipts created a paper trail documenting the sales of suppliers, forcing them to increase their VAT payments to avoid punishment for tax evasion. The fact that this spillover effect was not found among downstream client firms helps rule out that the effect was merely the result of word-of-mouth.

These findings suggest that verifiable paper trails can be a powerful tool for tax enforcement. Taxes such as the VAT may provide an advantage over other forms of taxation, such as a retail sales tax, because of the stronger paper trail. However, the results also show that information must be combined with deterrence to achieve effective tax enforcement. The mere existence of the paper trail created by a VAT

system does not incentivize firms to accurately declare tax liabilities if the risk of being audited is low. The firms in the second experiment had low compliance prior to announcing audits; heightening deterrence by preannouncing audits was necessary to trigger the effectiveness of the VAT paper trail and increase tax payments by supplier firms.

Limits to Enforcement based on Third-Party Information in Ecuador

The finding from Chile that it was the combination of information with effective enforcement capacity that led to tax compliance proved to be critical in a follow-up study that we undertook in collaboration with the tax authority in Ecuador (SRI) (Carrillo et al., 2017b). Ecuador had recently acquired the capability to electronically cross-check third-party information at a large scale. This allowed us to study the impact of the introduction of large-scale tax enforcement based on information cross-checks, and the challenges involved in such a policy reform.

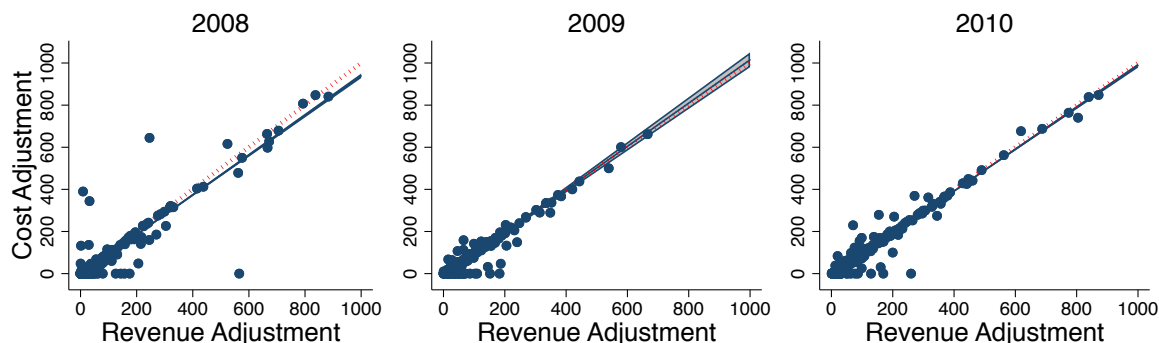
Using VAT data, as well as other sources such as credit card sales, the Ecuadorian tax authority developed estimates of a firm's revenues based on third-party information. Almost 8,000 firms were notified about large discrepancies detected between the sales they had reported and third-party estimates. The tax authority hoped that this would lead to a large increase in tax collection. However, the impact was below expectation, along two dimensions.

First, a large share of firms did not respond to the message. They anticipated -correctly- that the government did not have the capacity to formally audit and process the legal enforcement on such a large number of firms in a short period of time. When overall compliance is low, firms can rationally assume that government cannot prosecute everyone.

Second, among the firms that did respond and increased their reported revenues, there was a large compensating reaction: they also increased their reported costs by a similar amount, leading to only small increases in tax payments (see Figure 8). When third-party reporting is available on one margin of the tax declaration but not on others (in this example costs), the effectiveness of third-party reporting for tax enforcement can be severely limited. This concern can be an argument in favor of forms of taxation that provide third-party information covering the full tax base, as in the case of the turnover tax, as suggested by Best et al. (2015).²

² The reason this is difficult to achieve in the context of the VAT is that in settings of partial information, third-party reporting provides a lower bound. If firms report sales below the third-party reported amount, this

Figure 8: Firms Increased not only Reported Revenues, but also Reported Costs



Note: Amounts of revenue adjustment and cost adjustment in the firms' tax filings in response to the notifications in thousands of USD. From Carrillo et al. (2017b).

What does this imply for the role of third-party reporting as a tool to develop tax enforcement capacity? On the one hand, these results show that paper trails are not a panacea and not something that can be turned on and become effective immediately like a light switch. On the other hand, third-party information can still play a very important role in a number of ways.

First, when some transactions and firms are compliant with third-party reporting, authorities can focus their scarce auditing resources on the rest of the economy. Second, the deterrence power of paper trails can be built and strengthened over time. When firms report more costs, they have more incentives to ask for receipts, thereby increasing the coverage of the paper trail. The more firms comply and the more transactions are covered by paper trails, the more credible it is that authorities will clamp down on the rest.

