Survey on Total Tax Burden in the DRC, Final Report

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Executive Summary

This study of total tax burden and revenue leakage in the DRC was launched in April 2015 to estimate the total tax burden on households and businesses in the DRC, to understand the character of this tax burden and, to the extent possible, to produce rough estimates of the share of tax payments reaching the government treasury. To this end, the core of the study was a survey of approximately 2400 households across 300 sampling units in Kinshasa, North Kivu and Kasai Orientale, and an additional 700 businesses in Kinshasa and North Kivu. These surveys sought to capture all formal and informal tax payments, to both state and non-state actors, while adopting relatively broad definitions of both concepts—incorporating not only pure taxes, but also a range of user fees, licenses, fines, charges and contributions. The results offer a holistic understanding of the extractive burden facing households and businesses, and of potential revenue losses to government.

Alongside these core surveys, the project also included several complementary elements designed to ensure the robustness of the findings, and to deepen our understanding of the taxpaying process.

1. *A smartphone reporting system* designed to validate the survey data responses, and to allow us to track variation in tax payments over time.

2. *Information and advocacy experiments* designed to assess whether, and how, access to information and/or advocacy activities alters the burden of tax payments, and the ability of taxpayers to negotiate with collectors.

3. *A series of direct observation activities*, to track in detail the nature of the bargaining process between taxpayers and state agents, and assess differences across genders and levels of education

4. *Additional data to track the tax burden along the value chain for cassava*, which is a key consumption good in much of the country, in order to better understand the indirect tax burden faced by households.

The results of the survey offer an unprecedented look at the nature of the formal and informal fiscal burden on average citizens, and provide insight into the broader function of the Congolese fiscal system.

Key Insights

The tax burden on households is higher than is normally assumed, and reveals the DRC to be a high tax country at the level of households. Data from our household survey indicates that total formal and informal payments average about 11% of total household expenditures, with payments by median households of 7% of expenditures. In turn, data from the smartphone data collection system indicates that this significantly underestimates actual payments, as survey respondents fail to recall a wide range of more irregular, smaller, payments. We estimate that average payments are actually about 16% of total household expenditures, and reach a peak of almost 20% of household expenditures in Kinshasa and Goma. Such heavy burdens of direct taxes are higher, on average, than the burdens of direct taxes even in high tax countries in the West.

However, many of these payments do not reach the government budget, as payments reported by households dramatically exceed reported government revenue, indicating high levels of revenue leakage. We estimate that across the three provinces *at least* US$1 billion of payments made by households to state officials do not appear anywhere in local or central government budgets. This is more than 60% of all payments made to the state. In turn, survey responses indicate an additional US$1 billion in payments that are made to non-state actors, and thus similarly do not reach the state. Taking these into account, we estimate that about 80% of all formal and informal payments do not reach the government. Critically, these are conservative estimates, based on conservative assumptions about the revenue entering the government budget, and based on our lowest

estimates of total household payments. Using our higher estimates of total payments, and less conservative assumptions, it is very plausible that as much as 85% of all payments to state officials are not recorded in government budgets, and that about 90% of all payments (including those to non-state actors) do not reach the state.

This should not be interpreted simply as "lost revenue," that needs to be brought into the government budget by tightening enforcement, as payments may fail to reach the state for a variety of very different reasons. Some payments are made to non-state actors, some payments are used locally to pay salaries and provide services "off budget", while others are stolen through simple corruption. Simple corruption could in principle be "recovered" by curbing corruption among state officials. By contrast, the other payments appear to reflect a highly informal state—and thus have deeper causes, and raise different questions for reform. Research elsewhere—and official government statistics—indicate that transfers from higher levels of government to lower levels of government have consistently fallen far short of legislated levels. This has left local governments chronically underfunded. Local governments and local state officials have filled this gap by collecting a range of informal taxes and fees to pay for local services and local salaries directly, rather than the revenue being captured in the government budget. In general, this is unlikely to be an efficient means to pay local officials or to provide local services: it distorts incentives in favor or providing only self-financing services, and limits any potential oversight and cost control. But it is quite different from simple collusion and corruption. Large payments to non-state actors raise similarly complex questions. Rather than representing "revenue leakage", these appear in many cases to reflect taxpayers opting to support local non-state organizations, at least some of which are involved in local service delivery, rather than turning to the state. This, in turn, appears to be rooted in a pervasive mistrust of the state, discussed below.

The burden of taxes of all kinds is heaviest for low-income households, while high-income groups appear to frequently escape legislated taxes on income and property. Ideally, systems of direct taxation are designed to be progressive, such that higher income individuals pay a larger share of their income in taxes. However, we find the opposite in

our survey, with a clear pattern of higher relative burdens on low-income groups. Low-income groups bear a significant burden through payments for essential services, and other types of fees, licenses, rates, fines, contributions and other informal payments. These same payments, collected at relatively fixed rates, make up a much smaller share of expenditure for higher-income households. Illustratively, payments for education, water, health and electricity make up 76% of payments by low-income households in the survey, but only 41% of payments for the highest income quintiles of households. This discrepancy would normally be compensated by the fact that higher income households pay income and property taxes. But only a tiny portion of respondents in our survey report paying these taxes, which appears consistent with limited local and national revenue from these sources. Strengthening these two taxes likely holds the greatest revenue potential for government, and would be the most effective way to increase equity.

There is also significant variation in tax burdens within income groups, seemingly reflecting problems of tax system design and enforcement. In an ideal tax system taxpayers at similar levels of income should bear relatively similar tax burdens. However, this does not appear to be the case in the DRC, with respondents at similar income levels reporting widely divergent tax burdens. In Goma, for example, the survey data indicates that 25% of taxpayers pay taxes of 5% or less of total expenditures, while 25% of taxpayers bear a burden above 18% of total expenditures. This variation is, in turn, true within income groups as well as between them. This appears to reflect tax design. A very large share of reported payments are in the form of user fees, or charges related to specific activities, including important life events. As a result, those who engage in heavily taxed activities in a given year experience very heavy burdens, while those who do not may largely escape taxation. This argues for a simplified system designed to deliver more uniform fiscal burdens.

There is some evidence that female-headed households bear a higher relative burden of formal and informal payments than male-headed households, but this evidence should be treated with caution. Across the survey data, median tax payments by female-headed

households are about 12% of expenditures, while the equivalent figure for male-headed households is only about 7%. This is driven primarily by larger payments to access essential public services: water, health, electricity and sanitation (though not education). This may reflect more limited negotiating power, given that these are areas of significant informality and in which government officials enjoy significant leverage owing to control over access to essential services. However, this is only speculative at this stage, and it may equally be that female headed households consume more of these services. The latter would still imply that female headed households are disadvantaged by the informal financing of public services – but not that they pay more, for equivalent transactions, than male headed households. Questions about attitudes toward taxation and experiences of tax payment do not reveal major differences between male and female households, but instead only very tentative evidence that female headed household may face slightly greater sanctions for non-compliance. It is also important to note that female-headed households are, on average, somewhat wealthier than male-headed households, suggesting that they may not be representative of the broader experience of female taxpayers.

Overall, the largest part of the overall tax burden captured by the survey comes from formal and informal user fees to access essential public services (or their private substitutes)—education, water, health, and electricity. Because these are user fees, rather than taxes in a strict legal sense, there is a temptation simply to treat them as expenditures on goods and services. However, because these are essential services that are commonly provided—or at least subsidized—by governments, it seems essential to consider them when attempting to understand taxpayers' economic reality. Where the government fails to provide key public services effectively, this generates these extra costs for taxpayers. Based only on the survey data, these payments account for 67% of all payments, with education far and away the most important single cost, accounting for 40% of total payments.

However, the burden of payments other than user fees remains significant—particularly after accounting for underreporting in the survey. Data from the smartphone reporting

system suggests that taxpayers are very good at remembering larger payments to access public services, with payments reported in the smartphone system almost identical to those reported in the survey. They are also very good at remembering payments to religious organizations. By contrast – and consistent with expectations - respondents appear to have significant trouble remembering smaller, more irregular and more idiosyncratic payments to both state and non-state actors. As a result the survey appears to significantly underestimate the prevalence of these smaller, more irregular (and, one suspects, relatively informal) taxes, and thus overestimate the predominance of user fees. After accounting for this possibility we estimate that payments related to accessing essential services are likely only about 33% of total payments – though somewhat higher in Kinshasa and Goma, and lower in rural areas. Interestingly, these figures suggest that the higher tax burdens we record in urban areas are driven primarily by user fees to access services, likely reflecting in significant part greater access to and use of these services in urban areas. While these figures are tentative, owing to significant extrapolation from the smartphone data, they provide evidence that non-user fee payments are a significant burden on households.

Of total tax burdens in the survey, a significant part is informal, and to non-state actors, though the majority of payments are still understood by taxpayers to be "formal" and to go to the state. We estimate that more than 50% of all payments are understood to be 'formal' in urban areas, while 'formal' payments are larger, accounting for about 60% of the total value of tax collection. In turn, and unsurprisingly, informal payments are more pervasive in Kasai Oriental and rural North Kivu, where government presence is more limited. Across all areas payments to non-state actors are significant, amounting to greater than 20% of payments in Kinshasa and Goma, and rising to almost 40% in rural Kasai Oriental. Interestingly, even payments that are legally "informal" are often labeled "formal" by taxpayers in the smartphone reporting, reflecting the extent to which legally informal payments are deeply normalized and widely accepted.

Even for payments that respondents consider to be "formal" there is significant negotiation of how much is paid—with the level of negotiation appearing to reflect

differing scope for extraction by state agents around different types of payments. Overall, slightly more than 30% of payments in Kinshasa are reported to be negotiable, while an average of slightly more than 20% of payments are reported to be negotiable in the other survey locations. However, levels of negotiation vary dramatically across tax types. For example, in Kinshasa only 25% of water payments are reported to be negotiable, while 81% of electricity payments are reported to be negotiable. This appears to reflect different opportunity structures for collectors: they are much more able to cut off access to electricity, and thus have much greater power in seeking to negotiate payments.

We see evidence of extraction by state officials, and significant use of threats, though payments do not appear to be driven entirely by simple coercion. Across the sample about 10% of payments are reported to have been backed by threats of verbal or physical harassment, about 5% by threats of insecurity, and slightly less than 10% by threats of fines or imprisonment. These are high levels, particular for threats of harassment and insecurity, but are also far from universal. More commonly, about 70% of tax payments are made at least in part to avoid being denied access to specific services—consistent with the fact that significant share of payments are user fees of some variety. This may also be indicative of the limits of state power: the state can extract payment when citizens need access to services, but have more limited extractive power in other cases.

Despite the pervasive informality of fiscal payments, taxpayers continue to hold a strong general belief in the right of the government to tax—and in the value of tax payments for promoting national development. While pervasive informality may appear to signal a general unwillingness to pay taxes, 86% of respondents report believing that the central government has the right to collect taxes—significantly higher than an average of 70% across Africa. For local government the same figure is 80%, while 64% endorse the right of customary authorities to collect taxes. In the same vein, more than 70% of respondents express the belief that not paying taxes is wrong and punishable, as compared to an average of 49% across Africa. And, finally, 72.5% of respondents express a belief that the government needs to collect taxes to support development, as

compared to an African average of 66%. Overall, abstract belief in the right of the government to collect taxes appears to be higher in the DRC than in almost any other African country.

Taxpayers express this strong general belief in the right of the government to tax despite expressing low trust in government, and little confidence that tax revenue will be used productively. Trust in government appears to be lower than in the rest of Africa. For example, across Africa about 50% of respondents express at least some trust in parliament and local councils, whereas we find levels of about 20% in our survey. More specific questions about the likelihood that government will use tax revenues effectively have not been asked across the continent, but are notable. In our survey, about 70% of respondents express a belief that the government is likely to misuse funds, and an additional 15% believe that they are somewhat likely to misuse funds. This is significantly higher than the levels of 60% and 45% in two surveys in Sierra Leone—the only other country where similar research has been conducted.

Finally, despite widespread informality and low trust in government we see evidence that taxpayers remain more willing to pay taxes to the government when they have greater trust in government, and are more satisfied with public services. Across all of the sampling areas we see strong correlations between these variables. To be clear, this relationship should not be interpreted as causal—we do not have direct evidence that improvements in services or trust in government would lead to more positive attitudes toward taxes. But the data is consistent with this possibility, and suggests that improvements in government performance could be a useful means to strengthen tax collection and increase formality.

Policy Implications

The evidence makes clear that simply strengthening enforcement and oversight of tax collectors is probably not an appropriate nor sufficient answer to improving revenue collection. A broader focus on questions of equity, fiscal decentralization and service

provision is needed. Average taxpayers—generally with very low incomes—already pay significant formal and informal taxes. These payments represent an significant burden on the financial resources of households required in order to satisfy state and non-state demands and access essential services that are often provided or subsidized by governments elsewhere. There appears to be limited space or justification for additional extraction, on average, from existing taxpayers.

Instead reform should likely focus on reducing burdens on those who are already paying too much, increasing burdens on those who currently escape taxation, reducing the scope for illegal extraction from taxpayers, and pursuing more systemic reform aimed at bringing a larger share of existing payments into government budgets. A variety of steps could contribute towards achievement of these goals.

One goal of reform efforts should be to improve revenue collection and overall equity in the distribution of the tax burden by strengthening enforcement of income and property taxes. This study reveals inequalities across taxpayers in the level of taxes that they pay, which suggests high burdens on some taxpayers, and significant lost revenue from those who do not pay. Part of existing inequality stems from the fact that the taxes that are expected to be most important to both revenue and equity—income taxes and property taxes—appear to be relatively rarely collected, even in urban areas. This ensures that the wealthy pay comparatively few taxes as a share of income, while those with lower incomes bear an equal or heavier burden. This, of course, also results in lower government revenues overall. Official data from Kinshasa, North Kivu and Kasai Oriental indicate that taxes on rental income appear to be the most important source of local tax revenue, but that property taxes provide only a fraction of the same revenue. Meanwhile, both remain far below their likely potential in absolute terms: In North Kivu, for example, revenues related to property (including taxes on rental income) amount to less than US$3 per household according to government accounts, while our survey suggests that this low level of collection is an accurate reflection of the reality for most households.

Meanwhile, there is a strong case for simplifying the remaining tax system – effectively replacing the huge array of existing payments with a more narrow focus on a smaller number of productive and equitable sources of revenue. There are substantial differences in burdens among taxpayers at similar income levels. These uneven tax burdens appear linked to the nature of the tax system itself, which is dominated by a very wide array of taxes collected at relatively flat rates on specific types of activities. Those who engage in these activities have very high tax burdens, while others pay very little. Meanwhile reliance on direct payments for essential services eliminates significant potential for redistribution. At the same time, the complexity of the existing tax system creates broad scope for corruption in tax collection, as it generates confusion, and makes monitoring virtually impossible. Among other things, taxpayers themselves have limited understanding of what taxes they are expected to pay, and at what rates, thus making them much more vulnerable to informal demands. In turn, collusion between taxpayers and tax collectors also appears to be a strategy borne of necessity: if all of the taxes contained in the Congolese tax code were fully enforced, many individuals would be required to pay unmanageably large shares of income in taxes. In this sense, some measure of collusion may be an inevitable feature of an excessively complex system. By reducing the number of payments provided for under the law – potentially dramatically – greater equity and formality could likely be achieved.

The importance of, and potential for, simplification is apparent in official government data, which reveals limited revenue collection from most payment types. While most provinces do not have highly disaggregated revenue collection data, such data is available from North Kivu. It reveals that while the nomenclature contains over 400 potential payment types for local collection, only 157 of these payments actually deliver any revenue to the provincial budget. Of these 157 payment types, 10 types of payments account for 66% of all government revenue, 80% of all payment types provide $50,000 or less to the government budget, and 62% of all payments types provide less than $10,000. Illustratively, simply eliminating all payment types that currently provide no revenue, as well as the 100 least important payment types, would reduce total government revenue by

only 2%, while dramatically simplifying the system, reducing the scope for abuses and informality and, most likely, also reducing existing inequities.

In attempting to curb abuses there is also a tentative case to be made for strengthening the information available to taxpayers, and empowering organizations that may advocate against abuses on behalf of taxpayers. The survey evidence provides strong descriptive support for the idea that taxpayers may be more vulnerable to extraction owing to their lack of understanding of the tax system. In turn, those with stronger ties to the state are reported to enjoy advantages – something that seems to be reflected in the weakness of income and property taxes in particular. Building on these insights, we have studied the impact of improved information and advocacy support in helping taxpayers to negotiate more effectively with state agents. While the results are not perfect, they offer suggestive evidence that such measures can help taxpayers to resist demands for extraction, thus improving equity in the tax system and reducing informality.

However, improving the tax system almost certainly also requires more systemic reform, beginning with efforts to strengthen intergovernmental transfers. Legally mandated fiscal transfers from higher levels of government are rarely, if ever, made in full, thus leaving local governments underfunded, and struggling to finance local salaries and services. In many cases local user fees and demands for informal payments appear to be efforts to finance local costs that should otherwise have been funded by transfers from higher levels of government. In so far as this story is accurate much of the revenue that does not reach the government is *not* 'revenue leakage', in the sense of revenue that is simply being lost to corruption and collusion. Instead, the missing revenue is state financing that is occurring outside of the government budget, without formal record-keeping or oversight. Curbing informality may thus be very difficult without a parallel strengthening of inter-government transfers, and rationalization of local staffing.

Finally, because taxpayers are currently making a significant share of payments to non-state actors, successfully bringing more revenue "on-budget" is likely to require improvements in service provision, and strategic thinking about the respective roles of

government and non-state groups. An initial response to evidence of large payments to non-state actors might be to suggest that the government move aggressively to minimize these payments, capture that revenue within the government budget, and begin to fill those gaps in services. Over the long-term this may be a sensible reform strategy—at least in some cases. However, over the short-term this seems less likely. Not only are non-state actors filling gaps in service provision that the government appears to struggle to fill, but in many cases they appear to be as or more trusted than the state. As a result, the government would likely be well served to think about reform in more incremental—and potentially more cooperative – terms. Meanwhile, any effort to displace non-state actors will be aided by building public trust in the state through improved service provision.

1 Introduction

This study of total tax burden and revenue leakage in the DRC was launched in April 2015. The goal was to conduct an interconnected set of large-scale surveys designed to estimate the total tax burden on households and businesses in the DRC. Where possible, these data on reported tax payments were intended to be compared to official information on local government revenues in order to produce rough estimates of the share of tax payments reaching the government treasury. The study also aimed to conduct complementary data gathering to better understand the nature of tax negotiations in practice, the impact of information and advocacy on tax payments, and the overall impact of tax on the value chain for one essential commodity, cassava.

To this end, the core of the study was a survey of approximately 2400 households across 300 sampling units in Kinshasa, North Kivu and Kasai Orientale, and an additional 700 businesses in Kinshasa and North Kivu. These surveys sought to capture all formal and informal tax payments, to both state and non-state actors, while adopting relatively broad definitions of both concepts—incorporating not only pure taxes, but also a range of user fees, licenses, fines, charges and contributions. This reflects a desire to understand the broad "tax" system from the perspective of taxpayers, by capturing all of the payments that households and businesses are commonly required to make to state actors, or to non-state actors performing activities generally associated with the state. This allows us to offer a much more detailed understanding of the nature of these extractions as they happen in practice, of their impact on households and businesses, and of potential revenue losses to government.

In addition to information about formal and informal tax payments the survey also collected detailed information on experiences, understanding and perceptions of taxation, on the characteristics of different localities and on the wealth and other characteristics of respondents. The goal is not only to quantifying total tax burdens, but also to understand how tax collection transpires in practice, how these burdens are understood by taxpayers,

what they believe they receive in return, and how tax burdens vary across geographic areas, across income groups, across genders and across levels of education. Because the focus is on the majority of taxpayers, most of whom are low income, the information gathered in the survey relates overwhelmingly to taxes collected by local government officials, and to informal payments at the same level, as national income and sales taxes are paid primarily by a very small group of large businesses and, to a lesser extent, wealthy individuals – a situation that is common to almost all countries in sub-Saharan Africa.[2]

Alongside these core surveys, the project also included several complementary elements designed to ensure the robustness of the findings, and to deepen our understanding of the taxpaying process.

1. *A smartphone reporting system*, in which 330 respondents in Kinshasa used smartphones to report tax payments on a weekly basis over the course of 3 to 4 months. This was designed to validate the survey data responses, and to allow us to track variation in tax payments over time.

2. We employed the smartphone reporting system in order to implement *information and advocacy experiments* designed to assess whether, and how, access to information and/or advocacy activities alters the burden of tax payments, and the ability of taxpayers to negotiation with collectors.

3. *A series of direct observation activities*, to track in detail the nature of the bargaining process between taxpayers and state agents, and assess differences across genders and levels of education

[2] As described in what follows, only 2 respondents across more than 200 households report paying income taxes. It is possible that additional taxpayers may have income taxes deducted from their salaries as withholding tax without being aware of it, but we believe that this would be rare, and would not alter the basis story told here.

4. *Additional data to track the tax burden along the value chain for cassava*, which is a key consumption good in much of the country, in order to better understand the indirect tax burden faced by households.

The study is highly innovative, as similarly detailed data gathering about tax burdens and potential revenue leakages has, to our knowledge, never been carried out anywhere in Africa or the developing world. This study thus represents a major innovation in the study of formal and informal taxation in low-income countries, while also shedding important new light on the realities of taxation in the Democratic Republic of the Congo.

The remainder of the report proceeds as follows. Section 2 provides a review of existing evidence and of the context for the study in the DRC. Section 3 provides a more detailed introduction to the methodology of the study, including key definitions and concepts. Sections 4 and 5 report key results from the household and business surveys, while Section 6 reports key results from the information and advocacy experiments. Section 7 then summarized key messages, considers potential policy implications and concludes.

2 Background and Existing Evidence

Responding to the challenges of conflict, state weakness and limited accountability, the DRC government embarked on a formally ambitious program of decentralization beginning in 2008. The need for increases revenue to fund public services was an important government priority during this process, and the decentralization reforms called for expanded transfers from the central to local level of government, and offered local authorities substantially expanded tax powers. Proponents of revenue decentralization, both in the DRC and elsewhere, highlighted a series of potential benefits. Decentralization may encourage expanded revenue collection and service delivery, thus spurring broader state building. Additionally, decentralization brings government close to the population, allowing for closer alignment of tax and expenditure policies with popular preferences and characteristics, and encourages popular engagement, greater access to knowledge about the tax code, and substantially greater

scope for citizens to bargain with local governments (Jibao and Prichard, 2015; Paler, 2013).

Under the decentralized revenue system the central government retained control over the most important tax types: taxes on international trade, the value added tax (VAT) and taxes on corporate and personal income. They also shared control over the taxation of resource firms with provincial governments. Given central government control over the major revenue sources, the system of fiscal decentralization called for central governments to transfer a "retrocession" of 40% of centrally collected revenues back to provincial authorities. Provincial authorities are, in turn, required to transfer 40% of those revenues to sub-provincial local authorities, known collectively as *Entites Territoriale Decentralizer* (ETDs): *Chefferies*, *Secteurs*, *Villes* and *Communes*. Both the provincial and ETD authorities were also granted significant fiscal autonomy, with each level of government responsible for wholly owned taxes and fees, and the provincial government empowered to collect "Common interest taxes" to be shared with ETDs.[3] At the time of writing all provincial governments had established provincial revenue agencies, while various accounts suggest significant expansion of local revenue-raising across the country (e.g. Englebert and Kasongo 2014).

However, while the potential for strengthening local revenue collection—with corresponding benefits for service delivery and accountability—is widely understood, experiences in the DRC to date have highlighted two interconnected concerns. First, the system of fiscal transfers has not been implemented according to the law. The central government appears, at best, to have transferred only about half of the legally required retrocession to provincial governments, the majority of which are in the form of payments to de-concentrated state employees. In turn, provincial governments have not transferred their legally required 40% of those already reduced funds to ETDs, nor have they consistently shared revenue from the TICs. This has left both local levels of government chronically underfunded, and in need of resources. This has led both

[3] The most notable taxes in this category are the business license (patente), professional tax and road tolls.

provincial and local government to energetically employ their new revenue raising powers in search of revenue. Englebert and Kasongo (2014), among others, document the rapid proliferation of new taxes at the local government level.

The proliferation of new taxes at the local level, coupled with more aggressive collection efforts, emerged as a growing source of concern to external observers and government alike. The new taxes appeared to be frequently arbitrary, highly economically inefficient and prone to imposing heavy, regressive and unpredictable burdens on taxpayers. In some cases multiple levels of government were reported to be taxing the same activities multiple times. Meanwhile, the central government worried that sub-national governments were collecting significant new revenue, but that the revenue being collected was not reaching the government budget. These concerns are not unique to the DRC. So called "nuisance taxes" have been a concern across the continent. But the scope of the issue in the DRC appears unique, with the numbers of taxes, extent of informality and potential for confusion reportedly exceeding that seen elsewhere.