To build this deterrence power, it may be in the interest of tax authorities to only send a small number of notices of discrepancies in the beginning, such that they have the capacity to follow up with enforcement on all taxpayers who do not respond to the notice or respond in a highly suspicious way (such as increasing costs by the exact same amount as revenues, as in the Ecuadorian experience). Over time, an increasingly larger share of taxpayers will respond to such notices, and therefore an increasingly large number of notices could be sent with a constant capacity for follow-up on non-compliers.

is indication of under-reporting. However, a lower bound is not effective in case of costs, since misreporting on costs consists of over-, rather than under-reporting.

Growing Literature on the Role of Third-Party Information

A growing number of studies with tax authorities have contributed to our understanding of the importance and limitations of third-party reporting in different contexts. Kleven et al. (2011) undertook a large randomized field experiment with the Danish tax agency, which varied both the real and perceived probability of being audited on the personal income tax and measured evasion in randomized audits. Third party reporting seems to have a very strong effect in deterring evasion, and most evasion was concentrated on the small portion of income that was only self-reported.

Jensen (2019) takes a historical approach to this issue, analyzing third-party reporting on wages in a historical perspective. When work in the US shifted increasingly from self-employment to wage labor, this increased information about individuals' income for the government and led to a substantial expansion of state-level income taxes.

The monitoring effect cannot only flow from firms to employees, but also the other way around. In Mexico, employees started to receive written information about their employers' reports of their wages to the social security agency, which ultimately determine the employees' pension benefits. Kumler et al. (2015) show that underreporting of wages fell considerably for workers with stronger incentives to monitor employers' reported wages.

Research by Naritomi (2018) investigates the weak spot in the VAT, namely sales to final consumers. Working with the government of Sao Paulo, Naritomi evaluated the impact of incentives for consumers to ask for registered receipts. Consumers were rewarded with tax rebates and lottery tickets if they asked for their ID numbers to be reported along with the receipt. These new information trails increased retail firms' reported revenues by over 20%.

The differential ease to evade VAT in transactions with final consumers as opposed to sales between firms was further documented by Mittal and Mahajan (2017). In their study in the Indian state of Delhi, the authors show that after the government acquired the ability to cross-check buyer and seller records, VAT payments by wholesalers increased substantially more than those by retailers, who are more likely to sell to final consumers.

Much of the recent increase in use of third-party reporting is related to the growing digitalization of tax data (a topic extensively discussed in the book by Gupta et al., 2017).³ A number of papers investigate this directly. Ali et al. (2015) find that when the Ethiopian Revenue and Customs Authority (ERCA) required firms to use electronic sales registry machines, firms VAT payments increased significantly. Okunogbe and Pouliquen (2018) implemented a randomized field experiment with the government of Tajikistan, promoting the use of electronic tax filing. While it did not affect average tax payments and bribes, electronic filing seemed to increase horizontal fairness. Firms classified by the tax authority as "high evasion risk" increased their tax payments, possibly because the scope for collusion with tax collectors in person was reduced. In contrast, "low evasion risk"-firms reduced their tax payments, possibly because tax collectors had previously extorted unjustified payments from them.

Brockmeyer and Hernandez (2018) study the power of third-party reporting compared with withholding of sales taxes in Costa Rica. While introducing third-party reporting significantly increased sales tax payments, direct withholding by credit card companies led to a substantially larger increase. Again, information on its own is of limited use in the face of constrained enforcement capacity, so even though withholding does not provide any additional information, it can play an important role by changing the default payment.

Overall, this fast-growing area of research suggests that while third-party information and digitalization can play an important role for tax enforcement and create powerful new tools for tax authorities, information on its own does not provide a panacea. However, enforcement capacity and information trails can be complements to each other. Strengthening other aspects of tax capacity therefore remains important, and we will discuss recent research on some of these other aspects in Section 4.

4. Strengthening Tax Capacity beyond the Information Extraction Challenge

4.1. Early randomized tax experiments

The first ever randomized field experiments with a tax authority that we are aware of date back to 1967 and took place in the United States. Schwartz and Orleans (1967) cooperated with the American IRS to study what motivates tax compliance. They divided a sample of 374 taxpayers into two treatment

³ Digitalization and online technology have also found to lead to improvements in another area of public finance: government procurement. See e.g. Bandiera et al. (2009), Lewis-Faupel et al. (2016), Gerardino et al., (2017).

and two control groups. The treatments consisted of interviews conducted by the research team, with one version emphasizing sanctions as a reason to comply and the other emphasizing the moral duty to pay taxes. One control group was interviewed with no emphasized topics (placebo), while the other control group was not interviewed at all (untreated). The only significant increase in reported income relative to the placebo group occurred in the “moral duty” group.

This pioneering study was followed by a number of lab experiments, aimed at studying the impact of varying audit and penalty rates in a more granular way (e.g. Friedland et al., 1978; Spicer and Thomas, 1982; Becker et al., 1987; Alm et al., 1992). In line with the classical Allingham and Sandmo (1972) model of tax evasion, these experiments generally found that higher audit and penalty rates reduced non-compliance.

In 1985, the IRS started implementing a series of randomized audits, through the Taxpayer Compliance Measurement Program (Internal Revenue Service, 1996, 2006). The goal of these extensive auditing programs was to estimate the tax gap, i.e. the amount of tax that was not paid voluntarily and punctually, and the type of taxpayer who had particularly large gaps.

4.2. Policies to Promote Tax Compliance

Communication strategies by the tax authority

As discussed above in Section 3, the Minnesota tax authority undertook what is to our knowledge the first letter message experiment with a tax authority (Coleman, 1996; Slemrod et al., 2001; Blumenthal et al., 2001). These letter message experiments sparked a large series of follow-up studies to analyze the impact of different communication strategies on tax compliance. Hallsworth (2014), Mascagni (2017) and Slemrod (2017) provide comprehensive overviews of this literature. The most common letter experiments involve deterrence messages - which stress the risk of detection or the severity of penalties -

⁴ See e.g.: Torgler (2004, 2013), Wenzel and Taylor (2004), Wenzel (2005, 2006), Hasseldine et al. (2007), Iyer et al. (2010), Kleven et al. (2011), Ariel (2012), Del Carpio (2013), Fellner et al. (2013), Ortega and Sanguinetti (2013), Harju et al. (2014), Bhargava and Manoli (2015), Castro and Scartascini (2015), Kosonen and Ropponen (2015), Ortega and Scartascini (2015), Chirico et al. (2016, 2018), Dwenger et al. (2016), Guyton et al. (2016), Kettle et al. (2016, 2017), Manoli and Turner (2016), Bérigolo et al. (2017), Bott et al. (2017), Doerrenberg and Schmitz (2017), Hallsworth et al. (2017), Harju et al. (2017), Mascagni et al. (2017), Shimeles et al. (2017), Biddle et al. (2018), Brockmeyer et al. (2018), Gemmell and Ratto (2018), House et al. (2018), and Meiselman (2018).

and appeals to tax morale – which emphasize aspects such as the widespread social norm of voluntary tax compliance or the beneficial use of tax revenue. (For a great review of the literature on tax morale, see Luttmer and Singhal, 2014).

In general, deterrence messages tend to have significant impacts on tax payments (even though there are notable exceptions, such as Mascagni et al., 2017, in Rwanda), while the results on impacts of appeals to tax morale are more mixed. It would be interesting to further explore the underlying mechanisms. Do the effects differ because deterrence is more important for compliance than tax morale factors such as social norms, or because the letters are not equally effective in shifting beliefs? It seems plausible, for example, that letters from the tax authority are more likely to shift perceptions of audit risks than perceptions of social norms.

A number of randomized interventions with tax authorities investigated not only the content of the message, but also the method of delivery. Ortega and Scartascini (2015) and Dörrenberg and Schmitz (2015) find that in Colombia and Slovenia, respectively, messages delivered in person had stronger impacts on tax payments than identical messages delivered via other channels. Emails were found to be more effective than physical letters both by Ortega and Scartascini (2015) in Colombia and by Mascagni et al., (2017) in Rwanda.

Improving audit targeting strategies

Randomized deterrence messages can also be used as a tool to improve targeting of audits, as described in Pomeranz et al. (2014). Since audits are very costly, many tax authorities conduct careful analysis and use risk models to select which taxpayers should be audited (see e.g. Khwaja et al., 2011; Gupta and Nagadevara, 2007; Hsu et al., 2015). One challenge with many such models is that the risk factors used are often endogenous, for example, when they are based on results from past audits. This can lead to self-fulfilling cycles: the types of taxpayers that are ex-ante deemed more likely to evade are monitored more intensely, therefore more often found to be noncompliant, and then flagged by the model for additional audits.

Randomized deterrence letters can help to overcome this problem: taxpayers who strongly increase their tax payments in response are likely to have previously engaged in evasion. Tax authorities can combine letter experiment results with prediction models to see, which observable characteristics predict a strong response to deterrence.

Note: truthful communication on the part of the tax authority is very important. As discussed in the context of Carrillo et al. (2017b) above, the credibility and deterrence power of the tax authority is an important but fragile good. Empty threats should therefore be avoided.

Impacts of audits

A growing number of studies investigate not just the impact of a threat of audit, the general deterrence, but the effect of actually being audited, the specific deterrence. So far, these studies have mostly focused on high-income countries. In Denmark, Kleven et al. (2011) study both the effect of a higher audit probability and the effect of being audited on personal income tax payments. As discussed above, their key finding is that this increase in tax payments following an audit was entirely driven by self-reported rather than third-party reported income. DeBacker et al., (2018a,b) and Advani et al., (2017) also found lasting effects of audits on reported personal income in the US and the UK, respectively. Analogously, Guyton et al. (2018) find that when randomly-selected EITC claimants were requested to provide additional documentation to confirm their eligibility, they were less likely to claim EITC benefits in subsequent years. In contrast, DeBacker et al. (2015) found that US corporations temporarily increased their tax aggressiveness following an audit, presumably acting on the belief that audits rarely happen to recently audited firms.