In response, in 2013 the government introduced a new official list of tax assignments across each level of government (the *nomenclature*) in an effort to limit the imposition of arbitrary or particularly economically distorting taxes by lower levels of government. However, while the nomenclature nominally offers taxpayers a means to resist taxes that are not listed, in practice it is unclear whether this list has been effective in limiting the introduction of new taxes, or in empowering taxpayers—in significant part because the nomenclature still listed more than 400 tax categories available to provinces and ETDs, thus ensuring both enormous scope for taxation and significant potential for ambiguity and confusion.

The combination of the chronic underfunding of local governments by central government, and the proliferation of local government taxes, led a growing number of observers to view the local state apparatus as essentially self-financing. In a classic Weberian bureaucracy, revenues are collected by taxpayers and the users of services, remitted to the government budget, and then used to pay for salaries and public services.

By contrast, a variety of studies argued that the local Congolese state came to function very differently: both salaries and services were funded directly through fees imposed on citizens. A portion of these fees were retained by state officials—many of whom receive little or no official salary—with the remainder used to finance state functions that lacked necessary funding from central or provincial governments. Englebert and Kasongo (2014) correspondingly argue that in many cases the first concern of local state officials was identifying means to extract revenue to pay their own salaries. One implication is that the level of payments being made by citizens may be much larger than the revenues reported in the government budget.

However, despite an emerging view of the dysfunction of decentralization and the local state, concrete evidence of these processes has remained relatively limited and fragmented. Englebert and Kasongo (2014) provided the most explicit account of the dynamics described here, but explicitly note the absence of concrete data about the extent of the tax burden—both formal and informal—affecting taxpayers. Other studies have highlighted the pervasive informality of the system, arguing that "taxes" collected by state officials are often not part of the tax code at all, or are negotiated between tax collecter and taxpayer, with little revenue flowing back to the government. Some have linked this process explicitly to the legacy of the Mobutu era in which public servants, including the military and police, were encouraged to self-finance their salaries and operating costs through informal and predatory taxation (Weijs, Hilhorst and Ferf, 2012). De Herdt and Wagemakers (2010) similarly demonstrate that the weak central state in the DRC enables local state actors to use their political connections or feigned ignorance to extract taxes with no legal foundations.

Meanwhile, several studies have highlighted extensive payments, high levels of informality and significant revenue leakage in specific sectors. ODEP (2013) studied tax payments in major market in Kinshasa, and uncovered tax burdens of about $150 per year for market traders, of which only a small fraction appears to reach government coffers. Research undertaken by Titeca and Kimanuka (2012) at Congolese border crossings reveals that informal taxes collected by customs agents are widespread—and often

collected by a wide range of different agencies including the military—and that traders often prefer to pay cheaper, informal taxes than paying the formal tax. Some literature has suggested that the collection of taxes at border crossings has also exposed women to higher levels of informal taxation, both because they are more likely to be traders and more likely to be physically and sexually intimidated into making payments (World Bank 2011). In the conflict-affected regions of Eastern Congo, Van Damme (2012) shows that `improving' the security situation involved the entry of a large number of state actors (including the military, the national police, the national intelligence services, and other government departments) where the vast majority of state services collected illegal taxes, arbitrarily arrest or illegally detain people for money or demand large payments just to do their job. Research by the DFID-funded Elan RDC (2014a) similarly found very high taxes on coffee exporters, collected by a wide array of poorly coordinated government agencies, with major bureaucratic hurdles and delays designed to extract additional payments. A parallel study indicated that taxes and fees increase the cost of river transport by about 20% (Elan RDC, 2014b).

Finally, and perhaps most importantly, an array of studies have highlighted the very high costs to citizens of accessing many basic public services—most notably education—owing to the absence of adequate central government funding, and the corresponding reliance on local service providers and informal user fees. Existing studies suggest that 70% of health costs and 90% of education costs may be covered by these local fees. While these payments are not "taxes" in the formal legal sense, they look very much like taxes to households: they are required payments, coerced by the threat of exclusion from basic public services. Whereas, in theory, these public services are to be provided by the government using existing tax revenues, in practice, additional payments are required at the point of service, thus multiplying the effective tax burden on households.

Ultimately, existing studies have offered an initial picture of the reality of taxation at the local government level. They highlight the proliferation of an incredible range of local governments taxes, high levels of informality and negotiation, high levels of "revenue leakage"—in the sense that revenue do not return to the government budget—and very

high burdens of taxation for particular activities and sectors. However, this picture is still very incomplete. Accounts of the proliferation of taxes and informality are impressionistic, but have not been accompanied by data capturing the actual pervasiveness of these activities, nor the overall burden on taxpayers. While there is emerging evidence of heavy tax burdens in particular sectors—market traders and border-crossings in particular—it remains unclear to what extent this applies more broadly, or whether some sectors and activities are heavily taxed, and others relatively unaffected. This limits the potential for estimating the extent of revenue that is being collected locally, but which does not reach the government budget. And, finally, we know little about variation in tax burdens across population groups or geographic areas. The remainder of this study aims to fill these gaps.

3 Description of Data Gathering

In order to estimate the total tax burden in the DRC, we implemented two parallel data gathering strategies. First, a survey of 2400 households in Kinshasa, North Kivu and Kasai Orientale, and of 700 businesses in North Kivu and Kinshasa, which asked respondents to report to tax payments, by category, over the previous year. And, second, a smartphone reporting system through which 330 respondents in Kinshasa reported tax payments on a weekly basis. The latter system served two purposes. Most basically, it acts as a check on the data collected in the survey, by guarding against the risk that survey responses may be inaccurate owing to the inability of respondents to accurately recall all tax payments over the previous year. In particular, we expect that survey results may underestimate the total tax burden, owing to these recall problems. Second, it allows us to track tax payments over time, which, in turn, allows us to implement the advocacy and information experiments described in section 5. In what follows we first explain the definitions of "taxation" employed in both survey instruments, and then describe the survey and smartphone data collection in greater detail.

3.1 Defining formal and informal taxation

In a strictly legal sense, the term "taxation" has a relatively precise meaning in the DRC, referring to a limited set of payments made to government that are unrequited; that is, that are not explicitly connected to the provision of any specific good or service. The most important taxes in this narrow definition are corporate and personal income taxes, the value added tax and custom duties. However, this definition is relatively unhelpful for understanding the total burden of payments affecting households and businesses in the DRC, or in most low-income countries. Only a very small share of businesses and individuals pay formal income, corporate or value-added taxes, owing to low incomes and weak enforcement. Instead, the majority of individuals and businesses are affected primarily by a wide assortment of formal licenses, rates, fees and fines, as well as a range of informal taxes—tax-like payments that fall outside of the formal tax law. These payments often gain comparatively little attention from national authorities, as they are individually small, but recent research elsewhere suggests that they comprise major costs to households and businesses when taken in aggregate (Jibao, Prichard and van den Boogaard, 2017).

We thus define "taxation" broadly as "all payments to recognized authorities, whether cash or in kind, including labor time, that are made as a result of the exercise of political power, social sanction or armed force." This definition is much broader than a narrow legal definition, and introduces certain grey areas discussed in what follows, but better reflects the lived reality of most citizens in low-income countries, for whom different types of exactions by the state, or powerful non-state actors, have similar livelihood implications, and all form part of the day-to-day costs of maintaining a household, accessing essential services and/or running a business. In turn, this definition of "taxation" can be divided into three sub-categories: Formal payments to state actors ("formal taxes"), informal payments to state actors ("informal state taxes") and informal payments to non-state actors ("informal non-state taxes"), displayed in Figure 1. We describe each in turn.

Figure 1: Composition of the Total Tax Burden

Total Tax Burden	=	Formal taxes	+	Informal state taxes	+	Informal non-state taxes

"Formal taxes" are defined as those that are paid to the state, and which exist within formal tax laws. The key analytical point, noted above, is that we take "taxes" to include all payments formally labeled taxes, but also formal licenses, rates, fees and fines. So, for example, this category includes businesses licenses, fess associated with everything from livestock to marriages, payments related to property, payments to access essential documents and a wide variety of government fines. It also, critically, includes user fees to access *essential* services that have historically been associated with government provision for low-income groups: education, essential health care and water. By contrast, we exclude payments to the state that nonetheless resemble simple consumption, such as non-essential purchases from state-owned enterprises. Fees are often viewed as distinct from taxes because, unlike with taxation, there is a direct and immediate relationship between fee payments and the goods and services received in return. Yet, given the prevalence of user fees and the fact that they constitute compulsory payments in exchange for essential goods and services controlled by the state, we view them as analytically essential to the broader purpose of this study.

"Informal state taxes" capture all other non-consumption payments to the state, but which do not fall within formal laws. This may include levies demanded by state agents that do not exist in the law, or cases in which payments are demanded above and beyond the formal rate. In a classic study of informal taxation, Prud'Homme (1992) describes three types of informal taxes collected by state actors: 'pinch' informal taxes (the share of formal payments taken by front line officials); extortion (payments made to employees of semi-local governments in relation to authorization and rules); and requisitions (when government authorities ask enterprises and households to contribute to their activities). An alternative definition, by Olken and Singhal (2011), defines informal taxes as a system of local public goods finance coordinated by public officials, but enforced socially rather than through the formal legal system. They thus focus attention of

informal payments that give rise to public services. We again seek a broad definition that encompasses the spectrum off such payments. This could be, for example, payments made at an informal roadblock, informal payments required to access essential services like education, health care or water, demands for acceleration payments to access key documents, or "fines" or "bribes" required to avoid disruption of services or business.

Finally, "informal non-state taxes" refer to tax-like payments made to non-state actors. These payments are, by definition, outside of the formal law, and mirror informal payments to the state, ranging from simple extortion and predation to payments that contribute directly to the provision of public goods. While these payments are generally ignored in fiscal studies, recent research indicates that they may comprise a significant share of all payments in some contexts—and, tellingly, that payments to non-state actors are sometime more popular than payments to the state (Jibao, Prichard and van den Boogaard, 2016). Previous research suggests four particularly important types of non-state actors involved in collecting tax-like payments. First, traditional authorities, who may demand cash or in-kind payments to support their position and role, who may charges fees for things like justice services, and who may coordinate community contributions to public services or festivals. Second, community development associations, which are often led by notable members of the community, and collect semi-voluntary "contributions" toward the provision of services in the community. Third, armed groups may demand payments in exchange for security, or, in rebel held areas, may also be involved in providing broader services. And, finally—though most contentiously—religious organizations, which often collect significant revenues through contributions used to fund the religious organization itself, or to provide public services. While many of these contributions are nominally voluntary, research makes clear that there are often powerful social and other pressures to contribute, thus making them potentially resemble other informal taxes in at least some cases.

While the distinction between formal and informal taxes is relatively clear in theory, in practice drawing this distinction may be ambiguous for respondents, particularly in a complex environment like the DRC. In some cases, respondents may have limited

information about whether a payment exists formally in the law or not, while there is an even greater likelihood that they will not know the formal rate. In turn, some payments that are not within the formal law may be so widely normalized as to appear like formal taxes to respondents. At the extreme, some respondents may even identify payments to non-state actors as "formal" payments if they understand those payments to be normalized and required. And, in all cases, taxpayers are unlikely to know whether the payments they make to state agents actually reach the government budget - a key component of legal formality. In the analysis to follow, we correspondingly experiment with three alternative approaches to establishing whether a tax is "formal" or "informal". The first approach is based on respondents' own indication of whether they considered the taxes formal or informal. After each reported payment, respondents were asked, "In your opinion, would you consider this a formal tax or an informal payment?" The second is based on whether respondents indicated having received a receipt for the payment. Receipted payments were then designated as formal, non-receipted ones as informal. Third, we experiment with coding formality a priori based on the tax category we are asking about, and our own knowledge about what are, and are not, legal taxes covered by the Congolese nomenclature. Finally, we gain a more indirect notion of "formality" when we estimate the share of payments actually reaching the government budget.

Table 1: Coding of payments to state actors as formal and informal

		Kinshasa		**Goma**		**Nord Kivu**	
		Non-receipted	Receipted	Non-receipted	Receipted	Non-receipted	Receipted
Respondent "informal"	N	1126	353	472	159	297	148
	%	*38*	*12*	*32*	*11*	*27*	*13*
Respondent "formal"	N	277	1182	193	674	132	529
	%	*9*	*40*	*13*	*45*	*12*	*48*

Notes: Correspondence between two ways of operationalizing "informal" vs. "formal" taxes, the first based on respondents' assessment of whether the tax is formal or informal (on the rows), and the second based on whether respondents indicated receiving a receipt for the payment (on the columns). Each observation in this table corresponds to a tax payment that was reported in the survey, and there are usually multiple taxes reported per respondent. Percentages are shown per survey area. Tables omit cases for which the data were incomplete. The table shows that the two ways of classifying formal and informal taxes tend to agree. Source: total tax burden survey and authors' calculations.

3.2 Household and Business Surveys

The study involved a survey of about 2400 households in Kinshasa, North Kivu and Kasai Orientale, and about 700 businesses in North Kivu and Kinshasa. The survey was carried out from June-December 2015 across 100 randomly sampled enumeration areas in the three provinces, with respondents randomly selected within those enumeration areas. The surveys themselves took from 1-3 hours depending on the size of households, the complexity of their economic activities and the range of the tax payments that they make.

In order to capture the full range of payments made by citizens the survey included an extensive battery of questions about almost every formal "tax" in the DRC nomenclature, and about a wide array of informal payments identified through background interviews. This amounted to over five hundred different types of payments, but was essential; absent a comprehensive list of potential payments survey respondents were unlikely to consistently, and completely, identify payments made, thus undermining the quality of resultant data. This reflects the complexity of the system itself, as well as difficulties recalling payments that may be as much as a year old.

Alongside these questions about tax payments, the surveys contained three other major elements. First, large modules on household wealth, income and consumption, in order to assess tax payments as a share of wealth, income and consumption, as well as the overall progressivity or regressivity of tax payments. The income measure asks respondents about all sources of income, for all household members. The consumption measure asks about total household consumption by item, with each item assigned a monetary value by the respondent. Household wealth was measured as the monetary value of material assets that the household owns, expressed in current US dollars (taking 1 US dollar to be equivalent to 900 Congolese francs). We asked respondents whether they owned assets such as land and other real estate property, vehicles, other productive inputs (such as livestock or farm equipment), and a wide variety of household goods. We then asked them about the expected resale value of the assets that they owned. A household's wealth was the sum of the value of all owned assets. Again, these modules

were very complex, and necessarily provide a rough, rather than a precise, view of wealth, consumption and income given the difficulty of estimating the value of assets, the inherent challenge of recall, and the unpredictability of income in a highly informal, cash-based labour market that is frequently dependent on patronage.

Second, detailed modules assessing citizens' perceptions and understandings of each payment made, in order to better understand the functioning of these systems, and broader connections to local governance. The first part of the module focuses on the payment experience: who collected the tax, was the tax rate negotiated, was a receipt provided (and for how much), what was the character of the interaction, and what was the likely consequence for non-payment. The second part of the module then seeks, for both individual payments and for taxes writ large, to understand the level of public trust in the collecting authority, belief in the fairness of the tax itself, understanding of the tax system and expectations that tax revenue will be used for public purposes. This allows us to ask targeted questions about popular attitudes toward the state (at different levels), toward taxation (and individual taxes) and toward the provision of public goods.

Finally, enumeration teams also collected detailed data on each sampling unit, in order to understand variation in outcomes across locations—particularly among rural sampling units. The information collected include socio-economic information about the locality, information on access to services, details about the organization of local authority, and details on the relationship between individual ETDs and higher levels of government.

3.3 Smartphone System

In parallel to the household and business surveys we also conducted a smartphone data gathering initiative implemented exclusively in Kinshasa. This smartphone data gathering involved the distribution of smartphones to 311 household and business respondents from the original survey. These households and businesses, in turn, used the smartphones to report on total formal and informal taxes paid on a weekly basis over as many as 22 subsequent weeks. The smartphone data gathering employed identical definitions of taxation to the survey, though the format was somewhat different: participants were given a detailed training on all of the possible payments to be captured, and were then asked to

record payments within a somewhat more limited set of categories, organized into a nested menu of formal and informal tax types. This format reflected the practicalities of data collection: respondents could not be asked to complete a full survey every week, and the nested menus allowed them to entered weekly taxes more directly.

Recruitment of participants was from the pool of surveyed households and businesses in Kinshasa. A respondent was considered eligible for recruitment into the smartphone data collection activity if they were literate enough to read or write a letter in French and if the enumerator assessed them as having been willing to participate in the survey. If a respondent met these conditions and the target for the avenue had not yet been reached, the enumerator invited the respondent to take part. Note that the targets for the avenues were per-determined and based on the first step of the random assignment, with a target of 200 households and 200 businesses. To ensure that the sub-sample of participants in the smart phone survey was random conditional on eligibility constraints, enumerators visited households on each avenue in a random order.

Enumerators then invited households and businesses that agreed to participate in the smart phone data collection activity to attend training at the office of the research team in Kinshasa. A local research team then provided, at the trainings in the office, instructions on how to use the smart phones and on how to enter and upload their tax data on a weekly basis for up to 20 weeks. Where respondents were unable or unwilling to attend a training at the office, training was in some cases conducted in the field, though care was taken to ensure that the content of the training was unchanged. The training emphasized that the smart phone data collection activity was being undertaken by the same research team that had conducted the household and business surveys.

The research team recruited households on a rolling basis as enumerators implemented the survey. In return for their regular reporting, participants received a small compensation. As a result of the rolling recruitment, those recruited initially reported taxes paid over a longer period—up to 20 weeks—while those recruited later reported taxes for a correspondingly reduced timeline, as the final reporting date was the same for

all respondents. Not all respondents reported taxes each week, and when reports were not submitted our teams followed up directly to press for submission. This follow up suggests that non-reporting was in most cases caused by participants forgetting to do so, and in most cases reports were submitted after follow up, while remaining missing reports were treated as 0 payments that week. The average number of weekly reported per respondent is slightly below 13.

A total of 311 respondents were ultimately recruited into the smartphone reporting program. This was somewhat short of our target of 400 respondents, and reflected a variety of barriers to recruitment that were more pronounced than expected: low levels of literacy, unwillingness to travel to the office for training, and a lack of trust in the intervention—and corresponding reluctance to be involved—alongside the obvious challenge that participation required significant time, and compensation was relatively limited (an average of less than $5 per week after the cost of the phone credit).

The smartphone data serves as a check on the quality and robustness of the data reported in the survey. The household and business surveys relied on the ability of respondents to recall all taxes paid over the previous 12 months, and thus raised significant potential for recall bias—that is, that respondents may either fail to recall certain tax payments, or may recall them incorrectly. This was a particular risk given the complexity of our survey. By asking respondents to report taxes on a weekly basis, the smartphone initiative serves to guard against recall bias, and thus offers assurance of the quality of the survey data, and is a means to estimate any potential bias in the survey responses.

3.4 Data Cleaning

While the data gathering instruments were painstakingly designed to capture all tax payments, as well as wealth, income and consumption, they were also extremely complex, and thus required significant data cleaning at the end of the data collection process. Rather than simply excluding outliers in the analysis, the data cleaning aimed to systematically identify data entry errors, or obviously implausible responses, in order to remove inflated values. To ensure objectivity, the data cleaning followed clear protocols

for identifying, and then correcting or removing, problematic values. During the data cleaning the goal was to leave the data unchanged where it was plausible, but otherwise to be conservative in estimating the total tax burden--that is, setting criteria that were marginally more likely to adjust unusually high tax payments downward, and less likely to adjust income, consumption and wealth data. The data cleaning focused almost exclusively on three types of errors: (a) the inclusion of an extra zero when entering large values, (b) the use of the wrong currency in reporting a payment, or (c) the survey required respondents to report the number of times that each type of payment was made, and the *average* amount of each payment. However, in some cases respondents provided the *total* amount of all payments, thus requiring that the total *not* be multiplies by the frequency.

4 Detailed Household Survey Results

We turn now to the presentation of the data from the household survey, and proceed step by step. We begin by presenting the total tax burden, and then progressively disaggregate it further: by formality, by level of government, and by type. Having presented the core survey data we then compare that data to data from the smartphone reporting system in order to validate the data, and identify potential biases. Having validated the data we then implement some indicative exercises to compare the level of payments being made to those reported in the government budget, in order to identify potential "revenue leakage". We follow this by looking at experiences of, and attitudes toward, taxation, and we then present regression analysis exploring variation in tax burdens by demographic characteristics and by geographic location.

4.1 Overall Tax Burdens

We begin by presenting data on the total tax burden, as defined earlier: the sum of formal state taxes, informal state taxes and informal non-state taxes. We first present data on the mean and median tax burdens in each of our three provinces, while for each of North Kivu and Kasai Oriental we divide the province between the capital cities, Goma and Mbuji Mayi, and the remainder of each province (labeled "North Kivu" and "Kasai

Oriental"). While mean tax payments are useful for understanding the overall magnitude of payments to state and non-state actors, they are frequently skewed upward by a smaller number of very large taxpayers. Thus, median payments—or payments made by households within the middle quintile by expenditures or wealth—are often more informative for understanding the experience of 'average' households.

Table 2 presents data for each of the five locations, disaggregated into formal, informal state and informal non-state payments. The figures indicate that payments are large relative to per capita income, which is about US$400 in the DRC. Mean payments per household amount to $1444 in Kinshasa, $760 in Goma and $253, $296, and $148 in North Kivu, Mbuji Mayi and Kasai Oriental respectively.

Table 2: Mean Payments, by Formality and Recipient

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Mean Total Payments	1056.52	705.98	253.06	296.07	148.26
Mean Formal Payments (respondent)	60%	57%	55%	47%	38%
Mean Informal Payments (respondent)	40%	43%	45%	53%	62%
Mean formal payments (a priori)	64%	73%	58%	58%	56%
Mean informal state (a priori)	11%	7%	15%	8%	5%
Mean informal non-state (a priori)	24%	20%	26%	33%	39%

In order to distinguish formal from informal payments we focus on two approaches: based on the understanding reported by the respondent, and based on *a priori* coding of the payment type. We would expect *a priori* coding to overestimate the share of formal taxes, as it codes any payment requested under the guise of a formal tax as "formal", whereas respondents may be able to distinguish whether this is really the case in individual instances. Consistent with this view, we find that respondents report a bit more than 50% of the value of payments to be formal, with significant variation across locations. That number is higher for our *a priori* coding, according to which about 65% of payments are formal, with only a relatively small share of informal state payments.

These two data points suggest that the *a priori* coding likely underestimates the extent of informality in payments to state agents. Finally, the data reveals significant payments to non-state agents, amounting to 20% to 39% of the value of payments across locations.

The variation that we observe across locations is highly consistent with expectations. Total payments are higher, and are most formal, in Kinshasa, which is both wealthier and has a stronger state presence. The next highest level of payments and of formality is in Goma which is not as wealthy as Kinshasa, but much wealthier, and with a stronger state presence, than Mbuji Mayi. Payments are lowest and least formal in rural North Kivu and Kasai Oriental—and the latter in particular. Most notable when looking at the distribution between formal and informal taxes is the much larger role of non-state actors in poorer areas, with less state presence, with a third of payments to non-state actors in Mbuji Mayi, and almost 40% in rural Kasai Oriental.

Alongside looking at mean payments we also consider median payments. These may offer a more useful picture of the reality for the "average" household, as mean payment amounts are skewed upward by a small group of very large payments. Table 3 reports payments at the 25th percentile, median and 75th percentile for each location, in order to provide a picture of the distribution of payment levels across households. Overall, median payments are consistently only about 50% of mean payments, consistent with the mean being pulled upward by larger taxpayers—and this gap is largest in Kinshasa, where, anecdotally, income inequality is particularly pronounced. That said, the broader patterns of results across the different locations is unchanged.

Table 3: Distribution of Payments, Across Locations

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
25% percentile Total Payments	187.67	153.33	31.11	56.32	40.65
Median Total Payments	504.44	395.78	174.67	147.57	80.11
75% percentile Total Payments	1384.22	768.78	454.57	326.51	146.27

Table 4 presents data comparing total household payments to total household expenditures in order to better understand these payments.[4] The average overall burden across the entire sample of tax payments is 11% of expenditures, with the median household paying 7% of expenditures. The pattern of payments across locations continues to broadly follow expectations, with the total tax burden as a share of expenditures falling most heavily in Kinshasa and Goma, where there is greater wealth and a greater state presence. It is worth noting major variation in tax burdens within the sample: a quarter of households have burdens less than 3.5% of expenditures, while the 25% of households with the heaviest burden paying upward of 14% of expenditures. As we will see below, this variability seems to be an ingrained feature of the DRC tax system, which is characterized primarily by taxes on particular actions and activities that necessarily affect households differently—and likely affect different households differently over time.

Table 4: Mean and Median Taxes as Shares of Household Expenditure

	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Mean Total Payments	0.11	0.14	0.14	0.11	0.09	0.07
25% percentile Total Payments	0.03	0.03	0.05	0.02	0.02	0.02
Median Total Payments	0.07	0.10	0.10	0.07	0.06	0.05
75% percentile Total Payments	0.14	0.19	0.18	0.17	0.11	0.09

Table 5 turns to the distribution of tax payments across the income distribution, in order to assess whether the system is progressive or regressive. Looking at the sample as a whole, the overall distribution is relatively flat, with both mean and median tax burdens, as shares of expenditure, about the same for the lowest expenditure and highest expenditure quintiles of the distribution (and those in between). However, this pattern is driven in large part by inter-regional differences, with the tax burden highest in high income Kinshasa, and lowest in lower-income Kasai Oriental. When we look at tax

[4] We do not employ a measure of income, as many survey respondents were unable to report an annual income owing to highly irregular and informal work.

burdens across the income distribution *within* locations the story is quite different, with payments clearly regressive everywhere other than Kinshasa, where the relative burden is quite constant. This regressiveness is intuitively unsurprising, given few reported income and property taxes (illustrated below), which are generally the primary drivers of progressivity in direct tax systems. Instead, the bulk of taxes are relatively flat rate licenses, fines and fees, which impose a relatively heavier burden on low-income individuals.

Table 5: Payments as Shares of Expenditure, by Expenditure Quintile

	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Mean, 1st Quintile	0.12	0.15	0.19	0.16	0.13	0.1
Mean, 2nd Quintile	0.1	0.13	0.15	0.08	0.09	0.06
Mean, 3rd Quintile	0.10	0.16	0.13	0.14	0.07	0.07
Mean, 4th Quintile	0.12	0.14	0.13	0.09	0.08	0.06
Mean, 5th Quintile	0.11	0.11	0.11	0.06	0.07	0.03
Median, 1st Quintile	0.08	0.09	0.15	0.11	0.08	0.08
Median, 2nd Quintile	0.07	0.11	0.09	0.03	0.07	0.07
Median, 3rd Quintile	0.06	0.10	0.10	0.12	0.05	0.05
Median, 4th Quintile	0.07	0.13	0.09	0.06	0.05	0.02
Median, 5th Quintile	0.07	0.07	0.09	0.05	0.06	0.02

We can also look at the same data through a slightly different lens: the level of tax payments as a share of total household asset wealth. Whereas taxes as a share of expenditure offer a picture of how taxes relate to income year to year, taxes as share of wealth offer a picture of the size of taxes relative to the overall economic well being of households. These data should be treated with caution, owing to the difficulties of estimating total wealth, but nonetheless are a useful complement to the data presented so far.

As illustrated in Table 6, the median household across the entire sample makes annual payments worth about 16% of total asset wealth—an obviously large burden, which is

somewhat larger again in lower income Kasai Oriental. However, this aggregate figure disguises major variation across households

Table 6: Median Payments as a Share of Total Asset Wealth, By Location

	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
25% percentile Total Payments	0.04	0.02	0.05	0.03	0.07	0.1
Median Total Payments	0.16	0.10	0.17	0.15	0.28	0.2
75% percentile Total Payments	0.57	0.55	0.84	0.66	0.95	0.46

At one extreme, the data reveals a subset of taxpaying households—about 10%—for whom annual tax payments are greater than total household wealth. These are almost exclusively very low wealth households, with wealth below US$500, and often below US$200. They are best understood as households living at the margin of economic survival, and lacking almost any assets or capacity to save. While we lack quality income data, as described earlier, data suggests it is possible that many of these households survive in significant part through support from family members, friends or "patrons". At the other extreme are wealthy households, who pay only a very small share of assets in taxes: among the top quintile of asset wealth, the median tax payment as a share of wealth is only 4%. It is unsurprising that the tax burden as a share of assets is far more regressive than the burden as a share of expenditures. Finally, for the remaining households "in the middle" of the asset distribution there is still significant variation: for households in the middle quintile by asset wealth median tax payments are 27% of assets, but 25% of households pay less than 10%, and another 25% pay more than 61%. This is again consistent with a tax system that imposes highly uneven tax burdens depending on particular activities, and in which tax burdens are quite disconnected from wealth.

A final note: these figures capture only direct taxes paid by households, and do not consider the indirect tax burdens embedded in the prices of goods and services that households consume. These indirect taxes are potentially very large, and in most countries exceed the burden of direct taxes—though they also tend to be flat or

regressive. We present some limited data on the potential magnitudes of these taxes later in this section.

4.2 Composition of Tax Burdens by Tax Types

While aggregate data on total payment burdens is instructive for understanding pressure on local livelihoods, it disguises important information about the composition of this burden. This is particularly important here because of the very broad definition of taxation adopted in the study.

To begin, Table 7 presents total payments divided into categories based on the purposes of the payment. Categories include standard taxes, like income taxes and property taxes, but then divide licenses, fees, rates and fines based on their intended purposes (education, transport, water, documents etc…). This offers a clearer sense of what respondents are paying for. Are respondents primarily paying income taxes and property taxes to the central and provincial governments? Are they primarily paying fees and fines associated with doing business, or moving around? Or are they paying primarily formal and informal user fees to access key services, and, if so, which ones?

Table 7: Composition of Tax Burden, by Purpose

	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Animals	0.5%	0.4%	0.1%	0.9%	1.1%	0.2%
Business	0.0%	0.0%				
Community	0.5%	0.1%	1.1%	2.4%	1.1%	2.3%
Customary	0.1%	0.0%	0.0%	0.5%	0.1%	1.4%
Documents	0.3%	0.4%	0.1%	0.1%	0.6%	0.0%
Education	44.8%	47.8%	42.5%	46.3%	24.8%	26.2%
Electricity	3.4%	4.1%	6.8%	0.0%	0.6%	0.0%
Health	4.7%	2.5%	10.4%	5.2%	9.7%	24.4%
Land Building	1.5%	1.1%	2.1%	4.2%	3.2%	0.8%
Life	6.5%	5.9%	3.4%	10.7%	5.7%	10.8%
Public Legal	1.0%	1.2%	0.4%	0.2%	0.6%	0.2%
Religion	13.1%	12.5%	13.0%	9.8%	24.0%	16.3%
Revenue	1.0%	0.6%			2.6%	3.0%

Sanitation	4.8%	6.3%	0.6%	0.0%	0.0%	0.0%
Security	0.1%	0.0%	0.0%	0.4%	0.5%	0.0%
Transport	1.2%	1.0%	4.5%	0.8%	2.8%	1.2%
Vehicles	1.9%	0.8%	2.1%	2.8%	5.0%	11.8%
Water	14.4%	15.1%	12.8%	15.8%	17.7%	1.4%
Essential Services	67.3%	69.6%	72.6%	67.2%	52.9%	52.0%

Note: Essential services is here the sum of education, water, electricity and health payments

One feature of the results is particularly striking: the vast majority of total payments, and of the total value of payments, are formal and informal user fees to access essential services. Overall, payments for education, water, health and electricity comprise about 70% of the total value of payments in Kinshasa, 70% in Goma and North Kivu and slightly more than 50% in Mbuji Mayi and Kasai Oriental. While the pattern of payments varies somewhat across locations, education payments stand out at the most consistently large expenditure across the country, while water payments amount to about 15% of payments everywhere other than rural Kasai Oriental. Electricity payments are, as one would expect, concentrated almost entirely in urban Kinshasa and Goma, where electricity is available, and make up a larger share of payments in Goma. Meanwhile health payments are markedly higher in Kasai Oriental, which seems likely to reflect the inflexibility of the cost of treatments for low income people and, potentially, the relatively higher cost of accessing health care in a poorly served area.

Looking beyond user fees for essential government services, tax payments are more evenly scattered across a range of categories. Critically, there is little consistency across categories: outside of the user fees noted above, there is not a single category of payments that, over the past year, was reported by even half of the households in the survey. This suggests that the Congolese tax system does not apply a uniform set of taxes to all households and taxpayers but, instead, that tax payments are linked to particular types of activities and events, with relatively uneven and inconsistent incidence both across households and over time.

Two additional categories stand out, and are consistent with this story. The first are payments in the broad category "life", which capture payments related to important life events: births, deaths, marriages and imprisonments. Across locations these payments account for about 6.5% of all payments, though this proportion is almost doubled in rural areas, while in all areas this is driven by relatively infrequent but large payments. This is consistent with other literature noting the tendency of local governments to tax highly visible activities. It is also consistent with highly uneven and unpredictable tax burdens over time, with a small number of households liable for large tax liabilities when such events occur.

The second payments of interest are payments under the category "religion", which capture any contributions made to religious institutions. As described earlier, these payments are generally described as "contributions", but may share important characteristics of taxes in many cases Africa. They are, at least in principle, intended to contribute to important services in the community, and there appear to be strong social pressures to make contributions. These payments are of particular interest because they are relatively large: they are the largest category of payments after education and water overall, and are particularly large in Mbuji Mayi and Kasai Oriental, where they collectively account for about 20% of total payments. While the terminology to describe these payments may be in dispute, the survey data makes clear that such payments are major financial items for some households.

Finally, one of the most striking findings from disaggregating payments is that almost none of our respondents report paying what are in other contexts the two most important taxes on households: income taxes, and property taxes. Across the entire sample only two reported paying income taxes, while only 104 reported paying property taxes—97, of a sample of 1064, in urban areas, accounting for less than 1% of payments. The limited reports of income tax payments could be slightly misleading, as formal sector workers may have income taxes deducted at source without being aware—but we would expect at least some such workers to be aware of those tax payments, and the data demonstrates the

lack of broader income tax enforcement beyond any doubt. The weakness of the two taxes is, in turn, very important: it is hard to imagine an efficient, progressive and productive revenue system without these taxes.

In order to dig still deeper into the composition of tax payments, we also explore whether the composition of taxes changes for different income groups. Table 8 presents mean payments in each category by expenditure quintile. The distributions of payments are relatively similar across income groups. The most notable pattern is that the share of essential services in total payments is highest for low-income groups, and declines relatively sharply in the top income quintile, reflecting the relatively flat and inescapable cost of accessing essential services. There are also several more specific differences. Sanitation payments – many of which are linked to garbage collection- are relatively irrelevant for the lower two quintiles, and grow in importance for higher income groups. Meanwhile, health expenditures are dramatically higher as a share of payments (and income) for lower income households, as is electricity for those able to access it. Payments linked to life events are highest in the second and third quintiles, as are (still small) community contributions, which may be indicative of these groups being more able to contribute than low-income groups, but also more firmly embedded in, or reliant on, local communities than higher income individuals. Finally, religious payments are important for all groups, but become even more important for the highest income groups. That said, it is important not to draw overly strong conclusions, as these patterns are not entirely consistent across the survey locations.

Table 8: Composition of Taxes by Expenditure Quintile

	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Animals	0.2%	0.3%	0.5%	0.7%	2.8%
Business	0.0%	0.0%	0.0%	0.0%	0.0%
Community	0.3%	0.8%	1.7%	0.2%	0.5%
Customary	0.1%	0.1%	0.3%	0.3%	1.6%
Documents	0.0%	0.4%	0.0%	0.4%	1.0%
Education	41.9%	42.2%	41.2%	41.4%	22.2%
Electricity	10.4%	0.1%	0.9%	3.2%	6.1%

Health	17.2%	5.9%	7.6%	2.8%	3.4%
Land Building	2.5%	2.1%	2.0%	1.9%	1.9%
Life	3.9%	9.3%	8.4%	3.1%	3.3%
Public Legal	0.3%	0.2%	0.1%	0.1%	0.3%
Religion	13.4%	11.8%	15.0%	15.0%	25.1%
Revenue	1.1%	3.4%	0.5%	1.2%	2.6%
Sanitation	0.1%	0.1%	6.6%	8.9%	12.4%
Security	0.4%	0.2%	0.1%	0.0%	0.1%
Transport	0.2%	1.4%	1.1%	1.6%	4.4%
Vehicles	1.1%	5.2%	0.7%	1.8%	3.2%
Water	6.8%	16.5%	13.2%	17.5%	9.4%
Essential Services	76.3%	64.8%	62.9%	64.9%	41.0%

Overall, the fact that such a large share of payments are user fees for essential services, as opposed to classic "taxes", raises a conceptual challenge: is it useful to think of these things as "taxes" at all, or better simply to think of them as consumption items, like food or clothing? The case for including them centers on the fact that these are essential goods that, at least in the cases of education, water and basic health care, are widely understood as government responsibilities, paid for through tax revenues—particularly in ensuring access for low-income households. To the extent that tax revenues are insufficient to provide these services, and that formal and informal user fees expand, those user fees are essentially an alternative means of raising necessary revenues to provide expected services. This argument is strongest for basic education, and weakest for electricity—but this has little impact on the story, as electricity payments are by far the smallest of the group, and essentially non-existent in rural areas. While we view it as conceptually important to include these payments within a conception of the fiscal burden on households, it is equally essential to be precise about definitions when moving from broad descriptive information to policy implications. This is the approach adopted below in thinking about revenue leakage.

4.3 Data Validation Using Smartphone Data

The smartphone data follows broadly the same format as the survey data, using identical tax definitions, and can thus be used to triangulate the broad reliability of the survey data, and to assess whether recall bias appears to have shaped the survey results. We do this by directly comparing tax payments report by the smartphone respondents to the tax payments reported in the survey. We would not expect the payments to be identical, as the survey covers the year prior to the smartphone reporting, but nonetheless believe that the payments should be broadly comparable. *A priori* we would expect the smartphone data to capture somewhat higher payments, owing to the likelihood that some payments are forgotten in the survey, while the distribution of the payments in the survey data may be skewed toward larger, and easier to remember, payments. In practice this is precisely the pattern than we observe, though the details reveal important additional messages.

While the smartphone systems records payments on a weekly basis, we convert these payments to annual payments in order to compare to the survey data. In doing so, we treat weeks in which the smartphone respondents submitted no data, even after repeated follow-up, as 0 payments.[5] In aggregate, the smartphone system reports average total annual payments of $1820.40, as against average annual payments of $207.45 of the same respondents in the survey data. This is very much in line with expectations, if we assume some recall problems in measuring total payments in the survey. It suggests that the survey underestimates total payments by as much 50%, which seems entirely plausible, and thus offers reassurance that our estimates are broadly accurate. Ultimately, it seems appropriate to treat the smartphone responses as an upper-bound, and the survey responses as a lower bound, as there is some possibility that smartphone respondents may in some cases have included payments that fall outside of our classification of formal and informal taxes.

In order to gain deeper insights, we can also disaggregate total payments into the tax categories we have used so far. This requires some caution, as the different data gathering formats may in some cases lead to different classifications, but we would

[5] If this occurs at the beginning or end of the reporting period we treat as missing, as in those cases it is more likely that the respondent had not yet decided to begin, or had dropped out informally.

expect broad commonality. Table 9 presents data from the smartphone and survey data collection for comparison, with to versions of the survey data: the entire Kinshasa sample, and only the respondents who also participated in the smartphone data gathering, to maximize comparability. The latter two samples yield very similar patterns, as we would expect given our randomization.

Table 9: Comparing Smartphone Data to Survey Data for Kinshasa

	Smartphone	Survey Smartphone Sample Only	Full Kinshasa Survey
	Mean Annual Payment	**Mean Annual Payment**	**Mean Annual Payments**
Total	1820.4	1207.45	1066.67
Formal	88%	66%	60%
Informal	12%	35%	40%
Total excluding services	1047.6	307.57	324.65
Education	578.4	640.20	510.35
Life Events	240	74.37	63.2
Transport and Vehicles	186	40.7	19.79
Water	176.4	133.62	161.09
Property	168	14.81	11.84
Religious Tax	138	63.31	133.05
Documents	84	8.44	4.24
Sanitation	45.6	86.93	67.63
Business	38.4	0.15	0.08
Other Taxes	16.8	10.49	4.19
Other Taxes on Public Services	18	144.39	74.98
Revenue Authorities	68.4	4.45	6.53
Security or Judicial	42	0.87	12.99
Customary	13.2	0	0.04
Community	7.2	3.04	1.17

Note: Other taxes on public services combines the survey categories for health care and electricity.

Four key messages emerge from the data, reflecting commonality in the overall ordering of payment categories, but also important differences.

1) At a broad level, the patterns of larger and smaller payment categories are similar across both data gathering methods. In both cases education is a dominant category of payments—accounting for almost a third all of smartphone payments, and almost half of survey payments. And in both cases the largest categories of non-user fee payments are for life events, religious payments, and transport and vehicles.

2) There is a marked difference in the extent to which taxes are classified as formal or informal, with smartphone respondents much more likely to call payments "formal". This, however, appears to reflect the fuzziness of the concept of formality in the DRC context, as opposed to major differences in taxes paid. More than 30% of taxes in the smartphone survey were to non-state actors, but only a small percentage were called "informal", seemingly reflecting the extent to which respondents, absent the interaction with the enumerator, view these payments as "formal", in the sense of normalized and accepted, even if they are not reflected in Congolese law.

3) The survey appears to capture larger payments for user fees to access essential public services—water, health and electricity—very effectively, with recorded payments closely matching the smartphone data gathering for both education and water payments, which are the two largest categories.

4) If we exclude payments for essential services, the differences in the data collection appear more pronounced: while the patterns of payments by category are similar in their rankings, payments in these remaining categories are *about three times* larger in the smartphone survey. While this difference is large, looking closely at the data suggests that it can plausibly be explained by survey respondents failing to recall a wide range of frequent, small, payments—the types of payments that are widely cited in interviews and qualitative accounts, but appear comparatively absent from the household survey. The number of individual tax payments reported by respondents in the smartphone system is significantly larger than the number of payments reported in the household survey. This is particularly true in the five categories that drive the large non-user fee differences between the survey and smartphone data: life events, transport and vehicles, property, documents, and assorted payments to revenue officials. The implication is that—despite our painstaking efforts to ask individually about a huge range of distinct payments—the household survey fails to captures relatively small, infrequent payments, owing to the difficulty of recall. That said, it is

interesting to note that smartphone respondents still report these smaller and more frequent payments as primarily "formal", even in cases where they do not appear to be captured in the law, or are made to non-state actors.

Taken together, comparing the survey and smartphone data yields four likely conclusions about the reliability of the survey data.

1) Overall, it is encouraging: the data collection for this study was tremendously complex, and unlike any survey ever conducted (to our knowledge). The fact that the total payment amounts and categories are broadly comparable offers additional confidence that we are capturing the broad reality on the ground.

2) The survey almost certainly underestimates the level of non-user fee payments; that is, payments other than for education, water, health and electricity. The most compelling explanation is a failure of respondents to recall and report frequent and comparatively small payments in these categories—a risk that was a central motivation for piloting the smartphone approach. Whereas the survey data in Kinshasa estimates these non-user fee tax payments at about 3% of household expenditures, the smartphone data suggests that this number could be as much as *three times as high*.

3) Given evidence the survey underestimates total payments, we can generate "adjusted" survey data, which estimates actual tax burdens by multiplying the survey data by the difference between the survey and smartphone data. This needs to be treated with extreme caution: The adjustments almost certainly should not be the same across all survey locations,[6] and the results likely represent an upper bound on the actual level of payments. That said, the resultant figures seem

[6] Note, for example, that in Kasai Oriental we end up with non-user fee payments equal to total payments, owing to the application of the same adjustment factors as in Kinshasa, despite payments for services being initially much more important in Kinshasa.

intuitively plausible and empirically supported, and are somewhat more consistent with other accounts highlighting the pervasiveness of "*tracasseries*" in the DRC.

Table 10: "Adjusted" Tax Burdens

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Mean Total Payments	0.14	0.14	0.11	0.09	0.07
Total Payments excl. Education	0.08	0.08	0.06	0.07	0.05
Total Payments excl. Services	0.04	0.04	0.04	0.04	0.03
Adjusted Mean Total Payments	0.20	0.20	0.16	0.13	0.10
Adjusted Total Payments excl. Education	0.16	0.16	0.12	0.14	0.10
Adjusted Total Payments excl. Services	0.13	0.11	0.11	0.12	0.10

4) In light of evidence that the smartphone data gathering system was more successful in capturing these smaller, non-service payments, there is strong case for future exercises of this kind, in the DRC or elsewhere, to consider data gathering methods that minimize the risks of recall bias. These recall problems appear to be very significant for smaller taxes, and may be particularly pronounced in the DRC owing to the almost unparalleled complexity of the tax system, and reported pervasiveness of informality. The use of the smartphone system here was conceptualized as a pilot project, and the results suggest significant potential for scaling up such an approach.

4.4 Comparison of Payments to Government Budget

Alongside understanding the tax burdens faced by households, a key goal of this study is to attempt to produce *extremely approximate* estimates of "revenue leakage"—that is, taxes, licenses, fees, fines and the like that are paid by taxpayers, but which do not reach the government budget. Payments may not reach the government budget because they are retained by individual state officials (either front line revenue collectors, or their superiors), because they are collected by non-state actors, or because they are employed locally to provide services directly, rather than being remitted to the government.

Understanding these distinctions is critical, as it makes clear that "revenue leakage" *is not* equivalent to corruption, or to "lost" revenue. Where revenue is retained locally to provide services directly—including paying unpaid salaries of genuine service providers, like teachers—that may be relatively efficient from a social perspective. As such, the estimates to follow should be understood as estimates of tax and tax-like payments made by households, but which are not recorded in provincial or national budgets. They *should not* be interpreted as measures of revenue that is currently "lost" and would automatically be available for development purposes if leakages were blocked. This is certainly the case for some of this revenue, but research elsewhere makes clear that many services would not be provided at all if not for off-budget local payments.

To begin, we estimate total payments for each province, reported in Table 11. To do so we calculate the total number of households in a region based on official population data,[7] and then multiply by average household tax payments in our representative survey. We do this in two ways: considering all tax payments in our survey, and then excluding payments for education, water, health, electricity and religious organizations. The former are excluded because they are more likely to be used locally for service provision, at least in part, and may thus be conceptually somewhat different. The results are immediately striking: reported payments in our survey, extrapolated to the full provincial population, imply total payments across the three provinces of almost $2.5 Billion, compared to total reported government revenues, from all sources nationally, of slightly more than $5 billion in 2015. This revenue is, of course, from only three provinces, and entirely excludes taxes on businesses and trade, which make up the majority of reported government revenue. If we use the "adjusted" revenue figures, which account for underreporting of some payments by drawing on the smartphone data, extrapolated total payments rise to almost $3.7 Billion. Meanwhile, while many of the payments are for services, a significant share are also for other purposes: almost $800 million based on the raw survey data, but more than $2.5 billion using the adjusted data. Bottom line: the total

[7] We do this using average household sizes from out survey - 5.8 in Kinshasa, 5.7 in Goma, 5.5 in North Kivu - all of which are very comparable to the average household size of 5.3 nationally reported in the most recent DHS survey.

value of payments implied by our data is large, and substantially larger than reported government revenues in comparable categories.

In order to put these figures in further context we compare total payments to total revenue reported by local governments, reported in Table 12a. This mirrors a simple policy relevant question: What share of the payments made by local citizens actually flow into the local government budget? This is particularly relevant in so far as we know that the most important national tax on individuals – the personal income tax – is not reported by almost any of our respondents.[8] For provincial government revenues we draw on official data from the provincial government for either 2015 (Kasai Oriental) or 2016 (North Kivu and Kinshasa). In each case we include *all* own-source revenues reported at the provincial level, as it is impossible to reliably link specific payments in our survey to specific categories in the budget, owing to limited disaggregation for Kasai Oriental and Kinshasa. Again the results are striking: Local government revenues amount to only about 3% of total reported payments, with the remaining 97% of payments not ending up in local government budgets. Even the more limited set of payments exclusive of total services is more than ten times larger than total reported provincial government revenue. In turn, if we rely on data from the smartphone reporting, which estimates larger average payments, we find that local government revenue is less than 2% of total payments, and only about 3% of total payments even after excluding payments for services (Table 12b). Thus, only a very small share of payments made by households flow to local government budgets.

[8] It is possible that some individuals pay income taxes in the form of withholding taxes on their salaries, but are not aware of, or do not report, these payments.