Penalties

Direct evidence on the effect of different penalties remains scarce. Experimental variation is usually not feasible for legal reasons. A notable exception is Aparicio et al. (2011), who use a differences-in-differences analysis to estimate the impact of a reform in Ecuador. An increase in the management's personal liability for tax crimes, including the possibility of prison, was associated with a significant increase in corporate tax payments.

Spillover effects of tax enforcement

As discussed above in Pomeranz (2015), enforcement measures can go beyond the direct effects and lead to spillover effects to other taxpayers. In the VAT, this happens among trading partners along the supply chain. Rincke and Traxler (2011) study geographical spillovers of home audits for the Austrian broadcast tax. Inspectors visited households who did not pay the tax, to verify if they did not operate a TV and impose a fine if they did. Subsequently, other households in the same municipality also increased their tax payments. Relatedly, Drago et al. (2015) find that deterrence letters for the same broadcast tax also led to an increase in payments by neighboring households.

Boning et al. (2018) study spillover effects through tax preparers. Tax preparers play a very important role in the compliance behavior of many firms, and small firms often share an external preparer, rather than having a specialist in-house. Randomized in-person visits by a tax officers in the United States not only increased tax payments by the visited firm, but also had small impacts on other firms that share a tax preparer with the visited firm. Conversely, subsidiaries of visited firms somewhat reduced their tax payments, suggesting a possible reallocation of resources within the firm.

Strategic responses leading to bunching below enforcement thresholds

Two recent papers study the strategic response of taxpayers to enforcement actions. Almunia and Lopez-Rodriguez (2018) investigate the Large Taxpayers Unit in Spain, a program that subjects large firms to more and better audits. In response, firms kept their reported revenue under the program's threshold to avoid the additional monitoring. Carrillo et al. (2012) study the effect of discontinuous changes in the audit probability around withholding requirements. They find that there was substantial bunching of firms just above the withholding rate, suggesting firms tried to avoid the increased audit probability. In addition, firms who bunched near the threshold firms were more likely to misreport their sales and costs to the tax authority.

Positive incentives for tax compliance

Tax authorities sometimes use not only sticks but also carrots to promote compliance. Both in Argentina and in Montevideo, compliant taxpayers were entered in a lottery to win a reward. Researchers were able to study the impact of winning such a lottery (but not the overall effect of the existence of the lottery for compliers itself).

The nature of that reward seems to matter for the impact. In Argentina, a municipality rewarded 400 randomly selected compliant taxpayers with the construction of a sidewalk and public recognition in local media. Carrillo et al. (2017a) found that both the lottery winners and their neighbors increased tax compliance in response. In contrast, when the government of Montevideo awarded a yearlong municipal tax holiday to randomly selected compliant taxpayers, this had the opposite effect. Dunning et al. (2017) found that it led to lower compliance by the winners following the holiday. This may be an indication that habit formation plays an important role for tax payment.

4.3. Taxpayer Responses to Tax Rates and Tax Regimes

For a long time, public finance research has devoted substantial efforts to estimating the behavioral responses to legal changes in taxation, such as the tax rate or other aspects of the tax regime. Responses

can include both changes in tax evasion or avoidance and in real economic activity. Early empirical studies with tax authorities on the impact of the tax rate on evasion include those of the aforementioned Taxpayer Compliance Measurement Program (TCMP) of the American IRS. Using data from the TCMP, Clotfelter (1983) found that tax evasion was substantially higher for taxpayers with higher marginal tax rates, while findings by Feinstein (1991) were less conclusive. Consistent with Clotfelter's finding, the aforementioned study by Kleven et al. (2011) found that audits in Denmark reduced the amount of bunching at kinks of the schedule of the tax rate, which implies that those with a higher marginal tax rate had been evading more taxes prior to the audit.

A vast literature analyzes the elasticity of the tax base with respect to the tax rate, generally by using publicly available tax return panels in the US, or data accessed through national statistics offices in Europe (see e.g. Saez et al., 2012 for a review on the income tax). Recently, however, researchers have been able to cooperate with tax authorities in order to access novel administrative tax data to expand this literature. Chetty et al. (2013) study the effect of the EITC on wage earnings. Devereux et al. (2014) and Boonzaaier et al. (forthcoming) study the taxable corporate income elasticity in the UK and in South Africa, respectively.

Londoño-Vélez and Ávila (2018) worked with Colombian tax data and sources from the "Panama Papers" to study the impact of taxation on taxable wealth. Using wealth tax reforms and discontinuities in the tax schedule, tax filers lowered their reported wealth to reduce their tax burden. Most of this response appears to have been due to evasion and avoidance behavior, rather than real changes in wealth. In particular, tax filers misreported items subject to less third party-reporting, and offshored assets to places like Panama.

Tourek (2019) investigates firm responses to a tax reform in Rwanda aimed at reducing tax liability. Rather than reducing tax payments, the reform instead led to an increase in reported tax liability. Survey evidence reveals that many firms use past reported revenues as a benchmark and avoid filing reports that lead to a lower tax liability than in previous years. This is related to both their expectations about enforcement policies and uncertainty about their own true earnings. Such heuristic behavior is particularly prevalent among less educated and profitable entrepreneurs, leading to a regressive distribution of the effective tax burden.

The collaborations with tax authorities around the world has also engendered the study of taxes and tax regimes that are different from those in the US, which had been a focus of a large share of the preceding

tax literature. One such phenomenon are notches in the tax schedule, where the tax amount increases discontinuously above certain thresholds. Such notches are particularly prevalent in developing countries. They create strong incentives to reduce (or underreport) earnings to remain below the notch. Kleven and Waseem (2013) show in the case of Pakistan that even when the underlying behavioral elasticities are modest, the incentives created by notches are so strong that the observed behavioral response can be very large.

Another characteristic of tax systems in developing countries, as discussed by Gordon and Li (2009), is that they are often distortionary and lead to production inefficiencies. Best et al. (2015) study the trade-off between production efficiency and revenue efficiency, i.e. efficiency for tax collection. In Pakistan, the production-inefficient turnover tax reduced tax evasion on corporate incomes by up to 70%, compared to a production-efficient profit tax.

Consistent with these findings, and with Carrillo et al. (2017b), Bachas and Soto (2018) analyze the Costa Rican corporate income tax regime and find that cost deductions can represent a weak spot in corporate income tax enforcement. Notches in the tax schedule had a much stronger impact on reported costs than revenues, likely because it is harder for tax authorities to verify costs. They calculate that moving to a turnover tax might therefore be beneficial. Additionally, elasticities of corporate income are considerably larger in Costa Rica than those found by Devereux et al. (2014) for the UK. This likely reflects the weaker enforcement capacity of developing countries.

In countries with low tax capacity and large elasticities on the evasion margin, changes in the tax regime can have large impacts on tax collection. Waseem (2018) analyzes a reform in Pakistan that raised taxes on partnerships relative to other legal forms. Results from a difference-in-differences estimation show many affected firms changed their legal form or moved into informality, and the shift was so large that the net effect of the higher tax rate on revenue was negative.

4.4. Take-up of Tax Benefits

While an overarching concern of tax authorities is incomplete payment of tax obligations, implementing the tax legislation can also include the opposite concern: incomplete take-up of tax benefits, aimed at redistributing income, promoting investment, or other policy goals (see Currie (2006) for a more general review on non-take-up of social benefits). Bhargava and Manoli (2015) conducted a randomized field experiment with the IRS in California in which reminders were sent to individuals who were likely to be eligible for the Earned Income Tax Credit (EITC). This led to a substantial increase in claims for

EITC payments. Providing additional information aimed to reduce social stigma or emphasizing the low cost of claiming the EITC did not further affect take-up. However, Manoli and Turner (2016) and Guyton et al. (2016) show that the impact of reminders faded relatively quickly in the following years. Studying firms rather than households, Bustos and Pomeranz (2016) find very low take-up of investment tax credits in Chile. Less than 15% of potentially eligible firms requested the tax credit. This stems in part from firms which indicate no taxable profits or who file on eligible investments in their tax declaration. However, even among firms with both taxable profits and eligible investments, only about 50% of firms took the tax credit.

4.5. Incentives for Public Officials

While the research covered above focuses mostly on the behavior of taxpayers, a growing number of studies also focus on policy impacts of public officials such as tax collectors or politicians.

Three randomized field experiments stand out with regards to the study of incentives for tax collectors and their impacts on tax collection and on bribes: Khan et al. (2016, 2019) in Pakistan and Amodio et al. (2018) in the Kyrgyz Republic. Khan et al. (2016) find that while performance incentives for tax collectors led to higher tax payments by some taxpayers, they also increased bribe payment by others. This is consistent with the hypothesis that performance pay increases tax collectors' bargaining power vis-à-vis taxpayers. Khan et al. (2019) instead look at the effect of non-financial incentives, namely performance-based postings. These turn out to be almost as effective as performance pay, increasing tax revenue growth by over 30%. For governments with little fiscal space, performance-based postings can therefore be an interesting alternative to financial incentives. Amodio et al. (2018) study the impact of feedback incentives, in which tax inspectors' rewards were based on anonymous feedback by taxpayers. Consistent with the hypothesis that this reduces bribe-paying, they find that affected firms had lower costs and passed this on with lower prices for their customers. In addition, the paper by Okunogbe and Pouliquen (2018) shows that digitalization has the potential to significantly affect interactions public officials with taxpayers, as it can reduce the scope for public official's discretion in determining the tax liability.