Table 11a: Extrapolated Total Tax Payments by Location - Survey

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Population	10,000,000	1,000,000	5,000,000	1,680,000	9,000,000
Mean Household size	5.8	5.7	5.5	6.3	7.6
Total households	1724137.9	175438.6	909090.9	266,667	1,184,210
Mean Total Payments per HH	$1,064.68	$705.98	$253.06	$290.07	$148.26
Mean Total Payments excl. Services per HH	$324.65	$193.78	$82.88	$136.90	$71.08
Extrapolated Total Payments	$1,839,086,174	$123,856,143	$230,054,543	$77,352,097	$175,570,975
Extrapolated Total Payments excl. Services	$559,741,369	$33,996,492	$75,345,454	$36,506,712	$84,173,647
Smartphone Adjusted Total Payments	$2,772,680,004	$186,730,484	$346,839,447	$119,031,347	$264,697,836
Smartphone Adjusted Total Payments excl. Services	$1,835,655,139	$111,490,482	$247,093,170	$119,722,675	$276,044,966

Table 12a: Comparing total payments to total provincial government receipts - Survey

	Kinshasa	North Kivu - incl. Goma	Kasai Oriental - incl. Kasai Oriental
Total Tax Payments	$1,839,086,174	$353,910,686	$252,923,071
Total Provincial Own Revenue (925CDF=US$1)	$48,996,722	$11,762,903	$3,429,936
Difference	$1,790,089,452	$342,147,783	$249,493,135
Difference as % of Total	97.34%	96.68%	98.64%
Total Tax Payments excl. Services	$559,741,369	$109,341,946	$120,680,359
Total Provincial Own Revenue (925CDF=US$1)	$48,996,722	$11,762,903	$3,429,936
Difference	$510,744,648	$97,579,043	$117,250,423
Difference as % of Total	91.25%	89.24%	97.16%

Table 12a: Comparing total payments to total provincial government receipts - Smartphone

	Kinshasa	North Kivu - incl. Goma	Kasai Oriental - incl. Kasai Oriental
Total Tax Payments	$2,772,680,004	$533,569,931	$383,729,184
Total Provincial Own Revenue (925CDF=US$1)	$48,996,722	$11,762,903	$3,429,936
Difference	$2,723,683,282	$521,807,028	$380,299,248
Difference as % of Total	98.23%	97.80%	99.11%
Total Tax Payments excl. Services	$1,835,655,139	$358,583,652	$395,767,641
Total Provincial Own Revenue (925CDF=US$1)	$48,996,722	$11,762,903	$3,429,936
Difference	$1,786,658,418	$346,820,750	$392,337,705
Difference as % of Total	97.33%	96.72%	99.13%

Table 13a: Total Unaccounted for Revenue Under Conservative Assumptions

	Kinshasa	North Kivu - incl. Goma	Kasai Oriental - incl. Kasai Oriental
Total value of Payments	$1,835,655,139	$353,910,686	$252,923,071
Value of payments to non-state actors	$665,443,200.95	$128,056,783.36	$141,979,797.90
Value of Relevant Central Government Revenue	$37,831,253.44	$18,915,626.72	$18,915,626.72
Value of Relevant Provincial Revenue	$48,996,722	$11,762,903	$3,429,936
Payments for Water and Electricity Received by State	$353,104,545.37	$60,164,816.62	$18,969,230.35
Revenue Unaccounted For	$733,710,452.31	$135,010,556.74	$69,628,480.42
As share of payments to state	62.52%	59.78%	62.76%
Revenue Not Reaching Government	$1,399,153,653.25	$263,067,340.09	$211,608,278.32
As share of all payments	76.08%	74.33%	83.67%

Notes: Assumes that all "payments for water and electricity" are received by parastatal organizations, and there is thus no leakage from these payments.

Table 13b: Total Unaccounted for Revenue Under Standard Assumptions

	Kinshasa	North Kivu - incl. Goma	Kasai Oriental - incl. Kasai Oriental
Total value of Payments	$1,835,655,139.37	$353,910,685.98	$252,923,071.29
Value of payments to non-state actors	$665,443,200.95	$128,056,783.36	$141,979,797.90
Value of Relevant Central Government Revenue	$37,831,253.44	$18,915,626.72	$18,915,626.72
Value of Relevant Provincial Revenue	$48,996,722	$11,762,903	$3,429,936
Payments for Water and Electricity Received by State	$176,552,272.68	$30,082,408.31	$9,484,615.17
Revenue Unaccounted For	$906,831,690.57	$165,092,965.04	$79,113,095.60
As share of payments to state	77.49%	73.10%	71.31%
Revenue Not Reaching Government	$1,572,274,891.52	$293,149,748.40	$221,092,893.49
As share of all payments	85.65%	82.83%	87.42%

Notes: Assumes that 50% of "payments for water and electricity" are received by parastatal organizations, while the remaining 50% are leakage.

Table 13c: Total Unaccounted for Revenue Using Smartphone Data

	Kinshasa	North Kivu - incl. Goma	Kasai Oriental - incl. Kasai Oriental
Total value of Payments	$2,772,680,003.95	$533,569,930.65	$383,729,183.50
Value of payments to non-state actors	$665,443,200.95	$128,056,783.36	$141,979,797.90
Value of Relevant Central Government Revenue	$37,831,253.44	$18,915,626.72	$18,915,626.72
Value of Relevant Provincial Revenue	$48,996,722	$11,762,903	$3,429,936
Payments for Water and Electricity Received by State	$176,552,272.68	$30,082,408.31	$9,484,615.17
Revenue Unaccounted For	$1,843,856,555.15	$344,752,209.71	$209,919,207.81
As share of payments to state	87.50%	85.02%	86.83%
Revenue Not Reaching Government	$2,509,299,756.10	$472,808,993.07	$351,899,005.70
As share of all payments	90.50%	88.61%	91.71%

Notes: Assumes that 50% of "payments for water and electricity" are received by parastatal organizations, while the remaining 50% are leakage.

While we thus know that only a very small portion of payments enter the local government budget, the next step is to ask what may happen to the remaining payments, and how much revenue is entirely unaccounted for, as opposed to flowing to institutions of government *other* than local governments. Among the payments that do not enter the local government budget, there are a range of possibilities: (a) payments may flow to the central government, as direct payments or as payments to sectoral ministries; (b) payments may go to non-state actors, rather than the state; (c) payments – particularly for water and electricity - may go to parastatal service providers, and thus not appear in the government budget, but nonetheless be reaching formal state accounts. Alternatively, revenue may be retained by local state officials, either for their personal benefit or to finance local services, thus more closely reflecting the general meaning of "revenue leakage".

To estimate amounts of revenue leakage we thus begin with our estimate of the total value of payments, and then subtract the following:

- *Total potential payments to local government*, which is equal to all local government revenue, as above.
- *Total potential payments to central government.* We calculate as the total of all reported revenue categories in central government accounts that appear to correspond to the payments actually being recorded in our survey. This excludes trade taxes, sales taxes and payments made by businesses, as well as income taxes, given that they are almost non-existent in our sample.[9] This leaves non-tax revenue collected by DGRAD, out of which we identify those revenues that are plausibly collected from households (as opposed to businesses).[10] Of this total, we attribute 50% of total government revenues to Kinshasa (25%), North Kivu (12.5%) and Kasai Oriental (12.5%), and the remainder to other provinces.
- *Total potential payments to non-state actors*, which is the share of payments to non-state actors based on our *a priori* coding of payments: 24% in each of Kinshasa and North Kivu, and 37% in Kasai Oriental.
- *Total potential payments to parastatals.* It has been impossible to access data on total payments to SNEL and REGIDESO. As such, we make assumptions about the share of payments for water and electricity that go to parastatals, excluding payments assumed to go to parastatals from our estimate of revenue leakage.

We begin by presenting relatively conservative estimates of leakage (Table 13a). To this end, we assume that *all* payments for water and electricity go to parastatals, and that there is thus no leakage in these categories. This assumption is obviously overly conservative: It is a certainty that not all payments for water and electricity actually reach parastatals. We also continue to rely on our survey data to estimate total payments, instead of the higher smartphone data, while it is almost certainly also the case that some local

[9] Reported in the IMF Article IV consultation for 2015. Excludes fees related to mining, and dividends paid by state owned enterprises. Kinshasa, North Kivu and (old) Kasai Oriental account for a bit more than one-third of the population of the DRC, though Kinshasa, the economic capital, may make their contribution to fees somewhat larger.

[10] This amounts to CDF 139,975,637,734.60 in 2015.

government revenues come from business payments, rather than households. Table 13a presents estimates of revenue leakage based on these conservative assumptions, and the amounts are nonetheless large. The amount of revenue that appears to be retained by informally by local state officials – whether as simple corruption, or to finance local salaries and services – is estimated to almost US$1 billion. This implies leakage of more than 60% of *all* payments to the state. This excludes payments to non-state actors, which take the total revenue not reaching the government to greater than $1.8 billion – that is, more than 70% of all recorded payments do not reach the state. Alternatively, total leakage from these three provinces alone amounts to almost 40% of total reported central government revenue, implying a major effect on aggregate government finances. Similar patterns in other provinces would then suggest total payments not reaching the government being equal to perhaps 80% of total government revenue – before considering revenue leakage linked to payments by businesses, or payments at customs. Taken together, it is easy to imagine that total payments are more than double the level of revenue reaching the government.

Table 13b then presents the same calculations but employing less conservative assumptions, which may better approximate the empirical reality – though which may well still underestimate revenue leakage. For this purpose we now assume that 50% of payments for electricity and water reach the state, while 50% do not. Under these alternative assumptions estimated leakage of payments made to the state is about 75%. Including payments to non-state actors, almost 85% of all formal and informal payments made by households do not reach the government budget.

Finally, Table 13c presents the same calculations as in Table 13b, but now employing estimates of total payments based on the smartphone data instead of the survey data. This further increases the revenues that are estimated to not reach the government budget, to more than 85% of all payments to the state, and more than 90% of all payments.

To conclude, it is useful to reemphasize that caution is needed in how this data is deployed for policy purposes. Most obviously, these estimates are extremely

approximate, both owing to the risks of extrapolating from our sample to the larger population, and due to the highly aggregated nature of government revenue data. As importantly, "leakage" is not equivalent either to corruption, or to the loss of development resources. At least some of this revenue is almost certainly used to finance local services, and fill local budget shortfalls—resulting from the lack of retrocession payments—"off the books". The data is certainly indicative of very high levels of informality in the organization of the state, and of non-state service provision, at the local level, with formal budgets offering little information about realities on the ground. Whether or not this revenue is usefully understood as corruption, revenue loss or major inefficiency is less clear.

It may be that more nuance could be achieved by thinking category by category, though this involves larger assumptions than seems appropriate here, so we offer only some basic initial thoughts. Payments to community development associations are outside of the state, and seem comparatively likely to be used in significant part for local service provision—with a case for formalization only over a long time horizon. Payments to chiefs are likely to be difficult to formalize, while evidence elsewhere suggests that the extent to which these payments are used for public benefit is highly variable. Payments for transport, vehicles and security appear more likely to be relatively extortionate (we provide data for this below), though the latter may sometimes play an important role where the state is weak, or is not viewed as an effective security provider. Other research makes clear that payments for education are an important form of local financing for education—though the overall cost, extrapolated to the entire population, suggests the possibility of significant losses as well. A similar rationale applies to other user fees, while non-user fees may intuitively be more likely to be truly "lost" relative to the goal of service provision. The bottom line: while these headline numbers on "revenue leakage" are useful, deeper research is needed to make sense of how to understand what is happening in individual sectors, and how to pursue reform.

4.5 Tax Experiences and Attitudes

Alongside estimates of total tax burdens, and their composition, our survey included a wide range of questions exploring experiences of making payments, and attitudes toward payments and the state. Collectively, responses point toward a system that is highly informal, in which payers have very little trust, but which nonetheless enjoys significant legitimacy and acceptance. Put differently, citizens perceive the system of payments as ineffective at delivering services and benefits commensurate with payments, and believe that there are high levels of corruption, but do not seem to view the system as fundamentally abusive and extortionate. This juxtaposition likely exists in many countries, but appears particularly stark in the DRC. We discuss key elements of this story in turn.

4.5.1 There are High—and Highly Variable--Levels of Negotiation

Perhaps the most basic observation in existing work about taxation in the DRC is the extent of informality in the collection process itself, with extensive scope for the negotiation of tax payments between officials and taxpayers. This negotiation may be conceptualized in multiple ways. One is through the lens of collusion: tax collectors are willing to forgo (larger) formal payments in exchange for smaller informal payments. Another is through the lens of revenue maximization: knowing that taxpayers have little understanding of complex tax rules, tax collectors aim to maximize payments (either for the state, or which they retain), while taxpayers seek to minimize those payments. In either case, however, it suggests a high level of informality, and potential variation in tax burdens depending on the negotiating leverage of taxpayers and collectors.

Our data confirms the overall prevalence of the negotiation of tax payments, with the share of payments reported to be negotiable ranging from 18% (Kasai Oriental) to 31% (Kinshasa) across the survey locations. In turn, a still higher share of payments did not include the issuance of receipts, with the share ranging from 68% of payments that received no receipt in Mbuji Mayi, to a minimum of 44% receiving no receipt in North Kivu. As noted earlier, taxpayers themselves similarly perceived only about half of all

payments to be "formal"[11]—broadly intended by the questionnaire to denote legality—with this share ranging from 47% of payments in Mbuji Mayi to 57% in Goma. In turn, all of the indicators of formality are pulled upward by experiences in education—where payments are generally viewed as formal and non-negotiable, and often involve receipts—with informality and negotiation still more pervasive in other domain. While we lack comparative data from any other country in Africa—or, to our knowledge, anywhere in the world—these shares of negotiation and informality are obviously large, and point toward a large range of (often small) required cash payments that are negotiable, and present no particular indication of formal legality.

Table 13: Formality, Informality, and Negotiation: Full Sample

ALL TAXES	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Receipt	0.52	0.54	0.56	0.32	0.42
Perceived as formal	0.51	0.57	0.55	0.47	0.48
Negotiable	0.31	0.24	0.20	0.27	0.18

The data also reveals sharp variation in the extent of negotiation across tax types. This variation is interesting in its own right, but also reveals significant information about the broader drivers of negotiation. This is most apparent in comparing payments for two relatively essential services: water and electricity. Superficially the payments appear extremely similar: they are both made to state owned companies, they are both payments for a clearly defined benefit, measured in similar ways, and the magnitude of the payments in broadly comparable in urban areas. And yet, patterns of negotiation—and of formality more generally—are starkly different. Focusing on urban areas, where both are regularly collected, we find that water payments are comparatively formal: across the entire sample greater than 60% of respondents consider these payments "formal", less than 25% considered them negotiable, and receipts were provided in about 40% of cases. The story for electricity payments is starkly different: less than 15% consider them

[11] As noted earlier, formal payments tended to be larger, such that close to 80% of the value of payments was formal.

formal, about 80% consider them negotiable, and only about 10% received a receipt. The explanation seems to lie in different opportunity structures: because electricity relies on easily accessed wires, while water relies on difficult to access pipes and wells, informal connections, and disruptions, are much more straightforward for electricity provision. With this greater opportunity for informality, we see a transformation of behavior despite seemingly other similarities. Unsurprisingly, a third closely related service—sanitation--is likewise highly informal given the ease of providing uneven service, and the difficulty of monitoring. Finally, however, it is worth noting that for both electricity and water there is dramatically greater negotiation and lower formality in Kasai Oriental, suggesting broad informality in the provision of these services, which are much less pervasive in the province.

Table 14: Formality and Informality for Water and Electricity

Water	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Receipt	0.64	0.32	0.60	0.07	0.02
Perceived as formal	0.73	0.63	0.55	0.54	0.04
Negotiable	0.25	0.15	0.07	0.37	0.53

Electricity	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Receipt	0.11	0.12	N/A	0.00	
Perceived as formal	0.19	0.07	N/A	0.00	
Negotiable	0.81	0.68	N/A	1.00	

Interestingly, high levels of informality and negotiation across the tax system do not entirely undermine belief in the fairness of the taxes—though, as everywhere, rates are viewed as consistently too high. When asked whether the burden of these taxes is unfair, about 40% of respondents say that it is—a high, but far from universal, response. Meanwhile, taxpayers have surprisingly high confidence that other taxpayers also pay the same taxes that are due, with at least 70% (and as many as 90%) expressing this view outside of Kinshasa, and 60% holding this view in Kinshasa. Given widespread negotiation and informality, one might expect tremendously high frustration with tax rates, outcomes and the lack of equitable compliance. In practice, however, the more

moderate responses suggest that taxpayers are relatively accustomed to informality and negotiation around tax payments. Interestingly, feelings that payments impose an undue burden, or reflect an unfair result, are substantially higher than average for education and health payments, despite those payments being considered relatively formal, and frequently involving receipts. The most intuitive explanation is that households accept these payments as essentially normalized, irrespective of formal legality, but also understand these as essential services that should be provided by government, and are excessively costly. Tellingly, comparatively few households view water payments as imposing an undue burden, which suggests that these payments may be more widely viewed as a consumption good, rather than an essential good where government provision is expected.

Table 15: Perceived Fairness of Tax Payments

Fairness of Taxes	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Undue Burden	0.47	0.36	0.25	0.44	0.46
Unfair Result	0.38	0.23	0.19	0.34	0.40
Others Also Pay	0.60	0.81	0.90	0.69	0.76

Finally, in an effort to offer more detailed and nuanced evidence alongside the survey data, we enlisted a set of collaborators to go to government offices to secure a range of official documents: birth certificate, identity card, lost document certificate, voting card, passport and driver's license. Four to six individuals sought each document, and recorded their experiences, such that we could directly observe the taxpaying process, and also explore whether there appears to be systematic variation according to the gender or level of education of the individual seeking the document. Two messages stood out. The first is that negotiation of the price of the document was nearly universal, as long as we include various facilitation and acceleration payments. Indeed, even setting aside these "extra" payments, across all document types separate efforts to secure the same document inevitably resulted in different prices being paid. If anything, the universality of these differences, and of reports of negotiation, raise the possibility that the survey may underestimate the extent to which payments are negotiated – most likely because these practices are so thoroughly normalized. That said, it is also worth noting that while

payments were almost universally negotiated, they did seem to be firmly rooted in office prices. That is, for larger payments all of the respondents reported paying different prices, but all of the prices (inclusive of "extra" payments) were within 20% of each other. State agents did not exercise unlimited power of extraction. While smaller payments varied more in percentage terms, the variation was again limited in absolute terms. For example, among six individuals who sought an electors card the prices paid were: US$6, $4, $3, $7, $4 and $4. Among six individual seeking a lost document certificate the payments were $5, $9, $4 and $11. There is also limited evidence of systematic differences by gender or education within the small sample of cases, with, if anything, women appearing to face somewhat lower payments. Overall, the evidence matches the discussion so far, with clear evidence of extensive negotiation and informality, but relatively consistent treatment across different groups.

4.5.2 The Line Between 'Formality' and 'Informality' is Complex

The prevalence of negotiation is indicative of the complexity of distinguishing between formality and informality. On one hand, there is a reasonable level of consistency in whether survey respondents classified tax payments as formal or informal, across different methods. We experiment with defining formality based on (a) the perception of the respondent, (b) whether or not a receipt was issued, or (c) a *priori* coding of payment types as formal or informal. Despite a relatively fragmented tax system, the first two measures correspond reasonably well: in about 77% of cases there is agreement between whether a respondent considered a tax formal, and whether a receipt was issued. In turn, the total shares of formal and informal payments in the total value of payments are similar across all three methods for assessing formality, as illustrated in Table 16. The only place where the measures diverge noticeably is in Kasai Oriental, where a priori coding suggests a higher level of formality. This is indicative of taxpayers there having some sense of those payments that are presented as being formal, but lack receipts, and are clearly informal in practice.

Table 16: Formal Share of Payments, by Alternative Coding Methods

Formal Share of Payment Value	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
By Respondent Perception	68%	60%	55%	47%	38%
By Receipt	72%	68%	61%	51%	38%
A Priori Coding	72%	75%	58%	58%	56%

However, while we have some evidence of a level of clarity about the distinction between formality and informality, other data is suggestive of significant remaining ambiguity. As a starting point, while for 77% of payments the provisions of receipts, or not, matches taxpayer perceptions of formality, this does imply that for 23% of payments taxpayers consider them formal despite the absence of a receipt, or consider them informal despite the presence of a receipt. These are still meaningful proportions. More striking are three additional data points:

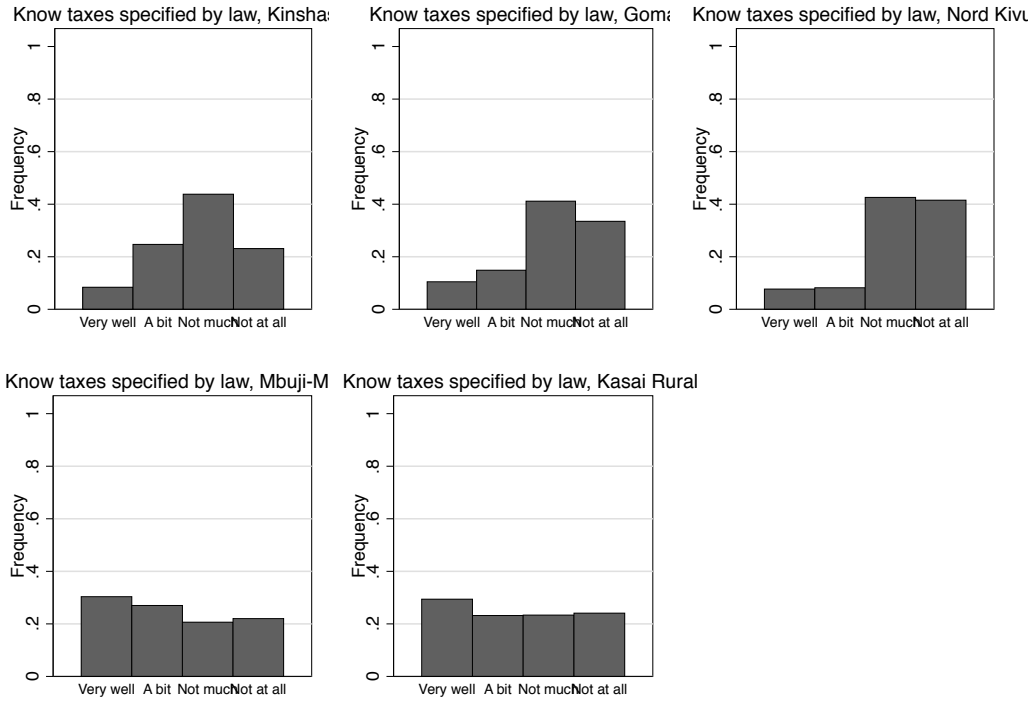
1. Responses to the smartphone survey are far more likely that survey respondents to have identified payments as formal, with payment declared as formal accounting for 88% of payments. The implication is that, left to their own definitions, taxpayers consider a wide range of payments that lack receipts or formal legal standing "formal", in the sense of being normalized and widely accepted. The structure of the survey appears to have led respondents to make a clearer legal distinction.
2. Most starkly representative of the distinction between legal "formality" and popularly understood "formality", we see evidence in the smartphone data—but also, to a lesser extent, in the survey data—of respondents classifying payments to non-state actors as "formal". In the smartphone system significant shares of payments are reported as going to non-state actors, but are also reported as "formal". A similar pattern can be seen in particular tax types in the survey, with, for example, more than 30% of payments to religious organizations, community organizations and customary authorities identified as "formal" by respondents, with those proportions higher in Kinshasa and North Kivu, and lowers in Kasai Oriental.
3. As described earlier, despite many payments being classed as formal, we know that large shares of this revenue are not reaching governments coffers. This

indicates a large share of payments being "formal" in the eyes of taxpayer, despite being "informal" in a strictly legal sense of being collected according to the law. It likewise suggests that the fact that a receipt is issued may have limited bearing on whether funds enter the government budget, though it likely is viewed as an important signal of formality by taxpayers. Interestingly, where receipts are issued they overwhelmingly match the value that taxpayers report actually paying. That this revenue does not enter the formal government budget suggests that public financial management systems function relatively little, which is consistent with accounts elsewhere.

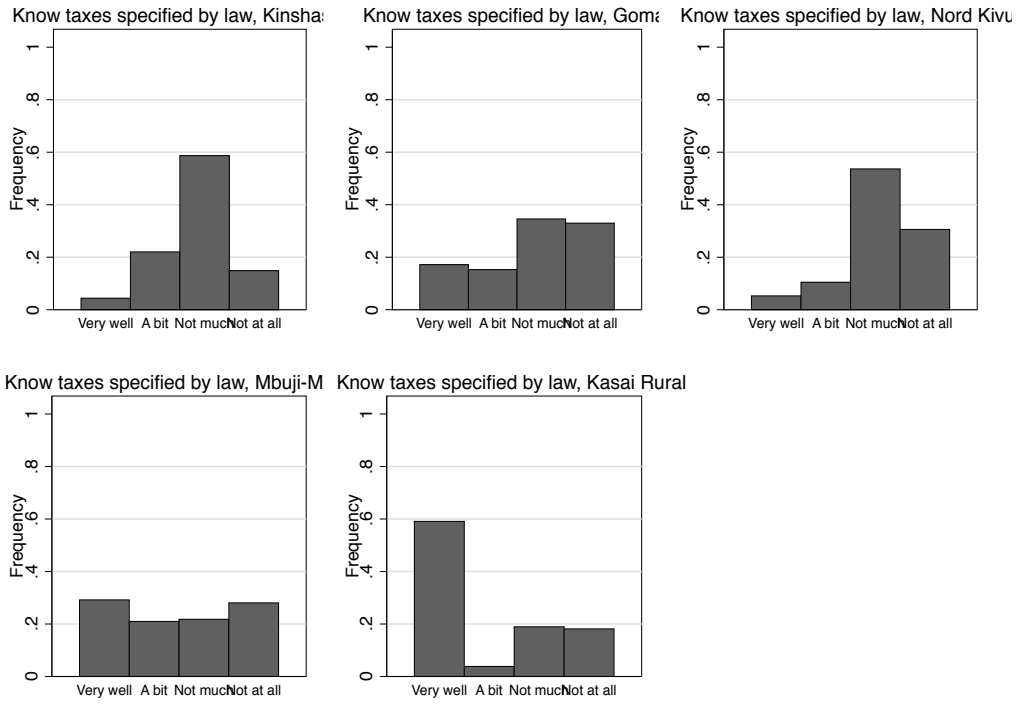
How, then, can we understand concepts of formality and informality? First, taxpayers appear to have relatively little knowledge of the formal tax systems, and are thus relatively unable to independently establish what taxes are legal, and their official rates (Figure 2). Across locations only about 30% of individuals on average express at least "a bit" of knowledge of the taxes specified in the law. As such, demands by state officials are often viewed as "formal", and receipts often provided, though money may not flow to the state. Second, in the context of weak state monitoring and widely accepted informality the provision of a receipt is not a guarantee of formality, in the sense that funds will reach state coffers. Third, in a context in which state officials are known to need to raise revenue to support themselves, in the absence of regular official salary payments, payments that are not legally sanctioned in law may nonetheless be regarded as "formal"—in the sense of institutionalized and accepted—by both collectors and taxpayers. Research elsewhere in the DRC seems to point toward similar understandings of these dynamics.

Figure 2: Knowledge of Taxes Specified in the Law

Men



Women



4.5.3 Despite significant informality, payments are not pure extortion

Just as there appears to be some public faith in the fairness of parts of the tax system, it is also the case that taxpayers frequently pay taxes in an effort to get something in return, rather than in response to threats or other aggressive forms of extortion. Large shares of taxpayers everywhere report that they pay taxes in large part in order to access services or goods—about 70% of individual tax responses across the sample. Meanwhile about 20% of responses report paying taxes in significant part in order to ensure good relations with collectors, or receive respect and trust. Both seem linked to the ability of tax collectors to disrupt access to services, and life more broadly, but do not appear linked to more aggressive threats. And, indeed, less than 5% of payments are reported to have been made to prevent harassment.

Table 17: What Do You Receive in Return for Tax Payments?

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Received nothing	0.11	0.14	0.12	0.15	0.11
Received immediate access to services	0.76	0.55	0.56	0.73	0.75
Receive goods in return over time	0.05	0.08	0.15	0.07	0.08
Ensured good relation	0.04	0.10	0.15	0.13	0.15
Received respect/trust	0.09	0.07	0.06	0.10	0.14
Received security	0.03	0.02	0.01	0.03	0.02
Protection tax	0.01	0.02	0.01	0.01	0.02
Prevented harassment	0.02	0.06	0.05	0.06	0.07

These messages about why people pay taxes are reinforced by looking at data on the potential consequences of non-compliance. Across all tax types the dominant consequence for now payment is denial of access to the service. This is unsurprising, given the large share of payments that are, essentially, user fees. However, it may also hold a separate message: Given weak enforcement capacity for collectors, revenue collection, both formal and informal, tends to focus in areas in which denial of service offers collectors greater leverage. Meanwhile, in areas in which payments are not simple user fees more coercive methods are more common—but they are not ubiquitous, and the

most aggressive methods are used relatively infrequently (prison, physical or sexual harassment). This is consistent with the idea that while the tax system is viewed as deeply dysfunctional, taxpayers are generally not subject to the threat of unbridled coercion by revenue collectors—though, of course, such threats directed against even relatively small numbers are taxpayers, remain significant (Table 18).

Table 18: What Would be the Consequences of Failing to Pay the Tax?

	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
No consequence	0.11	0.12	0.22	0.15	0.18
Fine	0.10	0.05	0.08	0.03	0.01
Deny access	0.73	0.57	0.65	0.71	0.74
Insecurity	0.05	0.04	0.02	0.05	0.06
Verbal harassment	0.06	0.07	0.05	0.07	0.09
Physical harassment	0.00	0.03	0.02	0.04	0.03
Sexual harassment.	0.00	0.00	0.00	0.00	0.00
Confiscation of property	0.01	0.05	0.06	0.03	0.06
Prison	0.00	0.03	0.03	0.01	0.01
Social sanction	0.02	0.04	0.04	0.04	0.02
Cease activity/operation	0.02	0.03	0.02	0.04	0.04

Meanwhile, certain taxes appear comparatively problematic, in the sense of being characterized by relatively high levels of threats and harassment (Table 19). Taxes related to security, transport and vehicles stand out most clearly: taxpayers perceive relatively little benefit, while the risk of a variety of consequence for non-compliance is comparatively very high. Notably, while there are risks of formal fines the more pervasive perceived consequences are more informal and aggressively coercive: insecurity, verbal, physical and sexual harassment, confiscation of goods and prison. In areas of somewhat more clearly and legally defined taxes, there these patterns remain, but are mutes, with somewhat greater reliance on formal fines, and less on insecurity, and various forms of harassment. While these taxes make up a relatively small share of total taxes in the survey, the smartphone data suggests that they are in fact relatively pervasive, and they appear to warrant particular attention in reducing the risks to taxpayers around formal and informal collection.

Table 19: Comparatively Coercive Tax Types, Full Sample

	Vehicles and Transport	Security	Property	Legal Proceedings	Livestock
No consequence	3.07%	11.57%	9.33%	7.11%	8.54%
Fine	10.96%	41.40%	24.64%	20.10%	14.12%
Deny access	72.90%	10.51%	35.34%	52.31%	66.73%
Insecurity	17.70%	36.74%	10.10%	12.28%	7.62%
Verbal harassment	21.14%	24.54%	14.04%	11.78%	1.27%
Physical harassment	16.22%	39.66%	3.50%	13.83%	3.08%
Sexual harassment.	1.33%	7.89%	0.00%	0.00%	0.00%
Confiscation of property	31.33%	1.31%	18.21%	1.44%	13.05%
Prison	8.31%	51.91%	2.65%	21.03%	3.20%
Social sanction	1.52%	4.60%	3.06%	1.67%	0.65%
Cease activity/operation	16.77%	2.86%	8.15%	0.64%	0.22%

A final area of particular interest is taxes paid to non-state actors involved in local service provision: religious authorities, community development associations and customary authorities. In each case there are questions about the extent to which such payments are best thought of as "taxes" or "voluntary contributions", about the extent of coercion, and about how taxes are used. For both customary authorities we find that payments are particularly tax-like: not only are these taxes subject to significant pressures through social sanction, the need to retain community standing and harassment, but they rank as highly as any formal taxes in the extent to which respondents perceive there to be a threat of fines, or even imprisonment, for non-payment. The story is similar for community development payments, though the share of respondents who perceive a threat of various types of penalties is generally lower almost across the board. This is consistent with expectations and other questions in the survey: a much higher share of respondents expected to receive goods or services in return for payments to community organizations, which lack the simple coercive (and quasi-legal) power of traditional authorities.[12] Finally, for religious payments we see the least evidence of coercion in motivating

[12] Of course, there may also be significant overlap in some cases, with customary authorities playing a role in community development projects.

payments, with almost 90% of those in North Kivu, 70% of those in Kasai Oriental and 40% of those in Kinshasa reporting that there would be no consequence for non-payment. That said, there are some signals of more implicit pressures to pay: outside of Kinshasa upward of 20% of payments were explicitly associated with ensuring good relations, or gaining respect/trust, while greater than 20% of payments were associated with accessing goods or services. All of these forces were strongest in Kasai Oriental (including Mbuji Mayi), where these payments were much more pervasive.

Table 20: Taxes Paid to Non-State Actors

	Community	Customary Authorities	Religious
No consequence	37.23%	17.61%	66.79%
Fine	23.03%	28.43%	3.68%
Deny access	31.10%	19.04%	9.78%
Insecurity	3.76%	2.32%	1.24%
Verbal harassment	2.52%	11.73%	2.25%
Physical harassment	0.63%	6.09%	0.00%
Sexual harassment.	0.00%	0.00%	0.00%
Confiscation of property	0.76%	1.16%	0.00%
Prison	1.57%	9.50%	0.00%
Social sanction	16.38%	25.96%	1.89%
Cease activity/operation	1.41%	5.75%	0.00%

4.5.4 The State Remains the Dominant Actor – Despite Broad Popular Unhappiness

The most striking feature of the data on attitudes follows from the discussion so far: taxpayers express extremely limited confidence in, and satisfaction with, the government, but nonetheless express high levels of support for the general right of the central government to collect taxes. This is intuitively surprising: why should citizens express high levels of general support for taxation—and limited cases of refusing to pay taxes—despite not believing that that revenue is consistently, or even frequently, employed to provide public services? One possibility is that they report that they are very willing to

pay taxes out of desire to 'say the right thing', either because of social desirability bias or fear about the independence of the survey team.

But while this is likely true up to a point, the results remain striking when viewed in comparative perspective—and there is no strong reason to think that such bias is greater in the DRC than elsewhere. To draw out this comparison, we are able to draw on two primary points of comparison: (1) the Afrobarometer survey, which includes a battery of tax related questions that have been asked across 34 African countries (though not the DRC), and (2) two similar national level surveys in Sierra Leone, which include a more detailed set of tax questions. Members of our research team have ben involved in the design of both of these surveys, thus ensuring significant overlap and scope for meaningful comparison.

- The most striking finding is that those in the DRC express unexpectedly positive attitudes toward taxation. In the average African country 70% of respondents either "strongly agree" or "agree" with the general right of government to collect taxes, whereas in our survey the figure is around 80% for both central and local governments.

Table 21: Do Government Have the Right to Make People Pay Taxes?

	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Central	86.0	91	83	77.5	81	89.5
Local	80.6	82	73.5	76.5	69	90.5
Customary	64.0	55	66.5	74.5	61	67

- A related question asks whether tax evasion is "wrong and punishable", "wrong but understandable" or "not wrong". Across Africa 49% of respondents believe that tax evasion is "wrong and punishable," whereas in the DRC significantly greater than 70% of respondents believe evasion is "wrong and punishable", across all of our survey locations, and for each of central, province and local

levels of government, and with almost identical responses from women and men (Table 22). In our comparable national surveys in Sierra Leone 59% and 58% of respondents reported that evasion in "wrong and punishable", respectively—relatively in line with the same figure from the Afrobarometer—giving us confidence in the comparability of our results.

Table 22: Is Not Paying Taxes Wrong and Punishable?

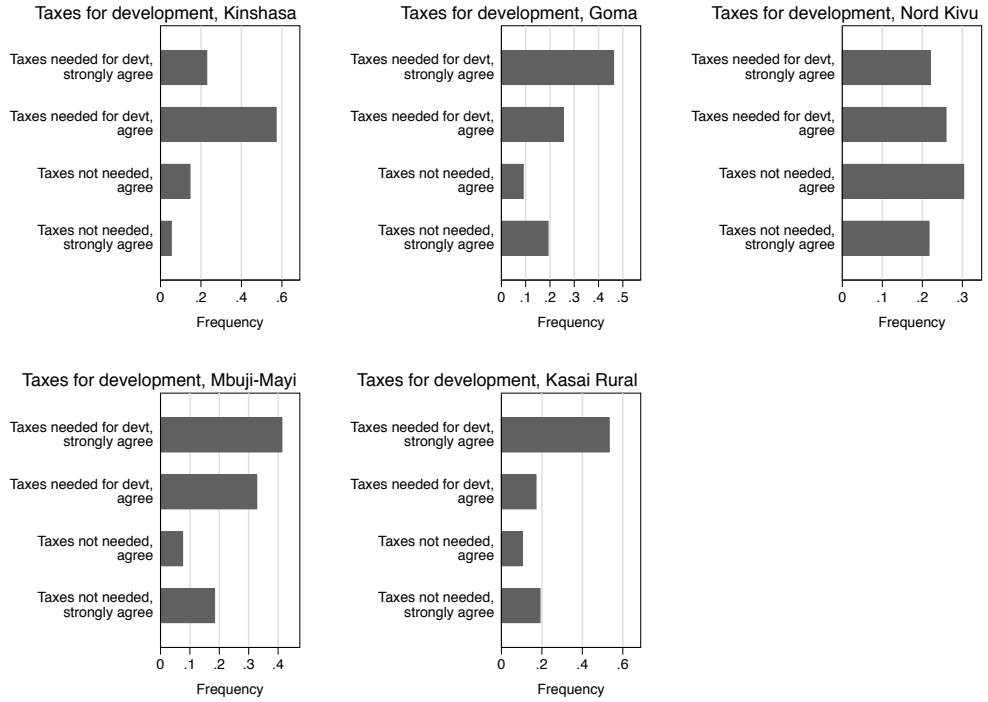
	Full Sample	Kinshasa	Goma	North Kivu	Mbuji Mayi	Kasai Oriental
Central	76.8	78.5	71.5	77	63	84
Provincial	76.3	75.5	70	78	68.5	83
Local	71.6	67.5	69.5	72	59.5	82
Chefferie	67.8	59	67	76	47	81.5

- A third question asks whether the government needs to collect taxes in order to support development efforts: On average 66% of respondents in Africa "Strongly agree" or "agree". The figures for the DRC are again somewhat higher, at 72.5%, though with a markedly lower level (56%) in North Kivu, and higher levels in Kinshasa in particular (80%)
- The only partial exception comes with respect to actual compliance. Both the Afrobarometer and Sierra Leone surveys—as well as the DRC survey—ask respondents whether they have themselves refused to pay a tax to the government, though the wording in the Afrobarometer is quite different so not directly comparable. In Sierra Leone 22% of respondents reply that they either have or would refuse to pay, where in the DRC this figure is about 40%—of which about 20% report having actually refused to pay. While not perfectly comparable to the Afrobarometer question, this level of non-compliance appears to be as high as any country in the Afrobarometer survey. This suggests that while those in the DRC have extremely high abstract belief in the need to pay, their actual compliance behavior is somewhat more consistent with the very low level of government performance, and the pervasiveness of legally questionable taxes. That said, it is worth bearing in mind that the number of government taxes in the DRC is

exceptionally high, and thus the opportunities and reasons to refuse may be far more extensive.

Figure 3: Are Taxes Needed for Development?

Men



Women

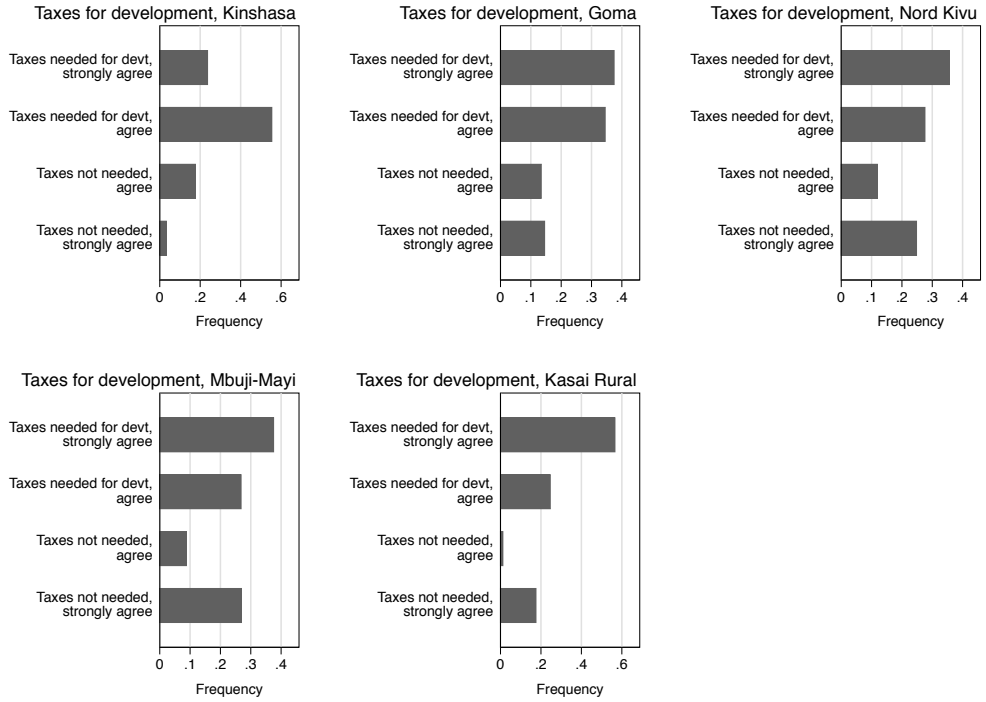
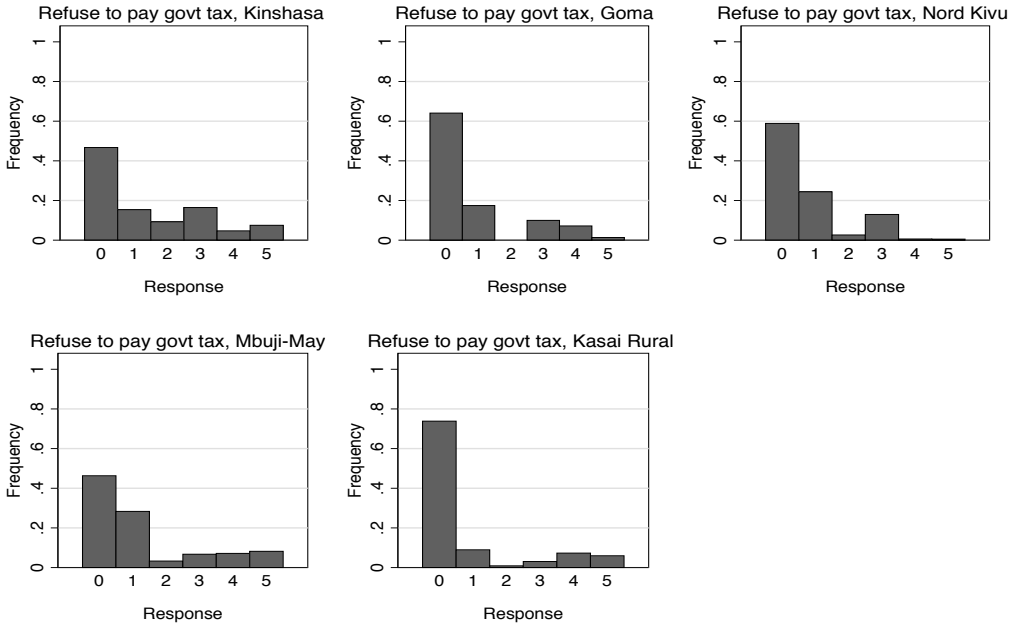
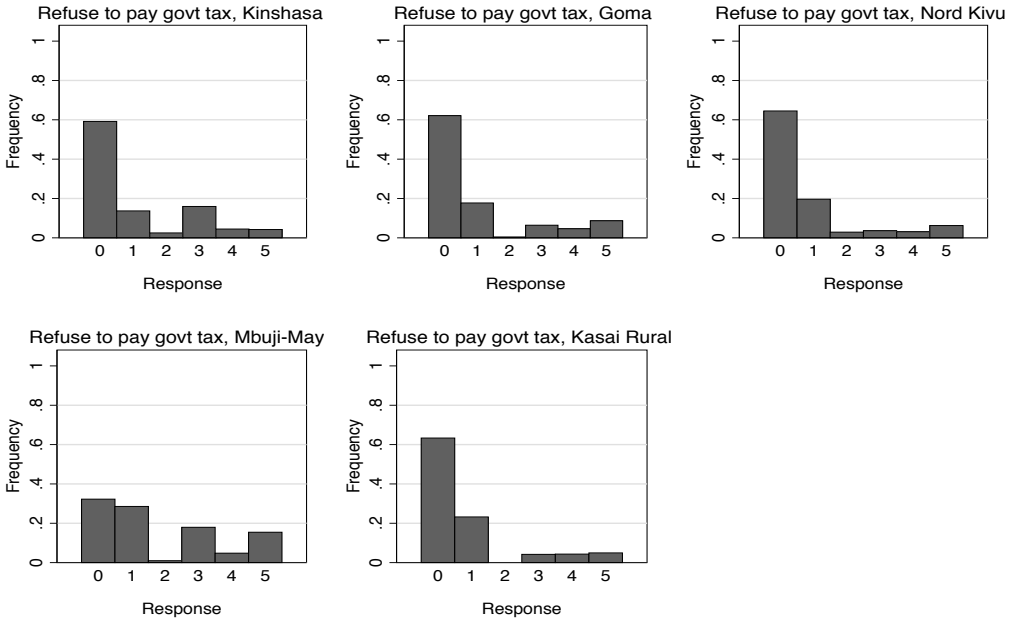


Figure 4: Have Refused to Pay a Government Tax

Men



Women



Notes: Notes: The histograms show rates at which respondents indicate that they refuse to pay taxes or other monetary obligations to government actors (top) or non-government actors (bottom), where the answer codes are (0) I would never, (1) I have not but would, (2) once or twice, (3) sometimes, (4) a few times, and (5) often. The histograms display the proportion of respondents in each locality indicating one of these choices. Estimates incorporate survey weights. Source: total tax burden survey and authors' calculations.

These striking positive attitudes about the legitimacy of government taxation stand in sharp contrast to generally highly negative attitudes about actual government performance.

- Our survey asks about trust in various levels and institutions of government, in format very similar to the Afrobarometer, and the DRC rates far below continent-wide averages. For trust in parliament, for example, in Africa on average about 50% of respondents report some or a lot of trust in parliament, where in DRC less than 20% of our respondents report the same.
- The Afrobarometer similarly finds that almost 50% of respondent express at least some trust in the local council, whereas our survey finds that slightly less than 20% of respondents say the same about provincial governments, and slightly more than 20% about *commune* and *territoire* governments.

- With respect to traditional leaders the Afrobarometer finds that slightly more than 60% of respodents express at least some trust, whereas our survey finds a similar level of trust in North Kivu—but dramatically lower trust in traditional authorities in Kinshasa and, particularly, Goma.
- More directly related to taxation, both of our earlier surveys in Sierra Leone ask whether respondents believe that different government authorities are likely to misuse tax revenue, and in all cases expectation of misuse are much higher in the DRC. Illustratively, across our locations in the DRC about 70% of respondents believe that the central governments is very likely to misuse funds, while another 15% believe that they are somewhat likely to do so. By contrast, in our two Sierra Leone surveys, which include a three point scale (likely, neither likely nor unlikely, unlikely) only 60% and 45% report that misuse is "likely". If we look at the provincial governments, the corresponding figures are about 60% for the DRC, and an average of 51% in Sierra Leone, while for more local authorities expectations of misuse are, again, much higher in the DRC.

Finally, and strikingly, we also find that respondents in the DRC express relatively higher levels of trust in more local levels of government, as compared to the central government—particularly dramatically so in North Kivu—yet they express a somewhat stronger belief in the right of the central government to collect taxes than lower levels of government, or traditional chiefs. This appears contradictory in simply rational terms, and suggests a pre-existing set of beliefs about tax payments that are unconnected to actual experiences and beliefs about the ability of different levels of government to deliver services using tax revenue.

Overall, our initial interpretation of this data—which seems to be supported by work elsewhere in the DRC—is that taxpayers in the DRC continue to adhere to a mental model of a strong and legitimate central state, which plays a critical role in national development and has a corresponding right to collect taxes, despite the fact that the actual state that exists on the ground bears little resemblance to that ideal. This attachment to the idea of a strong central state despite highly contradictory experiences appears to be a

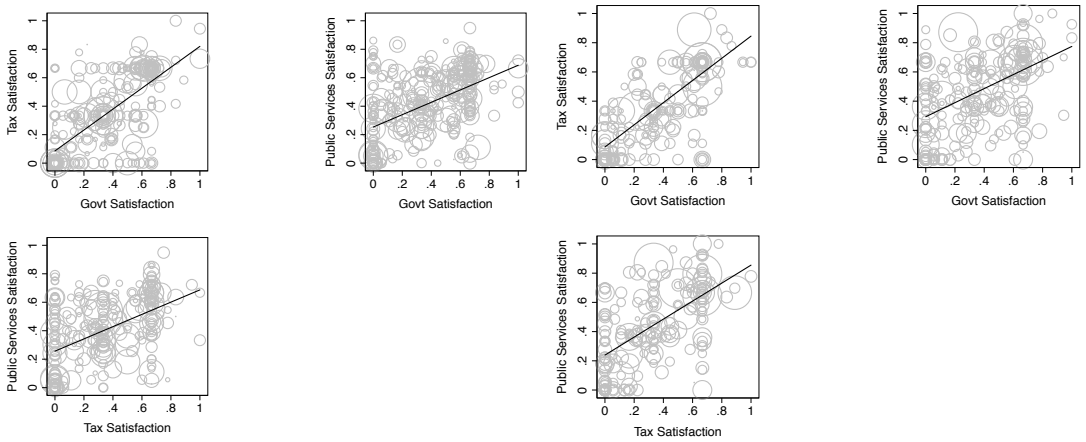
unique, but critical, feature of understanding the tax landscape in the DRC. This is a dimension of the data that we hope to continue to explore moving forward.