Another way in which taxation can affect public officials is in the way it may affect politicians' expenditure decisions. One mechanism through which this may come about is that citizens who pay taxes may feel more empowered to exert pressure on elected officials. As discussed in section 2 above, Weigel (2019) tests this idea in the Democratic Republic of Congo and finds that tax enforcement can indeed increase citizen engagement. In line with this, Gadenne (2017) studies the impacts of a program that increased the tax capacity of Brazilian municipalities on the quality of government expenditures. This

program led to improvements in the quality of public expenditures (particularly strongly in areas with a local radio station), while comparable increases in the government budget due to federal transfers did not.

Finally, tax enforcement policies can also affect who is in charge of public policy through impacts on elections. Casaburi and Troiano (2016) analyze the impacts of a program to detect and formalize unregistered buildings in Italy, which significantly increased tax revenues and local government expenditures. As a result, local politicians from areas where the program was most intense experienced a substantial boost to their re-election chances.

Overall, as the short review in this section has shown, partnerships with tax authorities have sparked interesting new research avenues in many areas of the economics of taxation. Many key questions remain to be explored, and the growing number of collaborations between academics and policy experts in tax authorities promises to continue to provide new insights for both economic theory and practice. The following section provides some pointers for researchers and practitioners interested in building such partnerships.

5. The Increase and Nature of Collaborations with Tax Authorities

The number of collaborations between academic economists and tax administrations around the world has been increasing steadily over recent years. These partnerships take different forms and levels of intensity. They can involve data sharing to study questions of mutual interest, quasi-experimental evaluations of policy reforms, or the joint implementation of field experiments.

In this section, we draw on personal interviews as well as responses from an anonymous online survey with researchers engaged in this type of partnerships, to provide a descriptive view of what such research processes can look like and some practical advice. The survey was conducted in August and September 2018 among around 70 researchers who had conducted studies in collaboration with tax authorities aimed for publication in academic economics journals.

Respondents reflect a wide range of experiences, with 34% having undertaken projects with tax authorities in low-income countries, 37% in middle-income countries and 57% in high-income (OECD) countries. In most cases, researchers worked very closely with the tax authorities over an extensive period of time. Over half had been collaborating with tax authorities for more than 4 years. In about half of the cases, the academic authors had spent more than 3 months at the tax authority. In only a small number of

cases the collaboration focused exclusively on access to data. About half of the collaborations involved information sharing about the context beyond the data and feedback by the tax authority on the research findings. Over a third of the collaborations went beyond that and consisted of jointly developed research projects, with daily or weekly interactions.

Different collaborations with tax authorities often have similar phases, which can overlap or reoccur multiple times. This section summarizes some common experiences and advice from survey respondents on: 1) Establishing the relationship. 2) Exploratory qualitative analysis and potentially piloting of an intervention. 3) Data collection, confidentiality and academic independence. 4) Main data analysis. 5) Communication with the tax authority about the research results.

5.1. Establishing the Relationship

There are many different avenues to start a conversation with a potential government partner and build a strong foundation for a long-term research relationship. Essentially, this is a matching problem. Many tax authorities are interested in the work of academics, and many researchers are looking for a policy partner. The challenge is to overcome asymmetric information about where these potential partners are. For researchers interested in getting involved in this type of work, the main advice is therefore to knock on many doors and reach out to many people.

Among the survey respondents, 19% reached out to the tax authority directly in a cold call or email, while in 13% of cases the tax authority had reached out to the researcher. Conferences and events can be a useful platform to initiate a relationship: 20% of respondents started their relationship at such an event. In the remaining cases, the contact came about through a direct or indirect relationship: through an advisor or co-author or through a personal or professional contact.

One key ingredient for a successful partnership tends to lie in winning the strong interest in the research collaboration of at least one influential person in the tax authority. In cases where the collaboration involves more than data sharing, these internal partners can also play a crucial role in building support across sub-departments of these large public institutions. A couple of survey respondents pointed out that it was ideal to work both with a very senior person to have broad buy-in and with a mid-ranked person who is more involved in the day-to-day activities and who is less likely to be replaced in case of a change in political leadership. An additional practice that has developed in some locations is for a research-related institution to play a brokering role between researchers and public authorities. These

institutions have the potential to become long-term partners of public authorities, thereby reducing transaction costs for the researchers and potential risks for the public body.

Asked about the main reasons why partners in the tax authority were interested in research collaborations, six common themes stood out: 1) Learning about more effective ways to increase revenue collection and reduce tax evasion. 2) Learning about new research methods. 3) Leveraging their own data and being able to implement research projects that individuals in the tax authority were interested in but did not have the time to pursue on their own. 4) Opportunity to get an independent opinion on relevant policy issues. 5) Providing stimulating experience for staff who are interested in research. 6) Prestige for officials to work with famous academic institutions.