4.5.5 Willingness to Pay Taxes is Correlated with Trust in Government

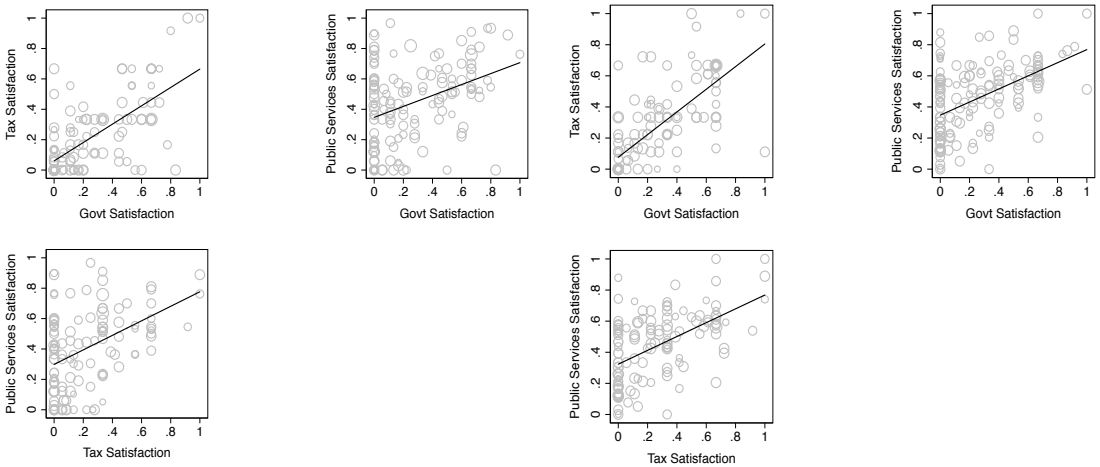
Consistent with a tax system that is highly ineffective, but that is not purely extortionate, and which elicits some trust from citizens, descriptive data is indicative of a clear association between satisfaction with public services, trust in government and attitudes toward paying taxes. Those who express greater trust in government, and satisfaction with services, likewise score higher values on an index of "tax morale", which measures attitudes toward tax payment. This is true across all survey locations, and is true for both men and women. This suggests that, at least at the margin, improved government performance is likely to improve attitudes toward tax payment, mirroring findings elsewhere on the continent. That said, overall levels of expressed support for taxation are extremely high despite poor government performance (discussed below), while overall payments are very extensive but rarely reach government coffers (discussed above). This suggests that improving attitudes toward taxation is not the primary challenge for strengthening the overall performance of the tax system.

Figure 5: Satisfaction with Services, Trust in Government, and Tax Morale

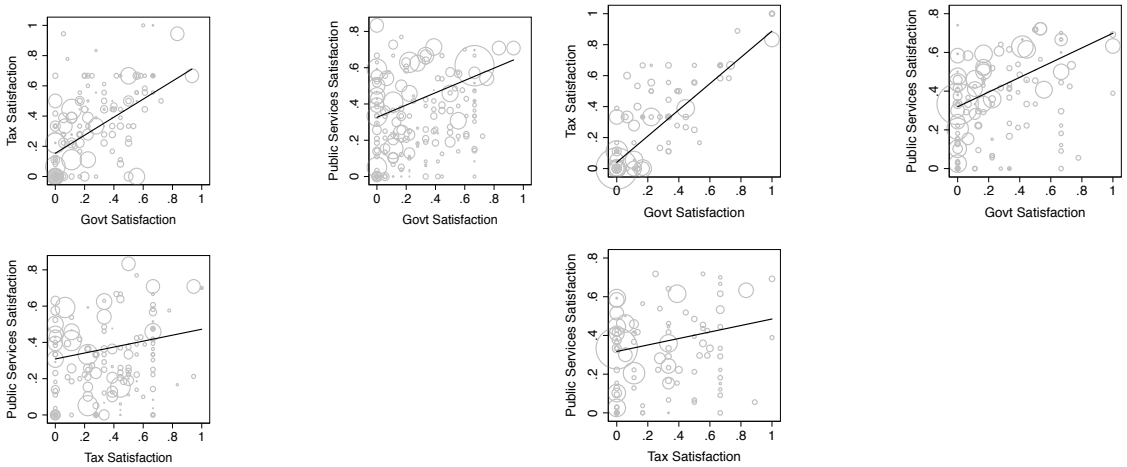
Kinshasa—Men **Kinshasa—Women**



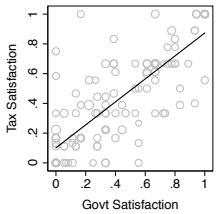
Goma—Men **Goma—W omen**

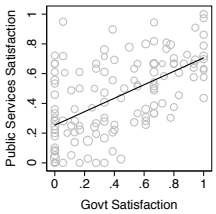


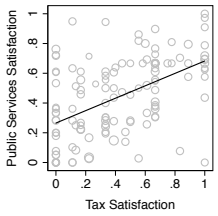
North Kivu—Men **North Kivu—Women**



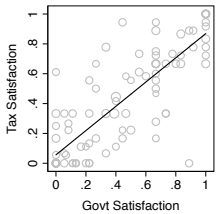
Mbuji Mayi—Men

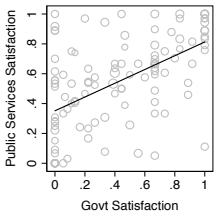


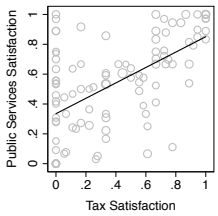




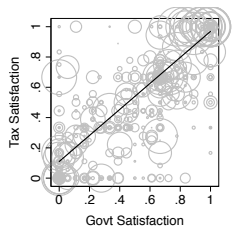
Mbuji Mayi—Women

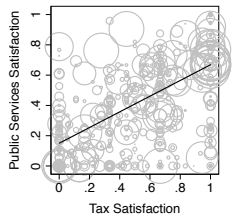




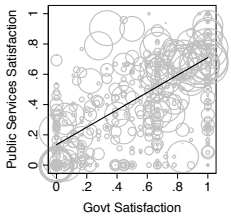


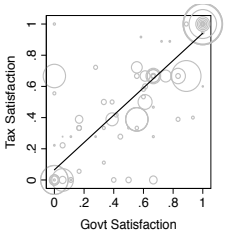
Kasai Oriental—Men

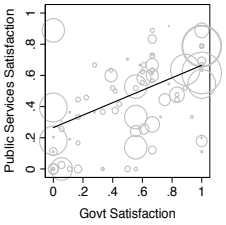


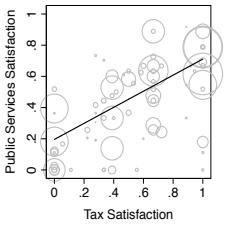


Kasai Oriental—Women









4.6 Variation in Tax Burdens and Attitudes by Demographic Group

Alongside aggregate data about tax burdens, we are interested in exploring variation in tax payments across demographic groups. Do particular types of households pay more in taxes, pay different types of taxes, or have different experiences of taxpaying? Do they have distinct attitudes toward paying taxes, or the state? We focus particularly on differences by gender and, to a lesser extent, difference by levels of education. In exploring these differences the study is relatively path breaking, as we consider difference across genders not primarily in relation to formal tax laws, but in relation to the practical realities of how tax systems play out in practice—a potentially more important, but less explored, dimension of gender differences (Joshi 2016). To do so, we look first at descriptive data, and then also run some basic regression analysis to confirm initial impressions.

Looking first at descriptive data by gender, female-headed households make up 13.5% of all households for which complete data is available. In turn, these households are somewhat wealthier than male-headed households as measured by assets, while household expenditures are similar. This is somewhat surprising, as we might expect female headed households to be one parent households, and thus to have lower assets and income. One possibility, though this is speculation, is that among women without husbands or partners those who are better off have independent households, and are thus captured by our survey, while less well off women may continue to live in larger households with a male head. The broader point is that the experience of female-headed households may not be the same as the experience of women taxpayers as a broader group, and thus warrants further attention.

That said, we find that female-headed households make larger payments as a share of wealth and expenditure. And the gaps are significant, with female-headed households paying about 50% more. Across the entire sample the median female headed household pays 12% of expenditures, while the mean is 15%. The equivalent figures for male-headed households are 7% and 10%. In terms of composition, the survey data indicates

that female-headed households pay substantially more, in both absolute and relative terms, to access public services: water, health, electricity and sanitation. Interestingly, they do not appear to pay more to access education, while paying similar amounts in most other categories. It is possible that these much higher burdens to access public services reflect the lower negotiating power of female headed households in dealing with officials who are able to cut off access, and that this may be less applicable to education, where the system, even if legally informal, appears comparatively formal, and involves more women. However, the explanation may also be more banal: female headed households may consume more or higher quality water, health, electricity and sanitation services, and thus bear higher costs. In the latter case this would still imply that female headed households are comparatively disadvantages in a system in which key services are largely informally financed, but would not imply that women pay more for similar transaction that men. More research is needed.

Turning to attitudes and experiences, the story is less straightforward, and is in some ways surprising, relative to the payments data. That said, caution is needed: the data above is for female headed households (n=259), whereas we have attitudinal data from all female respondents (n=752). Across a wide array of questions about taxes, the use of tax revenues, satisfaction with services and broader trust in government, women's attitudes appear almost indistinguishable from those of men, to an almost remarkable degree. This can be seen in the data and figures presented in the previous section. In so far as women appear to need to pay more to access key services, this does not appear to have undermined their views of these payments or government. Only one difference appears notable across a wide battery of questions: while women report having refused to pay taxes at level similar to those of men, their reasons are quite different: the dominant explanation from men is that they were "not told why the payment is necessary", whereas women explain refusal by the fact that "services are poor", that they don't use a particular services, or that "authorities are corrupt". Turning to experiences of paying taxes, one potential explanation for high payments by female-headed households is that women face stronger penalties for non-compliance. However, this is not strongly supported by the data. While there is tentative evidence that women may face slightly greater risk of

denial of service, or verbal harassment, the differences are relatively small, while the taxpaying experiences of men and women appear relatively indistinguishable across other dimensions.

We are also interested in the potential for tax burdens to vary with a wide variety of other characteristics of respondents: their level of education, their age, their wealth, and their connections to state officials, who may offer protection from taxation. To explore these various possibilities we run a preliminary regression analysis, looking at the determinants of tax payments as a share of expenditure. They key results are reported in Table 23.

Table 23: Demographic Determinants of Total Tax Burdens

	Tax Share of Expenditure	Tax Share of Expend. No Educ.	Tax Share of Assets	Tax Share of Assets No. Educ
HH no. adults	0.01*	0.00	0.04	0.01
	(0.00)	(0.00)	(0.06)	(0.05)
HH no. children	0.01**	0.00	0.09	0.02
	(0.00)	(0.00)	(0.05)	(0.04)
Resp. resettled since 10 yrs.	-0.00	-0.00	-0.23	-0.21
	(0.02)	(0.01)	(0.26)	(0.25)
Total wealth (log)	0.02***	0.02***	-0.82***	-0.55**
	(0.00)	(0.00)	(0.21)	(0.21)
HoH female	0.06**	0.06*	1.50	1.34
	(0.02)	(0.02)	(1.02)	(1.02)
HoH age	0.00	0.00	0.03*	0.02*
	(0.00)	(0.00)	(0.01)	(0.01)
HoH has primary ed.	-0.01	-0.01	-0.21	-0.25
	(0.02)	(0.02)	(0.50)	(0.45)
HoH has secondary ed.	-0.01	-0.01	0.36	0.38
	(0.01)	(0.01)	(0.43)	(0.43)
Know Armed Group	0.01	0.01	-0.68	-0.77
	(0.02)	(0.02)	(0.67)	(0.63)
Know Bourgmestre	-0.05**	-0.03*	-0.16	-0.16
	(0.02)	(0.01)	(0.26)	(0.23)
Know FARDC	-0.04**	-0.02	-0.14	0.05
	(0.01)	(0.01)	(0.20)	(0.18)
Observations	1422	1422	1422	1422

The regression results reinforce some of the descriptive results presented so far, while tentatively raising additional possibilities. Most notably, we see relatively consistent confirmation that female-headed households pay more as a share of expenditure, while the coefficients are positive, though not quite significant, for tax payments as shares of wealth. We see similar evidence, as we would expect that having children increases total payments, given the large share of education in total burdens. We also investigate whether having personal relationships with state officials, chiefs or armed groups leads to reduced tax payments, based on the possibility that this might lend protection and expanded negotiating power. We ask this question for a variety of public officials, and

find only weak evidence that personally knowing the *Bourgmestre* or the Armed Forces (FADRC) may offer benefits, though this is a question that requires additional investigation. Finally, we include a measure of total household wealth as an explanatory variable, and it behaves as expected. In the regressions exploring taxes as a share of wealth, total wealth has a strongly negative coefficient, consistent with the tax systems being generally regressive. Interestingly, the total wealth variable has a positive coefficient in the regressions explaining tax as a share of expenditure. This indicates that while household with higher wealth pay less taxes as a share of wealth, and households with higher expenditure pay less taxes as a share of expenditure, high wealth households do pay more as a share of expenditure—perhaps because these high wealth households spend heavily on essential public services relative to their income.

4.7 Variation in Tax Burdens by Location

We also seek to explore variation in tax burdens by location. As a first step, we want to explore variation across our five survey locations, between urban and rural areas, and between Kinshasa, the capital, and the smaller cities of Goma and Mbuji Mayi. We can move quickly through the data, much of which has been presented already in different form.

As we expect, total tax payments are highest for households in Kinshasa and Goma, somewhat lower in Mbuji Mayi, and lowest in smaller towns and rural areas in North Kivu and Kasai Oriental. Tax burdens overall are somewhat higher in North Kivu (incl. Goma) than Kasai Oriental (incl. Mbuji Mayi), which is consistent with a general impression that there is less development, and a less present state, in Kasai Oriental.

When we turn to total burdens as shares of expenditure, we again find commonality across locations, though with higher burdens in more developed and urban areas: Total payments, as a share of expenditure, amount to about 14% of expenditure in each of Kinshasa and Goma, 11% in the rest of North Kivu, 9% in Mbuji Mayi and 7% in Kasai Oriental. We see very similar patterns in the incidence of taxation in each location, with tax payments following a regressive trend everywhere, as noted earlier.

Larger differences—and quite different trends—emerge when we look at tax payments as share of wealth. In Kinshasa, the median household makes payments worth about 10% of total asset wealth. In Goma and North Kivu that number is about twice as large: 17% of asset wealth in Goma and 15% in the rest of North Kivu. And the figures are, in turn, higher again in Kasai Oriental: 28% of asset wealth in Mbuji Mayi, and 20% in the rest of the province. These figures paint a picture of a much heavier tax burden overall: In OECD countries direct taxes (excluding social security) generally account for somewhat more than 10% of income of the median household - similar to the DRC- but only about 3% of median wealth - much lower than in the DRC. This pattern appears to speak to the extent to which in all locations—but particularly outside of Kinshasa—households struggle to accumulate asset wealth. While taxes as a share of expenditure are higher in wealthier areas, taxes as a share of assets are much higher in lower-income areas. Meanwhile taxes are a potentially major drag on that accumulation—a 50% reduction in payments in rural areas could allow for an almost 10% annual increase in asset wealth *if* tax savings were deployed for that purpose.[13]

When we look at the composition of tax payments there is, again, significant commonality across locations, with the broad patterns described so far holding true everywhere. That said, there is some interesting variation worth noting. Education payments are the largest share of payments, but are much larger in Kinshasa, Goma and North Kivu (average of 45% of payments in the survey) than in Mbuji Mayi and Kasai Oriental (about 25%). It is unclear whether this reflects families having less children in school—perhaps owing to cost—or lower costs for accessing education. Health payments are relatively similar across locations other than Kasai Oriental (excluding Mbuji Mayi), where health payments are markedly larger and more common than elsewhere in the country. Absent a much higher burden of disease, this would appear to suggest particular dysfunction in the health system there. Water is a large share of payments everywhere, except for small towns and rural areas in Kasai Oriental, where

[13] This is, of course, a heroic assumption, and there are a variety of reasons to believe that such savings and accumulation would not occur.

such payments are almost non-existent, presumably owing to a lack of state provision and access to free water sources. Finally, two other differences are worth noting: payments to religious organizations are about twice as significant, as a share of payments in both Mbuji Mayi and the rest of Kasai Oriental, while payments related to vehicles are dramatically more important in Kasai Oriental, suggestive of relatively unrestrained extraction along transport routes.

We run additional regression results exploring whether tax payments appear to vary systematically according to variables seeking to capture the extent of state presence, the availability of government services, or the presence of armed groups (Table 24). Overall, the preliminary results are inconclusive: there is very modest evidence that being further from the tax office reduces tax burdens, and that being further from a police station actually increases tax payments—contrary to the image of the police as fundamentally extractive. However, both results appear very weak, while we see no evidence of tax burdens varying systematically with the size of the state presence, or the presence of armed groups in the area—both of which would suggest quite idiosyncratic drivers of outcomes. That said, these are relatively crude indicators, and proved difficult to measure accurately, with local leaders often unable to provide required information. This remains a rich area for further investigation.

Table 24: Location-Based Determinants of Total Tax Burdens

	Tax Share of Expenditure	Tax Share of Expend. (No Educ.)	Tax Share of Assets	Tax Share of Assets (No. Educ)
HH no. adults	0.00	-0.00	0.05	0.01
	(0.00)	(0.00)	(0.07)	(0.05)
HH no. children	0.01	0.00	0.07	0.01
	(0.00)	(0.00)	(0.05)	(0.02)
Resp. resettled since 10 yrs.	0.01	0.02	0.12	0.26
	(0.03)	(0.02)	(0.34)	(0.15)
Total wealth (log)	0.01*	0.02**	-0.73***	-0.31***
	(0.01)	(0.01)	(0.11)	(0.04)
HoH female	0.09**	0.08*	0.36	0.20
	(0.03)	(0.04)	(0.42)	(0.15)
HoH age	0.00*	0.00	0.02	0.02*
	(0.00)	(0.00)	(0.01)	(0.01)
HoH has primary ed.	-0.00	-0.01	0.20	0.12
	(0.03)	(0.03)	(0.47)	(0.18)
HoH has secondary ed.	-0.03	-0.03	-0.22	-0.04
	(0.02)	(0.01)	(0.20)	(0.10)
Know Armed Group	-0.01	-0.00	-0.04	-0.07
	(0.02)	(0.02)	(0.40)	(0.16)
Know Bourgmestre	-0.04	-0.02	-0.08	-0.17
	(0.02)	(0.02)	(0.34)	(0.17)
Know FARDC	-0.07***	-0.03*	-0.21	0.12
	(0.02)	(0.01)	(0.30)	(0.20)
Distance to nearest tax office (km)	-0.00**	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Distance to nearest police post (km)	0.00***	0.00**	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Number of central state employees	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Number of police	-0.00	0.00	0.01	0.01*
	(0.00)	(0.00)	(0.01)	(0.01)
Armed group activity	0.02	0.03	0.09	-0.15
	(0.02)	(0.02)	(0.23)	(0.12)
Observations	674	674	674	674

4.8 Value Chain Tracking and Indirect Taxes

As noted above, in estimating tax burdens on households we are capturing only direct taxes—that is, payments made directly by households. This excludes all indirect tax payments—that is, taxes embedded in the prices of goods and services consumed by households. Illustratively, if the price of every product consumed by a household was 20% higher owing to taxes levied over the course of its production and sale, then this would imply that households are effectively paying 20% of expenditure in indirect taxes. Their true total tax burden would then be the total burden of direct taxes—captured by our survey—plus their indirect tax burden. This indirect tax burden is a frequently overlooked component of the taxes paid by households.

It is not the goal of this study to attempt to measure these indirect tax burdens in detail, in part because doing so is extremely complex. Even with our larger business survey we cannot adequately capture all of the businesses along the value chain for particular goods, in order to estimate all taxes paid along that value chain. However, we do attempt to provide an indicative look at this question, while piloting an innovative methodology for studying the indirect tax burden embedded in the prices of specific goods. To this end, we set up a monitoring system to attempt to estimate the share of directly paid taxes in the price of one key consumption good—cassava—in North Kivu province (including Goma).

In order to track the value chain of cassava we implemented four steps:

1. Oversample businesses that are involved in the cassava value chain in the business survey.
2. Oversample villages that produce cassava in our rural sample
3. Conduct an additional "value chain survey" with producers and market sellers of cassava throughout North Kivu.
4. Distribute 10 smartphones to businesses at various points in the value chain to report prices and taxes paid on a weekly basis.

This approach allowed us to study the prices and taxes throughout the cassava value chain. Specifically, we surveyed the following actors in the value chain:

- *Producers*: businesses or households in North Kivu that grow cassava to sell
- *Rural normal market*: merchants at regular markets where consumers buy for consumption in North Kivu
- *Rural main market*: merchants at markets in the main towns in North Kivu (the capitals of the territory) where consumers buy for consumption
- *Rural market towards Goma*: merchants at markets in North Kivu that sell to merchants transporting cassava to Goma. These markets are almost exclusively in the territory of Rutshuru (34 respondents) with some also in Lubero (4 respondents)
- *Goma arrival market*: merchants at markets in Goma where cassava arrives from the countryside
- *Goma normal market*: merchants at regular markets in Goma where consumers buy for consumption
- *Goma Consumer*: households in Goma that regularly buy cassava for consumption

Table 25 shows median purchase and sale prices in each location.

Table 25: Prices of Cassava at different stages in the value chain

	Flour			Peeled root		
	N	Purchase price per kilo	Sale price per kilo	N	Purchase price per kilo	Sale price per kilo
Producer (business survey)				33		FC 230
Rural normal market	45	FC 184	FC 190	99	FC 200	FC 290
Rural main market	75	FC 200	FC 250	16	FC 295	FC 400
Rural market towards Goma	0			38	FC 125	FC 150
Goma arrival market	0			18	FC 254	FC 300
Goma normal market	9	FC 280	FC 400	20	FC 236	FC 283
Goma Consumer (value chain)	11	FC 380		3	FC 317	
Goma Consumer (hhold survey)	223	FC 360				
Rural Consumer (hhold survey)	334	FC 250				

The market for cassava flour paints a particularly straightforward picture. Prices increase progressively moving from rural markets, to the primary provincial markets and, finally, to Goma. Critically, the prices paid by consumers, as recorded in our household survey, closely match the prices recorded by the value chain tracking system, with prices about 50% higher in Goma. This gives us significant confidence in the figures that we capture.

The data for the market in peeled cassava root is more complex, and appears to speak to the complexity of the relevant value chain across the province. The top right of the table records producer prices, and prices in rural markets, in Masisi, Beni, Walikale and Lubero. As expected, the purchase price by traders in rural markets in similar to the sales price reported by producers in our survey in the same areas, while prices are higher in the main market, in larger cities, than in smaller rural markets.[14] The bottom right of the table, captures the value chain leading to Goma, capturing sales and purchase prices as smaller rural markets in Rutshuru, where traders purchase Cassava root to transport to Goma. The prices in these smaller markets are far lower than the prices in markets in Masisi, Beni, Walikale and Lubero, which suggests that the value chain supplying Goma from Rutshuru is somewhat separate from the higher cost value chain supplying

[14] Our value chain tracking system failed to capture enough producers to producer reliable data, owing to limited resources for this pilot.

secondary towns.[15] Nonetheless, by the time cassava root reaches Goma prices there are comparable, or slightly below, those in secondary towns.

Having tracked prices along the value chain, Table 26 reports data on the two tax categories captured by the value chain tracking system: direct taxes on transport to the market, and taxes on sales (which includes VAT/turnover taxes, markets fees and other informal payments made in the market). To obtain this tax rate, we sum the total taxes paid on a given day by a respondent and divide this by the total sale revenue that day (price times volume sold). We then take the mean per respondent for each stage in the value chain.

Table 26: Transport and Sales Taxes on Cassava at Different Stages of the Value chain

	Flour			Peeled root		
	N	Sale tax, % of sale total	Transport tax, % of sale total	N	Sale tax, % of sale total	Transport tax, % of sale total
Rural normal market	45	<1%	0%	99	<1%	2%
Rural main market	75	3%	0%	16	<1%	<1%
Rural market towards Goma	0			38	<1%	<1%
Goma arrival market	0			18	0%	3%
Goma normal market	9	12%	0%	20	16%	<1%
Goma Consumer (value chain)	11	<1%		3	7%	

The most immediate message is that taxes are far higher in Goma that in other secondary markets, averaging 14% of the total value of sales across cassava flour and peeled cassava root. These values are much lower in rural markets, where sales taxes are less than 1% of total sales for everything other than cassava flour in the major regional markets, where taxes are still only 3%. Transport taxes are reported as zero for cassava flour, but this seems likely to reflect the nature of the market: cassava flour is largely

[15] This is consistent with research on Cassava markets in Chemonics International (2015). Democratic Republic of the Congo: Staple Food Market Fundamentals. *Family Early Warning Systems Network.* Pp. 38-39

imported from Rwanda, or else produced locally.[16] By contrast, Cassava root is transported through the value chain, with transport taxes account for perhaps 2%-4% of total sales depending on location.

The total tax burden is thus about 14%-16% of the total value of sales in Goma, and markedly lower—perhaps 2-5%—in regional markets, and still less in local markets. The data for Goma implies a large indirect tax burden for a key staple crop, and also runs counter to some suggestions that indirect taxes may be relatively modest for low-income households because core consumption goods are locally produced, sold in informal markets and may escape the VAT. By contrast, conditions in rural markets better reflect the conventional wisdom that taxes on staple goods may be limited—however, the smaller tax burden is nonetheless far from negligible for often very low-income households. This implies the value of further and larger studies of this kind for key consumption goods. Meanwhile, this pilot study in employing market interviews and smartphone to record price information appears a valuable approach to this question, though with a need for careful attention at the planning stage to gathering adequate data at each stage in the value chain, and to understanding the geographic structure of those value chains.

5 Business Survey Results

Alongside data on total tax burdens on households, we also conducted a somewhat more limited survey of 800 small and medium sized businesses in Kinshasa and North Kivu (again split between Goma and the remainder of the province). Again we expect the survey to capture primarily data on payments to provincial and ETD governments, as many of these firms are too small to be liable to the most important national tax—the

[16] There was only one trader who reported transporting cassava flour in to Goma. That individual reported transport taxes of 17%, but one observation does not allow for drawing confident conclusions.

corporate income tax. We present the data following the same broad format used for the household data.

5.1 Overall Tax Burden

Overall tax payments by SMEs are markedly smaller than those for households, amounting to an average of $248 per business in Kinshasa, $140 per business in Goma and $203 in the rest of North Kivu. Much like for households, the majority of these payments are labeled "formal" by businesses: about 90% across all three locations. Even more so than for households, however, this tax burden is skewed by a smaller number of larger businesses, and the median level of payments is only $47 in Kinshasa, $15 in Goma and $50 in North Kivu. In fact, even the 75th percentile of payments remains below the mean in all three locations, thus further highlighting the small size of the absolutely burdens on these SMEs.

Table 27: Total Payments by Businesses, by Location

	Kinshasa	Goma	North Kivu
Mean Total Payments	$247.67	$137.80	$203.23
Mean Formal Payments	$219.19	$125.31	$183.91
Mean Informal Payments	$37.48	$12.50	$19.32
25th percentile	$0.00	$0.00	$0.00
Median	$47.22	$15.00	$50.00
75th percentile	$166.67	$132.00	$85.00
Mean Payments as Share of Expenditure	4%	4%	7%

This message is further emphasized when we look at the share of business tax payments in total expenditures, where the mean share of expenditures is only 4% in Kinshasa and Goma, and 7% in North Kivu. We employ tax payments as a share of business expenditures, as opposed to revenues or profits, as the smallest firms in the sample appear to struggle to estimate revenue and profit with any accuracy, thus yielding implausible values. This is not necessarily surprising in retrospect: small firms in low-income countries are generally subjected to highly simplified tax regimes precisely because of their perceived inability to keep reliable accounts. Indeed, even the expenditure data should be treated with significant caution, and future data gathering might be well served to collect revenue and expenditure data on a weekly or monthly basis.

Despite these caveats, we can make some reasonable assumptions about how taxes as a share of expenditure would translate into taxes as shares of revenue and profits. In general we would expect revenues of a functioning business to be somewhat larger than expenditures, on average. This would lead taxes as a share of revenue to be still lower, and this is what we see for larger firms with more reliable accounts, for whom taxes as a share of revenue however closer to 2%-3% on average. In turn, we would expect profits to be somewhat smaller than expenditures or revenue. Unfortunately much of the data reported by the firms for profit appears unreliable, but reasonable assumptions could put taxes as a share of profit around 10% on average, and somewhat higher in North Kivu.

However, again, these burdens appear to be shaped very heavily by a smaller number of heavily taxed firms, with over 50% of the firms in the sample reporting paying less than 1% of expenditures in taxes—and 75% of firms in Kinshasa and Goma reporting tax burdens below 1.5% of expenditures. This is consistent with most SMEs existing largely outside of the formal tax net, but with small numbers of firms being either inside the formal tax net, or periodically liable for larger informal payments, thus creating much heavier tax burdens for a relatively small subset of firms. Meanwhile, firms outside of the formal tax net may struggle to access formal services, as documented in other research, but do not appear to be liable for large informal payments in the absence of formal taxes.

5.2 Composition of Tax Burdens by Tax Types

As with the household survey, we can gain deeper insight into the tax burdens on businesses by disaggregating total tax payments into sub-categories. These sub-categories are reported in Table 28.

Table 28: Business Tax Payments by Category

	Mean Total Payments			Share of Total Payments		
	Kinshasa	**Goma**	**North Kivu**	**Kinshasa**	**Goma**	**North Kivu**
Communications	5.42	0.00	0.00	2.19%	0.00%	0.00%
Contracts	0.01	0.00	0.02	0.00%	0.00%	0.01%
Customs and Borders	6.56	24.83	2.41	2.65%	18.02%	1.19%
Electricity	71.83	12.67	82.85	29.00%	9.19%	40.77%
Fuel	14.15	0.99	6.74	5.71%	0.72%	3.32%
Sanitation	16.48	12.61	11.58	6.65%	9.15%	5.70%
Insurance	0.04	0.00	2.70	0.02%	0.00%	1.33%
Labour	6.80	3.88	2.69	2.75%	2.82%	1.32%
Licensing	45.66	48.80	41.06	18.44%	35.41%	20.20%
Maintenance	0.30	0.81	0.04	0.12%	0.59%	0.02%
Marketing	3.73	0.55	0.01	1.51%	0.40%	0.00%
Other Taxes	4.52	0.36	0.28	1.83%	0.26%	0.14%
Packaging	3.50	1.20	0.02	1.41%	0.87%	0.01%
Printing	0.14	0.00	0.01	0.06%	0.00%	0.00%
Profit	2.05	4.26	0.64	0.83%	3.09%	0.31%
Property	5.28	0.88	2.72	2.13%	0.64%	1.34%
Royalties	0.00	1.25	0.05	0.00%	0.91%	0.02%
Sales Tax	18.52	6.89	20.56	7.48%	5.00%	10.12%
Secutiy and Judicial	6.68	6.85	0.38	2.70%	4.97%	0.19%
Storage	1.13	0.17	8.05	0.46%	0.12%	3.96%
Transport and Vehicles	8.93	2.56	6.78	3.61%	1.86%	3.34%
Water	25.94	7.58	13.67	10.47%	5.50%	6.73%

At a broad level, the disaggregated data is again encouraging with respect to the overall reliability of the results, as we find significant commonality in the pattern of tax types across locations, and broadly consistent with expectations. Across the three locations the two most important payments categories are licenses and electricity, each accounting for greater than 20% of total payments. The importance of licenses is consistent with the fact that licenses, rather than income taxes, are a dominant strategy in many low-income countries for taxing small businesses. This reflects the relative inability of many such businesses to maintain reliable accounts, and the logistical difficulty and cost to tax agencies of tracking and taxing large numbers of small businesses. And, indeed, taxes on profit are far less significant, making up only a tiny portion of total tax payments. While almost all firms pay licensing taxes, only 37 firms in our sample pay taxes on profit. Sales taxes fall somewhere in between the two—easier to collect than profit taxes, but

more complex than licenses. We correspondingly find that sales taxes are a relatively important payment for a smaller subset of 50 larger firms, such that sales taxes comprise about 7.5% of total payments.

The importance of taxes on electricity is similarly intuitive—though it is important to note that the business survey, unlike the household survey, is careful to focus specifically on taxes and informal payments for electricity, but not the basic cost of electricity from the state provider. Electricity is a key input for a subset of business—almost all businesses in Kinshasa pay such taxes, about a third of businesses in Goma, and only 8 in North Kivu (where one somewhat larger business in the sample made large payments for electricity). Meanwhile, electricity provision is highly amenable to the extraction of payments by state officials, owing to the ease of informal connections and informal disruptions. The combination of urgent need from businesses, and easy disruption and informality for state officials, is an obvious recipe for significant payments. Notably, payments for water are more modest, presumably reflecting the same forces mitigating against informality described in relation to households. Meanwhile, sanitation payments are as large as payments related to water, and much more pervasive, which is consistent with anecdotal accounts about the costs of waste disposal, but also the use of "sanitary inspections" as a means for state officials to demand payments.

The most interesting point of variation across locations is that payments related to customs and borders make up almost 20% of all payments in Goma, but less than 3% in the other locations. This is consistent with Goma's role as an important trading hub with Rwanda, with 24 businesses incurring large costs of this kind. Such costs would also be visible, presumably, in direct border towns elsewhere in North Kivu, these were not central to our sampling. The corollary of sampling businesses involved in cross-border trade in Goma is their relatively lower reliance on electricity. Overall, these differences, while interesting in context, are also consistent with other data suggesting that—much like for households—the tax burden is quite fragmented, and shaped heavily by the particular activities in which different firms engage.

5.3 Data Validation Using Smartphone Data

The final stage in our analysis is to seek to assess the reliability of the survey data, by comparing it to data from our smartphone data gathering system. The basic comparison, by payment type, is presented in Table 29.

Table 29: Comparing Tax Payments from the Smartphone and Survey Data, Kinshasa (Annual USD)

	Smartphone	Survey
Total Mean Payments	636	247.67
Total Mean Formal Payments	87%	85%
Total Mean Informal Payments	13%	15%
Licensing Taxes	138	45.66
Tax on Electricity/Power	50.4	71.83
Tax on Property and Physical Goods	91.2	5.27
Transport Tax	57.6	8.92
Water tax	38.4	25.94
Fuel Tax	36	14.15
Sanitation Tax	33.6	16.48
Labour Tax	28.8	6.8
Security or Judicial Tax	28.8	6.68
Maintenance Tax	26.4	0.3
Communication Tax	25.2	5.42
Packaging Tax	20.4	3.64
Profit Tax	13.2	2.05
Sales Tax	13.2	18.52
Storage Tax	10.8	1.12
Other Taxes	8.4	4.51
Taxes on Purchases	7.2	0
Marketing Tax	3.6	3.73
Insurance Tax	3.6	0.04
Excise Tax	1.2	0
Media Tax	0	0
Royalties	0	0

The comparison between the two types of data is strikingly similar to the comparison between the smartphone and survey data for the household survey, with several key messages emerging.

1. Overall, total tax payments captured by the smartphone reporting system are more than double those recorded in the survey, suggesting significant recall problems in the survey. On the surface this appears to be a larger difference than that recorded by the household survey. However, the business survey includes a much smaller share of user fees to access public services, which were a major component of household payments, and were somewhat larger in the household survey than the smartphone data. When we excluded these larger payments from the household data gathering, the smartphone system recorded payments about three times larger than the survey.

2. As with the household survey, although the smartphone system recorded higher payments overall, the pattern of payments across payment types is relatively common between the two—but with greater agreement for payments related to accessing essential services. In both sets of data payment related to electricity, water, sanitation and fuel figure among the most important payments. Among payments not directly related to accessing services payments for licenses are most important in both sets of data, while profit taxes are markedly less important. Meanwhile, interestingly, the survey actually records somewhat higher average payments for the other major formal tax facing SMEs: the sales tax.

3. The largest discrepancies between the two surveys in absolute and relative terms fall amongst seemingly more idiosyncratic and varied payments, and are again similar to the categories of greatest divergence for the household survey: property and physical goods and transport, and then more modest payments related to security, judicial, maintenance, communication, labour and packaging. As with the household survey, this suggests that while survey respondents easily recall the most important and high profile payments for access to services, licenses and sales, they fail to adequately recall other more idiosyncratic—but still important—payments.

4. On balance the evidence suggests that the survey data is broadly reliable, but underestimates total payments—particular those not related to accessing key services. This, in turn, suggests that future data gathering efforts of this kind—in the DRC and elsewhere—should consider strategies for regular data gathering, in order to minimize recall bias. The smartphone systems deployed here appears to have performed will in this pilot exercise, and could usefully be deployed on a larger scale.

6 Tax consulting and taxpayer protection Experiments

Alongside the core data gathering, the data from the smartphone reporting systems was employed to conduct two experiments exploring the determinants of tax payments by respondents—and possible strategies for reducing front line corruption. Both experiments begin from a simple premise, which is firmly supported by the survey data: taxes are *bargained* with revenue collectors. In this sense some of these payments resemble illegal extraction of revenue from taxpayers, which hurts both taxpayers and the state (through reduced tax revenue). Anecdotal evidence suggests that bargaining outcomes depend on who the tax payers' know that can protect them against abuse, and whether the tax payers are well informed about the legal level of the tax. Our experiments seek to explore whether taxpayers become better able to negotiate these payments when they are given access either to (a) improved information about the legality and formal rate of different taxes, through intensive and high frequency tax consulting and (b) protection by promise of follow-up on abuse by a prominent local civil society organization. Both are "hard" tests, in the sense that the timeline for effects is short, and the sample size relatively small, but offer a pilot to consider possible strategies for combatting corruption in tax collection.

6.1 Rationale and Theory

The widespread informality of the taxpaying *process* in the DRC, even for so-called "formal" taxes, makes it useful to understand tax payments as a negotiation. Tax

collectors are interested in extracting comparatively greater revenue from taxpayers. These payments may return to the state as tax revenue, may be divided with more senior officials, or may be retained by tax collectors to increase their own wealth. The ability of tax collectors to extract revenue from taxpayers is likely to be shaped by the law itself, of course, their outside options, and their relative bargaining power. This is, in turn, likely to depend, among others, on two factors: access to information about the tax code environment, and the extent to which taxpayers have access to recourse, or support, to resist illegal demands for unwarranted or additional payments. Where taxpayers lack knowledge of the tax code—that is, what payments are legal, and what the legal rates are—tax collectors may be more able to demand payments above and beyond the legal rate, threaten worse sanctions than are in fact possible, or demand high bribes in order to forgo the formal payment. In turn, where taxpayers lack the ability to legally appeal unfair payments, or access to powerful patrons who can act on their behalf, they may have little leverage in resisting demands by tax collectors.

6.2 Description of Information and Advocacy Interventions

Our data gathering—as well as broader sources—offer clear evidence that knowledge of the tax code and the instruments that exist, and efforts to protect tax payers, may play an important role in shaping patterns of tax payments. First, consistent with qualitative accounts, our survey reveals that the negotiation of tax payments is widespread, affecting 30% or more of all payments. This may understate the potential for negotiation, and for illegal extractions, as there are likely to be additional cases in which taxpayers do not explicitly negotiate, but in which the payment being made is either illegal, does not conform to the formal rate or does not enter state coffers. Second, we have clear evidence, reported earlier, that citizens have very limited understanding of the tax law, and may thus be relatively vulnerable, as about 70% of respondents report knowing “not much” or “not at all”. Finally, analysis of payments data from the smartphone reporting reveals that the level of tax payments is correlated with the strength of connections to state officials, as well as levels of education, indicating that access to external support—particularly within the tax agency itself—may, indeed, be important to the ability of taxpayers to negotiate tax payments.

To more formally test these possibilities we implement a parallel randomized control pilot. This pilot allows us to test the impacts, respectively, of giving taxpayers access to improved information ("tax consulting experiment"), offering them advocacy support from a respected local NGO ("protection experiment") and implementing an advocacy campaign targeting government. We describe each in turn.

The *tax consulting experiment* involved providing respondents with customized consulting services, whereby they would be contacted regularly by our implementing partner, ODEP, in order to gain access to tailored information on the tax system. The goal was to provide taxpayers with access to information about whether individual taxes were legal, what the formal rates were and how to seek more detailed information or lodge concerns. Our hypothesis was that access to this information would give taxpayers greater bargaining power in seeking to minimize illegal payments, and will affect the terms of the negotiation of informal payments to avoid paying the formal tax.

The *protection experiment* involved offering respondents access to a valuable ally in confronting potential abuses. In this experiment ODEP recorded any abuses experienced by the respondents, and then promised to launch an advocacy campaign against recorded abuses—though the advocacy campaign was only launched after a period of time, as described below. By increasing the beliefs of respondents about the likelihood that tax collectors will be punished for abuses, the experiment aimed to increase their willingness to negotiate tax payments, and thus increase the effectiveness of their bargaining.

Recruitment into the initiative was randomized as follows: a few days after the end of the smartphone training, individuals were contacted by an ODEP advisor, based on random assignment by the research team, to learn about the ODEP tax activities and to indicate their willingness to participate. Some respondents were presented with participation in the tax consulting service, others with access to protection support against abuses, and a third group would receive both interventions. A fourth control group did not receive any support from ODEP. Those who agreed were then given access to the prescribed services

throughout the entire period of smartphone reporting. The goal was a 2x2 design, with 50 participants in each category (consulting, protection, consulting and protection, control), though in practice numbers were somewhat lower, owing to recruitment challenges in the field.

In addition to the tax consulting and protection experiments we also implemented a third experiment: we implemented an anti-corruption campaign aimed at making bribe taking riskier. While the tax consulting and protection interventions acted on the beliefs of households—beliefs about their bargaining power, and beliefs about the tax system—this intervention was designed to act on the payoffs for tax officials. Since we promised households selected in the protection intervention that ODEP would launch a campaign against recorded abuses by tax officials, we worked with ODEP to organize a citywide campaign after three months of smart phone data collection. To be able to estimate the effects of this intervention, we randomly selected half of the neighborhoods in Kinshasa to receive the campaign while administrators in the remaining half were able to continue to operate with impunity. This allows us to estimate the impact of a citywide anti-corruption campaign on the ability of administrators to extract payments from households and small enterprises.

Ultimately, implementation of all of the experiments was led by our local partner, ODEP, under the supervision of the research team. ODEP was the best available partner, as it has expertise in the tax area, based on previous advocacy and research work, and is relatively widely trusted—with trust significantly exceeding any state agencies. That said, trust was far from perfect: our survey indicates that trust in ODEP is somewhat lower than an average civil society organization, thus potentially limiting the perceived credibility of the information and, particularly, protection promises from ODEP.[17] Parts of the intervention were implemented relatively effectively, and ODEP staff demonstrated—even in follow-up interviews—strong understanding of the intervention.

[17] We did not ask specifically about other civil society groups, and it could be that citizens simply express more trust in civil society generally than when they are asked about specific organizations. What we know for sure is that trust is far from universal in both cases.

That said, exit surveys suggest that in some cases ODEP did not manage to adhere strictly to the randomization protocols, despite numerous training sessions, weakening our ability to clearly identify the potential impact of the interventions. Based on an exit survey conducted with participants we find three potential problems with the tax consulting and protection experiments, though the relatively small sample size implies that exit survey data must be treated with some caution:

- For some of the respondents in the protection experiment ODEP may not have asked about all payments made and potential abuses, thus reducing their ability to follow through credibly on the advocacy promise for all respondents in the sample.

- ODEP should have provided information only to those in the tax consulting experiment, but in practice appears to have sometimes provided information to the protection only group as well, not withholding where required for learning about impacts.

- ODEP should have identified abusive tax collectors, and offered advocacy, in only the protection experiment, but these seem to have also occurred, though to a lesser extent, in the information group as well.

To the extent that the treatments may not have been as clearly targeted in practice as in the original design, we should expect some substitution between the two interventions, as when one is implemented, it leaked to the other intervention. In turn we see similar problems, though more acute, for the advocacy campaign intervention: whereas ODEP was meant to implement the campaign intervention only in half of the respondent avenues, in practice they initially implemented the intervention in *all* avenues, thus eliminating the potential for an effective control head on. Despite multiple training sessions with ODEP and verification of their understanding, this implementation issue reduced our ability to learn from this study. However, we were able to detect issues at implementation early enough and corrected for this deviation at the start of December. We thus expect the main effect of the intervention to be detectable in both treated and

control groups, but only after the campaign started—hence detectable by comparing before to after the start of the campaign.

6.3 Results

Notwithstanding the challenges in implementation, we were able to estimate key results. As is described below, some of the ambiguity of the results is consistent with imprecision in the implementation of the experimental interventions. Our first sets of results focus on the impacts of the tax consulting and protection interventions. We implement ordinary least squares to estimate the effects of our interventions. The results include three explanatory variables: binary variables for participation in either the consulting or protection interventions, and a third binary variable equal to 1 if the respondent was included in both interventions. The consulting coefficient captures the effect of having the consulting treatment *only*, compared to no treatment at all. Similarly, the protection coefficient captures the effect of someone without *any* treatment being assigned the protection treatment. The effect of both the consultation treatment and the protection treatment is the sum of the consultation coefficient, the protection coefficient and the Both coefficient—effectively, the coefficient on both—captures whether or not the two interventions have a cumulative effect, or are instead substitutes. We next describe how we use this framework to implement an implementation check.

Table 30: ODEP Compliance to Experimental Protocols

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Contacted	P. ask	P. caught	P. promise	Prot ident.	P. useful	Prot Z	C. tax	C. complaint	C. useful	Consult Z
Protection	0.790***	0.00980	-0.0686	0.667***	-0.0686	0.0882+	0.801*	0.441***	0.412***	0.0784	0.658*
	(0.0635)	(0.290)	(0.288)	(0.168)	(0.288)	(0.0497)	(0.316)	(0.0870)	(0.0862)	(0.291)	(0.262)
Tax consulting	0.732***	-0.259	0.0741	0.545**	0.0741	0.0741	0.322	0.556***	0.556***	0.222	0.942**
	(0.0752)	(0.294)	(0.294)	(0.160)	(0.294)	(0.0515)	(0.338)	(0.0977)	(0.0977)	(0.295)	(0.285)
Both	-0.736***	0.128	-0.00545	-0.576*	-0.0661	-0.102	-0.563	-0.360*	-0.361*	-0.0885	-0.573
	(0.113)	(0.318)	(0.316)	(0.279)	(0.314)	(0.0832)	(0.559)	(0.156)	(0.157)	(0.319)	(0.372)
Observations	192	97	97	32	97	97	32	97	97	97	97
R^2	0.570	0.047	0.014	0.058	0.018	0.004	0.046	0.062	0.060	0.020	0.049
FE	No	No	No	No	No	No	No	No	No	No	No
Cluster	No	No	No	No	No	No	No	No	No	No	No
Sample	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.	Resp.

Standard errors in parentheses

$^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

6.3.1 Implementation Check

We implemented an exit survey with households and businesses as part of the experiment to examine the interventions they received. During the month of January, our surveyors attempted to contact all households and surveys and asked them a series of questions about what exact type of interaction they had with ODEP. We use that information as an implementation check, technically a compliance table. Table 30 shows the results.

Column 1 indicates whether the subject was contacted by ODEP. For both treatments, the level of contact is consistently high, suggesting that 80% of our respondents were indeed contacted by ODEP, and that the two interventions are substitutes, meaning that receiving one, or the other, is sufficient to have had an interaction with ODEP. Columns 2 to 6 examine the actions specific to the protection intervention. Respectively, they indicate whether the respondent was asked about the taxes they paid the previous week, whether an abusing tax collector was caught through the conversation, whether ODEP promised to provide protection on future abuses, whether an abuse was identified, and whether protection provided by ODEP was useful. Column 7 presents the results using a standardized score for all dimensions of the protection intervention. It suggests that protection was implemented in accordance to plan, although with some leakage to non-protected respondents as well. Columns 8 to 11 indicate the compliance check on the consulting outcomes. Respectively, they indicate whether they discussed their taxes, whether they discussed how to voice complaints, whether the information provided was useful, as well as a standardized score for all dimensions of consulting. The results indicate consistently that consulting was properly implemented among the subjects in the consulting group, but that it was also likely implemented among the respondents in the non-consulting group, reflecting the implementation issues discussed above. This is somewhat promising, and suggests that scaling up this intervention is feasible, if complemented by the required capacity support to ODEP. We next examine the effects of the intervention on the subjects' behaviour.

6.3.2 Behavioral Change

Main Effect on Tax Payments, Across Payment Categories

We first examine the effects of the treatments on the amount paid in total taxes, disaggregating by tax payment category. Table 31 shows the results using the baseline specification. Columns 1 to 9 respectively show the effects on the following tax payment categories: education related tax payments, tax payments related to physical goods, tax payments related to life events, such as marriages, taxes related to transport, taxes related to water consumption, taxes related to religious activities, taxes related to formal documentation by the state, taxes related to security actors, hygiene taxes. Column 10 provides a standardized score of all tax categories.

The results from Table 31 indicate consistently, and across specifications (many of which not reported here), that our interventions are associated with a decrease in payments related to education, and payments related to physical goods. These are also the two largest tax payments in the taxpayer basket. According to our smartphone data, they alone account for 45% of all tax expenditures of the households. Both consulting and protection have similar effects on the payments, when implemented in isolation. However, when both are implemented jointly, the effects are close to zero, suggesting that the interventions potentially crowd each other out, and reflecting the implementation issues described above.