To be able to build and maintain a successful relationship, it was key for researchers to put themselves in the shoes of their research partners within the tax authority and to really take the time to learn about their institutional partners' experiences, perspectives, and needs. It is rarely the case that an idea that occurs to an academic researcher from a distance ends up corresponding exactly to the interests, priorities and feasibilities of the tax authority. This may be one of the reasons why almost 40% of research ideas emerged from a joint process of searching for topics of mutual interest. Survey respondents gave the advice to "listen to what the tax authority would like to know and build that into your research agenda" and to "do your best to look out for their interests and not only yours." Helpful information about how to build a success research partnership with practitioners can also be found in Glennerster (2014; 2015).

Even after the establishment of the relationship, many researchers invest significant time and energy in nurturing and strengthening that collaboration. When asked about which was the most serious challenge to the implementation and survival of the research project, 23% of respondents named setting up of the relationship and a similar share named dealing with turnover within the tax authority and other challenges in the relationship. In contrast, only one respondent ranked data analysis as highest, and over half of respondents ranked data analysis as the least challenging aspect of the project.⁵

By far the most repeated points of advice in our survey related to the importance of the depth and the breadth of the relationship. "It's crucial to have a permanent relationship", "Don't underestimate the bureaucratic issues", "Make sure the relationship lasts until the end of the project, for clarification about

⁵ Getting access to the data and implementing field work ranked in between the other choices.

the context of the data”, “Form close relationships with the people at the tax authority and talk to them often”, “Get to know individuals in the tax authority who are interested in research”, etc.

Concrete advice included the following: "Be extremely patient and realize that you are not (and should not be) their top priority. “Make sure you listen carefully to their feedback as they understand the data and institutional details much better than you – at the same time, be careful with the anecdotes they tell you.”, “Provide frequent feedback. Email every two months at a minimum about how things are going, and go to in-person meetings in addition.”

5.2. Exploratory Qualitative Analysis and Potentially Piloting of an Intervention

In order to strengthen the quality of the economic analysis, it is often very fruitful to conduct qualitative exploratory work, to improve researchers’ understanding of the context and help generating hypotheses and improving the interpretation of results. See for example Glennerster et al. (2018). Survey respondents frequently emphasized this point: “Try to embed yourself in the tax authority for a period”. “Listen and observe what’s going on in the country, in the tax office, on the news, etc.” “Go and listen to people in the tax administration. Go with a few loose ideas of what you're interested in, but most of all with an open mind and intense curiosity.”

In cases where the collaboration involves a randomized field experiment, conducting a pilot of the intervention before the large-scale study is an important step that can significantly enhance the quality and probability of success of the project. Piloting has important benefits both for academic and institutional purposes.

From an institutional perspective, a pilot intervention reduces the risk of unforeseen difficulties. Potential problems that emerge can be addressed at small scale before causing more serious difficulties. A pilot also allows for stronger implementation, and in cases where the project is controversial within the tax authority, it can help reduce concerns about potential problems with the intervention.

From an academic perspective, the pilot plays an important role in a number of ways. First, it allows testing whether the intervention indeed works in the way it was conceived. More often than not, there are unexpected responses or difficulties that arise, and the intervention can then be adjusted correspondingly. An informative pilot often combines a small-scale intervention with additional qualitative exploratory conversations to gain a deeper understanding of the context. It also makes it more likely that the large-

scale intervention will work as intended. Finally, the pilot can sometimes allow researchers to get baseline information that can be used for power calculations.

There are many excellent resources about both the econometric methods and the practical implementation of randomized field experiments. We will therefore not cover this topic in detail. The book by Glennerster and Takavarasha (2013) as well as the website of the Poverty Action Lab provide guidance on many technical and practical questions involved in running randomized evaluations. Some aspects can differ when running a randomized field experiment in collaboration with a government rather than a non-governmental institution, as discussed in Chabrier et al. (2017).

5.3. Data Collection, Confidentiality and Academic Independence

There are typically two types of data that may be involved in research projects of this nature: administrative tax data and survey data. One big benefit of research conducted in partnership with a large institution such as a tax authority is that much of the analysis can be implemented by using existing administrative data. This can substantially reduce project costs, as no surveys or project-specific data collection may be required. On the other hand, a key challenge is that tax data is highly confidential. Access for researchers is therefore always subject to varying degrees of restrictions, with the goal that researchers cannot identify individual tax payers in the data and that no data can leak to unauthorized persons. Almunia et al. (2018) describe two case studies of how to organize access to tax data and emphasize the importance of high data security and equality of access across researchers.

Data access and confidentiality can represent a hurdle for research. Choosing among five different aspects of the research project, over 30% of respondents indicated that getting access to the tax data and dealing with data confidentiality was the most time-consuming part of the collaboration. In contrast, the actual analysis of the data was judged by most respondents as the least time-consuming aspect. Managing the relationship with the tax authority, implementing fieldwork and preparing the data for analysis ranged in between.⁶

⁶ In the case of fieldwork, the responses were bimodal, with 30% of respondents saying it was the most time intensive aspect – presumably many of those having implemented randomized field experiments – while 33% responded that this was the least time intensive – presumably many of those focusing exclusively on analysis of existing data.

In order to grant access, even to de-identified data, tax authorities typically ask researchers to sign a legal agreement. One important point to consider in these data access agreements is the assurance of academic independence. While the tax authority has the prerogative to define the scope of the work that can be done with their data, it is inadvisable to sign any agreements that provide the authorities a veto right about whether or not the results can be published, as this could seriously jeopardize academic independence and research transparency. As one survey respondent put it: "You are not an employee of the government, but an independent academic. So do collaborate and use the tax authority's expertise, but do not compromise on the right to publish what you find." It is therefore important to clearly define the scope of the work ex-ante, and agree that all results within that scope can be published, independent of the findings.

5.4. Main Data Analysis

Working with administrative tax data provides its own benefits and challenges, as discussed extensively in Slemrod (2016) and Feeney et al. (2015). One key benefit of working closely with the tax authority is that researchers can gain many insights from the experts of tax administration who have a deep understanding of the data and the context. These experts can not only explain to the researchers how the different variables are constructed and defined, but also provide deeper insight for their interpretation. This allows the researchers to adopt the "mindset of a plumber" in their search for relevant academic insights (Duflo, 2017). Many of the survey respondents provided advice in this direction: "Talk to some of the frontline people who actually work with the data for administrative purposes, who are the main data creators and users", "You'll learn that some variables may mean different things than what you thought.", "Reserve a lot of time to understand the data structure".

Just as qualitative, exploratory conversations are helpful when designing the study, as discussed above, it is often very fruitful to return to such conversations after having implemented some of the quantitative analyses. The experts from the partner institution can often provide helpful feedback on preliminary research results. Their input on possible interpretation can lead to new hypotheses that can be tested in the data, or a deeper understanding of the context from which the quantitative results emerge.

5.5. Communication with the Tax Authority about the Research Results

After long periods of collaboration, with often significant costs on individuals within the tax authority in terms of time and effort, it is crucial that researchers take the time to share the results with the partners

in the tax authority. This can include two important, separate aspects: the research findings, and the research methods.

With regards to the methods, academics often have knowledge of new methods that those analyzing data within the tax authority are eager to learn. This may involve sharing of files describing how the researchers analyzed the tax data and teaching of the methods employed in the process. This can involve a variety of approaches, including workshops, sharing codes, and providing specific feedback for ongoing internal research in the tax authority. Over 40% of survey respondents reported that the tax authority had adopted research methods used in their projects for their own internal analysis.

In terms of sharing research findings, researchers take a range of approaches with varying degrees of involvement. All survey respondents shared the findings with the tax authority, and many used multiple channels in parallel. At the most basic level, researchers can send the academic paper to the policy partners. 70% of respondents did so. However, this by itself may be of limited use, as the technical nature of such documents is often only accessible to a small group of experts within the tax authority. About half of respondents therefore wrote a policy report and over 80% gave an in-person presentation of the results. One of the most effective approaches consists of meeting in-depth with the partners in the tax authority and thinking together about ways in which the results may be useful and may have actionable implications for the government. What academics should avoid in all cases is making promises about how learnings will be shared and then never follow through in the end.

Sharing of results can sometimes lead government partners to implement policy changes, large or small. Some of these changes are based on the direct research results of the academic paper. 64% of respondents indicated that there had been some policy changes as a result of a specific finding in their academic study. These impacts ranged from adjustments to the format of notices sent to tax payers, to changes to the auditing strategies and internal management structure, to legal reforms of the tax schedule. Results from the joint academic studies were also used by tax officials in policy conversations and negotiations both with other government entities and with international donors. In other cases, there can be “side products” of learnings that emerge during the collaboration, for example when academic collaborators notice some opportunities for improvement and make suggestions, which are not an explicit result of the academic study. Almost half of respondents reported such impacts. These ranged from helping in organizing the collection or management of data to improvements to internal logistics, to new ways of measuring employee performance and new approaches for auditing strategies.

6. Conclusion

State capacity and the ability to raise taxes in an effective, fair and efficient way are key foundations of the modern state. A growing number of research projects, implemented in partnerships between academics and practitioners from tax authorities, have helped to shed new light on these important issues. This trend has been fueled by a combination of increased availability of large-scale administrative data, a growing penchant of economists to combine quantitative data analysis with fieldwork-based research, and renewed interest of the economics literature for the role of institutions and the impact of specific administrative policies.

In a fruitful iterative cycle, this strand of the literature both tests existing theories and provides empirical puzzles that can generate new theoretical hypotheses. The wide range of geographical, economic and cultural contexts in which these research projects are undertaken, allows to build an increasingly rich picture of the mechanisms at play. Both theory and replications help gaining a deeper understanding about which effects are very context-specific, and which mechanisms seem to be robust across many settings (Bates and Glennerster, 2017).

As this strand of the literature grows, many additional research topics remain to be explored, including in areas such as the impact of tax enforcement on real economic activity, the role of social norms, the distributional implications of tax policies and tax enforcement, the role of discrimination in tax administration or the interplay of politics and power with taxation.

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