Table 31: Main Results, Across Tax Payment Categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Educ	Goods	Life	Trans	Water	Rel	Doc	Sec	Hyg	Zscore
Protection	-0.527+	-0.187	-2.36e-26	0.462	-0.125	-0.00527	-0.0509	0.0995	-0.160	0.160
	(0.314)	(0.157)	(3.81e-14)	(0.424)	(0.233)	(0.00493)	(0.0633)	(0.0804)	(0.342)	(0.231)
Tax consulting	-0.628+	-0.318+	-2.50e-26	-0.0126	0.154	-0.00460	0.0384	0.0304	-0.130	0.0516
	(0.380)	(0.163)	(4.06e-14)	(0.458)	(0.303)	(0.00452)	(0.0859)	(0.0655)	(0.369)	(0.224)
Both	1.203*	0.424+	3.37e-26	-0.106	0.0992	0.00394	0.0366	-0.0761	0.647	-0.312
	(0.535)	(0.249)	(6.01e-14)	(0.662)	(0.381)	(0.00484)	(0.111)	(0.108)	(0.541)	(0.342)
Observations	4081	4081	4081	4081	4081	4081	4081	4081	4081	695
R^2	0.140	0.033	.	0.143	0.080	0.021	0.026	0.031	0.104	0.122
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent
Sample	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly

Standard errors in parentheses

$^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Main Effect on Tax Payments, by Taxpayer and Type of Tax

We then examine the effects of our experimental interventions on the amount paid in total taxes, disaggregating this time by the respondents who are households, and those who are businesses. Furthermore, for each, we examine the taxes depending on whether they are formal payments (negotiated or not) or informal payments (thus, clearly not using the state tax code as a cover). Table 32 shows the results using the baseline specification. Columns 1 to 5 show the results for households, and columns 6 to 10 show the results for businesses.

We begin by presenting the results for households. Column 1 shows the total effects for households. It indicates that the tax consulting intervention is able to decrease total payments among households. Column 2 and 3 indicate that this reduction among households stems from decreases in formal taxes, as well as informal taxes. Columns 4 and 5 indicate that the decrease in payments stems mostly from a decrease in payments to non-state actors. Note that formal and informal taxes can be collected by state and non state actors alike. The results suggest that the decrease in education and goods payments mostly reflects, for households, a decrease in payments to non-state actors as a result of our interventions, especially tax consulting. We also find, while unreported here, that the tax consulting intervention leads households to negotiate their tax payments 18% more often, consistent with the empowering effect of the intervention.

We then examine the effects on businesses. Column 6 indicates that tax consulting and protection, when implemented in isolation, decrease total tax payments made by businesses, although the two effects seem to crowd each other out when implemented together. Columns 7 and 8 indicate that all of the effects on businesses stem from a decrease in formal taxes, although, again, the interventions seem to crowd each other out when implemented together, which likely reflects implementation issues, but also raises some concerns about robustness. Columns 9 and 10 indicate that these decreases stem from decreases in payments to state actors and non-state actors alike, though again crowding out between the two interventions is a source of concern.

Table 32: Main Results, Across Tax Payer Type and Tax Formality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	HH Total	HH Formal	HH Informal	HH State	HH Non-state	Bus Total	Bus Formal	Bus Informal	Bus State	Bus Non-state
Protection	-6.501	-8.501	1.532	1.346	-9.942	-65.17*	-60.76+	-38.74	-47.47	-40.04*
	(7.995)	(6.897)	(6.831)	(7.359)	(6.537)	(30.77)	(34.86)	(26.17)	(29.44)	(19.17)
Tax consulting	-12.54+	-15.56*	-10.92*	-1.658	-16.92***	-420.6**	-413.8**	-163.1	-380.9**	-315.4***
	(6.353)	(6.328)	(4.688)	(6.026)	(4.907)	(126.1)	(144.9)	(99.02)	(126.8)	(72.76)
Both	9.346	7.631	12.27	-0.558	17.71*	513.7**	500.6**	218.9+	461.3**	373.4***
	(10.01)	(9.410)	(7.468)	(9.306)	(8.476)	(151.8)	(174.4)	(121.6)	(152.2)	(91.36)
Observations	1822	1822	1822	1822	1822	877	877	877	877	877
R^2	0.204	0.224	0.253	0.150	0.243	0.391	0.382	0.339	0.325	0.392
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent
Sample	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly

Standard errors in parentheses
$^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Main Effect on Tax Payments, by Tax Payer and Type of Tax

Finally, Table 33 and Figure 7 report results for the advocacy campaign intervention carried out by ODEP toward the end of the reporting period.

Table 33 shows the ordinarily least squares results. Column 1 presents the baseline differences in differences specification, where the post variable indicates weeks *after* we launched the implementation campaign, and the variable campaign indicates the neighborhoods that we randomly selected, within each commune, to receive the advocacy campaign. Thus the coefficient Campaign indicates the effect of being selected for the campaign, before the campaign occurs—it thus simply reflects a selection effect. The coefficient on post indicates the time effect of weeks after the campaign, for neighborhoods that were not selected. The coefficient Campaign X Post indicates the marginal effect of the post period among the neighborhoods selected for the campaign, thus how much more the post time period affects payments to targeted neighborhoods relative to all other. Thus, it measures the treatment effect of our advocacy intervention, if it was well implemented.

Columns 1 to 3 present the results using the baseline specification, while column 2 adds controls, and column 3 adds respondents' fixed effects. The columns show that total tax payments decrease after the campaign launch, and that this decrease is larger among targeted neighborhoods—although this additional decrease is only marginally significant, suggesting there may be some effect, but that we do not have very strong confidence that this effect reflects a real change. Importantly, the coefficient on post likely reflects that implementation was imperfect, as it targeted all neighborhoods, thus decreasing payments significantly in all locations. The effect vanishes when we add controls, but it vanishes because of the addition of "visits per week". However, when we examine the data more closely we find that tax collectors were much less likely to visit households during the post period, suggesting that the campaign may have deterred tax collectors from going "fishing for taxes". While the results of this econometric specification are thus indicative of an effect they are not entirely conclusive, nor reflective of the actual treatment, owing

to the absence of an effective control group – it could, instead, be that tax payments declined everywhere in this period for other reasons, such as a seasonal downturn before the Christmas period.[18]

Table 33: Main Results of the Advocacy Campaign

	(1) Total taxes	(2) Total taxes	(3) Total taxes
Campaign	0.559	0.658**	
	(0.458)	(0.225)	
Post	-0.761**	0.186	-0.601**
	(0.239)	(0.199)	(0.195)
Campaign X Post	-0.238	-0.345	-0.166
	(0.319)	(0.246)	(0.291)
Gender		0.305	
		(0.243)	
Education		-0.0739	
		(0.118)	
Log tax burden		0.179***	
		(0.0408)	
Network Z-score		-0.202*	
		(0.0974)	
Visits in week		1.987***	
		(0.104)	
Protection		0.226	
		(0.275)	
Tax consulting		0.00816	
		(0.229)	
Observations	3568	2795	3568
R^2	0.010	0.551	0.503
FE	No	No	Respondent
Cluster	Respondent	Respondent	Respondent
Sample	Weekly	Weekly	Weekly

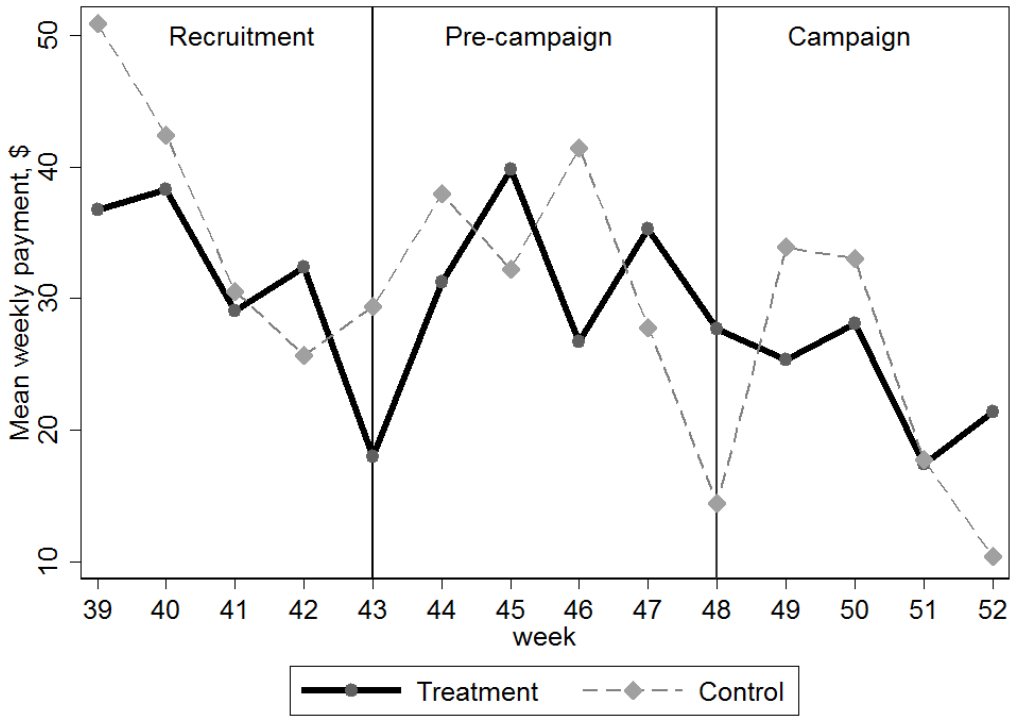
Standard errors in parentheses
$^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Figure 6 indicates the evolution of tax payments for the neighborhoods that were assigned to control, and those that were not. Note that the system is fully in place

[18] Anecdotally, we heard suggestions that payments may increase near the holiday period, owing to a demand for funds from public officials. But we cannot rule out the opposite possibility driving our results.

beginning in week 43, and the official start date of corrected implementation is week 48. At week 45, however, ODEP started the implementation of the campaign while *not* respecting the randomization protocols, thus announcing a citywide advocacy campaign. The overall downward slope from Week 45 thus presents what the experimental results might look like if scaled up, but we would expect clearer divergence between the black and dotted lines if a more effective control group were maintained during implementation

Figure 6: Main Results of the Advocacy Campaign, Assuming Proper Implementation



As indicated above, the statistical analysis picks up a decrease in overall tax payments after week 48, and this decrease is due entirely to a decrease in visits by tax collectors. We thus present in Figure 7 the evolution of tax visits by tax collectors, and overall tax payments, this time not disaggregating by treatment and control, since implementation was not respected, but instead reflecting the patterns of implementation: everyone was treated after week 45. The figure clearly indicates the presence of a very strong deterrence of visits by tax collectors. This decrease could reflect the deterrence effect of the campaign. Because randomization is not cleanly implemented, it may also reflect the

tax collection cycle by the state. We believe this evidence strongly indicates the potential of such campaigns, and thus argues for scaling up this pilot to obtain both strong effects, and a cleanly identified study.

Figure 7: Main Results of the Advocacy Campaign, Accounting for Coarse Implementation

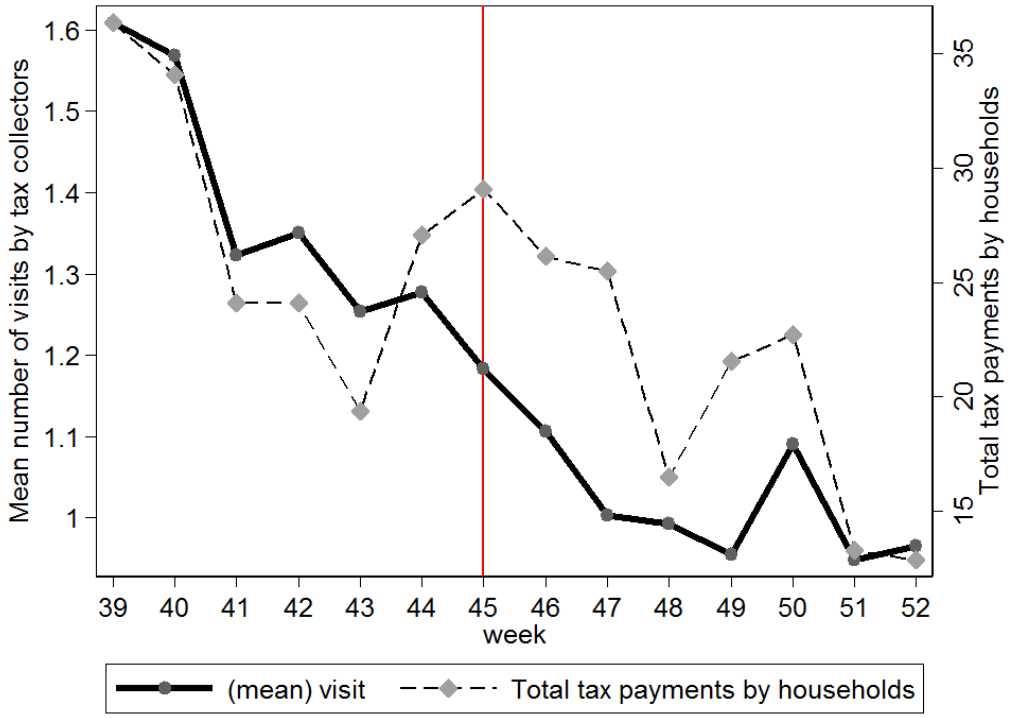


Table 34 below presents the statistical equivalent to Figure 6 above. We define the treatment as weeks after week 45. Columns 1 to 4 indicate the results for total payments, and 5 to 8 for mean tax collector visits. Columns 1 to 3 replicate the specifications used in columns 1 to 3 (and respectively 5 to 8) in Table 33 above. Columns 4 and 8 include in addition week fixed effects to account for trends in a non-linear fashion.

Table X: Main results of the advocacy campaign, accounting for implementation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total taxes	Total taxes	Total taxes	Total taxes	Visits in week	Visits in week	Visits in week	Visits in week
Post	-1.180***	-1.124***	-0.890***	-2.010***	-0.479***	-0.477***	-0.429***	-0.704***
	(0.137)	(0.145)	(0.149)	(0.277)	(0.0559)	(0.0561)	(0.0581)	(0.0881)
Gender		0.477				0.126		
		(0.484)				(0.162)		
Education		0.0479				0.0262		
		(0.180)				(0.0594)		
Log tax burden		0.387***				0.114***		
		(0.0868)				(0.0292)		
Network Z-score		-0.197				0.0252		
		(0.229)				(0.0932)		
Observations	4495	3752	4495	4495	4461	3730	4461	4461
R^2	0.014	0.054	0.462	0.472	0.019	0.050	0.511	0.522
FE	No	No	Respondent	Respondent	No	No	Respondent	Respondent
Cluster	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent	Respondent
Sample	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly

Standard errors in parentheses

$^{+}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Overall, the results are encouraging, and reflect limited implementation capacity by one of the most well known civil society organizations. We detect weak effects of the tax consulting and protection interventions, on tax payments and on the tendency of households to negotiate their taxes. Imperfections in the implementation of randomization, and relatively small sample sizes overall, limit the strength of the result.

More broadly, all of the results reported here are consistent with the smartphone reporting being very successful in capturing tax payments, while we have matching qualitative evidence that the interventions were well received by respondents. We thus believe that there is a very significant potential to consider *replicating* and *scaling up* this experiment pilot to more households and businesses, over longer periods of time, to capture more fundamental changes, as well as to capture the same changes more precisely, with better statistical power, while investing significantly in building capacity at ODEP in order to guarantee perfect implementation.

7 Policy Implications

The central goal of this project has been to understand total tax burdens in the DRC, comprising formal payments to the state, informal payments to the state and informal payments to non-state actors. This is valuable for a variety of reasons, including: (a) understanding the burden of these payments on the livelihoods of low-income households and businesses, (b) understanding potential fiscal losses to the state, (c) exploring strategies for reducing abuses, and (d) more broadly, casting light on the broader functioning of the Congolese state, and the relationship of taxpayers to it. With the exception of the information and protection experiment we have not explicitly tested specific policy options. However, the results point toward a range of potential directions for policy reform.

The evidence makes clear that simply strengthening enforcement and oversight of tax collectors is probably not an appropriate nor sufficient answer to improving revenue collection. A broader focus on questions of equity, fiscal decentralization and service

provision is needed. Average taxpayers—generally with very low incomes—already pay significant formal and informal taxes. These payments represent a significant burden on the financial resources of households required in order to satisfy state and non-state demands and access essential services that are often provided or subsidized by governments elsewhere. There appears to be limited space or justification for additional extraction, on average, from existing taxpayers. Illustratively, the total burden of direct payments on median households in the DRC is comparable to that in OECD countries, at about 10% of household income (exclusive of social security contributions). Meanwhile, whereas this burden falls sharply for low income households in the OECD, it increases for low income households in the DRC. The story is still more extreme if we focus on payments as a share of wealth, which are almost an order of magnitude higher in the DRC than in OECD countries. And this is the cost of direct taxes alone, and does not account for the cost of indirect taxation, which could easily take the total burden of taxes to 20-30%, or more.

Instead reform should likely focus on reducing burdens on those who are already paying too much, increasing burdens on those who currently escape taxation, reducing the scope for illegal extraction from taxpayers, and pursuing more systemic reform aimed at bringing a larger share of existing payments into government budgets. A variety of steps could contribute towards achievement of these goals.

One goal of reform efforts should be to improve revenue collection and overall equity in the distribution of the tax burden by strengthening enforcement of income and property taxes. This study reveals inequalities across taxpayers in the level of taxes that they pay, which suggests high burdens on some taxpayers, and significant lost revenue from those who do not pay. Part of existing inequality stems from the fact that the taxes that are expected to be most important to both revenue and equity—income taxes and property taxes—appear to be relatively rarely collected, even in urban areas. This ensures that the wealthy pay comparatively few taxes as a share of income, while those with lower incomes bear an equal or heavier burden. This, of course, also results in lower government revenues overall. Official data from Kinshasa, North Kivu and Kasai

Oriental indicate that taxes on rental income appear to be the most important source of local tax revenue, but that property taxes provide only a fraction of the same revenue. Meanwhile, both remain far below their likely potential in absolute terms: In North Kivu, for example, revenues related to property (including taxes on rental income) amount to less than US$3 per household according to government accounts, while our survey suggests that this low level of collection is an accurate reflection of the reality for most households.

Meanwhile, there is a strong case for simplifying the remaining tax system – effectively replacing the huge array of existing payments with a more narrow focus on a smaller number of productive and equitable sources of revenue. There are substantial differences in burdens among taxpayers at similar income levels. These uneven tax burdens appear linked to the nature of the tax system itself, which is dominated by a very wide array of taxes collected at relatively flat rates on specific types of activities. Those who engage in these activities have very high tax burdens, while others pay very little. Meanwhile reliance on direct payments for essential services eliminates significant potential for redistribution. At the same time, the complexity of the existing tax system creates broad scope for corruption in tax collection, as it generates confusion, and makes monitoring virtually impossible. Among other things, taxpayers themselves have limited understanding of what taxes they are expected to pay, and at what rates, thus making them much more vulnerable to informal demands. In turn, collusion between taxpayers and tax collectors also appears to be a strategy borne of necessity: if all of the taxes contained in the Congolese tax code were fully enforced, many individuals would be required to pay unmanageably large shares of income in taxes. In this sense, some measure of collusion may be an inevitable feature of an excessively complex system. By reducing the number of payments provided for under the law – potentially dramatically – greater equity and formality could likely be achieved.

The importance of, and potential for, simplification is apparent in official government data, which reveals limited revenue collection from most payment types. While most provinces do not have highly disaggregated revenue collection data, such data is available

from North Kivu. It reveals that while the nomenclature contains over 400 potential payment types for local collection, only 157 of these payments actually deliver any revenue to the provincial budget. Of these 157 payment types, 10 types of payments account for 66% of all government revenue, 80% of all payment types provide $50,000 or less to the government budget, and 62% of all payments types provide less than $10,000. Illustratively, simply eliminating all payment types that currently provide no revenue, as well as the 100 least important payment types, would reduce total government revenue by only 2%, while dramatically simplifying the system, reducing the scope for abuses and informality and, most likely, also reducing existing inequities.

Reform could also be undertaken to attempt to curb the scope for abuses by revenue collectors more directly. For example, governments could do more to publicly post information on legally required payments, and their amounts. They could likewise seek to increase the ability of citizens to make payments directly at banks, or using mobile technology, in order to minimize face to face interactions with collectors, which offer greater scope for informality. Even simple measures, such as introducing more reliable procedures for receipts – such that when receipts are given those funds actually enter the government budget – could have benefits. Finally, introducing channels for citizens to raise concerns or appeals against unfair payments could have value.

In attempting to curb abuses there is also a tentative case to be made for strengthening the information available to taxpayers, and empowering organizations that may advocate against abuses on behalf of taxpayers. The survey evidence provides strong descriptive support for the idea that taxpayers may be more vulnerable to extraction owing to their lack of understanding of the tax system. In turn, those with stronger ties to the state are reported to enjoy advantages – something that seems to be reflected in the weakness of income and property taxes in particular. Building on these insights, we have studied the impact of improved information and advocacy support in helping taxpayers to negotiate more effectively with state agents. While the results are not perfect, they offer suggestive evidence that such measures can help taxpayers to resist demands for extraction, thus improving equity in the tax system and reducing informality.

Civil society groups could potentially play a major role in both providing information and advocacy support, and also pushing for broader reform of the tax system. Following the methods employed in this study, civil society groups could establish public campaigns, or targeted hotlines, that could be used to provide greater information about legal payments, and their amounts. They could likely create mechanisms for citizens to report abusive demands for payments by state or non-state actors, and advocate on their behalf. Alternatively, the types of research pursued here to capture informality in payments, and extensive revenue leakage, could be replicated on a more limited scale to support advocacy for broader reform.

However, improving the tax system almost certainly also requires more systemic reform, beginning with efforts to strengthen intergovernmental transfers. Legally mandated fiscal transfers from higher levels of government are rarely, if ever, made in full, thus leaving local governments underfunded, and struggling to finance local salaries and services. In many cases local user fees and demands for informal payments appear to be efforts to finance local costs that should otherwise have been funded by transfers from higher levels of government. In so far as this story is accurate much of the revenue that does not reach the government is *not* 'revenue leakage', in the sense of revenue that is simply being lost to corruption and collusion. Instead, the missing revenue is state financing that is occurring outside of the government budget, without formal record-keeping or oversight. Curbing informality may thus be very difficult without a parallel strengthening of inter-government transfers, and rationalization of local staffing, as local staff will otherwise retain strong incentives to engage in informality.

Finally, because taxpayers are currently making a significant share of payments to non-state actors, successfully bringing more revenue "on-budget" is likely to require improvements in service provision, and strategic thinking about the respective roles of government and non-state groups. An initial response to evidence of large payments to non-state actors might be to suggest that the government move aggressively to minimize these payments, capture that revenue within the government budget, and begin to fill

those gaps in services. Over the long-term this may be a sensible reform strategy—at least in some cases. However, over the short-term this seems less likely. Not only are non-state actors filling gaps in service provision that the government appears to struggle to fill, but in many cases they appear to be as or more trusted than the state. As a result, the government would likely be well served to think about reform in more incremental—and potentially more cooperative – terms. Part of such a strategy could revolve around seeking to build trust among citizens, such that citizens become more enthusiastic about payments to the state, rather than non-state actors, for service provision. Another element could lie in efforts to understand which informal payments are most destructive of local welfare, and which appear to be contributing to local service provision, and focusing on curbing more damaging payment types.

8 Future Work

This study has been, to our knowledge, the first of its kind anywhere in Africa, or the developing world more broadly. The picture of the total burden of payments that it presents is correspondingly relatively unprecedented, and offers a wide array of avenue for future work that builds on this rich and novel empirical foundation. Furthermore, the data collection process pioneered the use of smartphones to collect regular data on tax payments—with the data collected indicating that such regular data collection is, in fact, critical to adequately capturing formal and informal tax payments in complex tax environments like the DRC. We thus conclude by seeking to highlight potential directions for future work.

8.1 Deepening Understanding of the Local Dynamics of Formal and Informal Taxation

One direction for future work is to "drive-down" to the local level, in order to better understand the detailed functioning of systems of formal and informal taxation at the local level—and how they change. We now have rich data about the wide variety of

payments that people make, about the formality or informality of those payments, and about how they experience and feel about those payments. We have less information about how these systems function locally, and how they vary. How do revenue collectors themselves understand their role, and what shapes their behavior? How are different types of payments subsequently used by those collecting the revenue? How do different revenue collectors—both state and non-state—interact with one another, in shaping overall patterns in different locations? What explains variation in what payments are collected, and how, across location? And how does this change?

8.2 Exploring Potential Policy Implications in More Detail

Understanding the details of local practices in greater depth is critical in order to translate these findings into more detailed and precise policy implications. At a broad level, understanding how revenue is used locally is critical to understanding the right direction for reform—is revenue being stolen, with a need to control abuse? Is revenue being used to finance unpaid salaries—and do those officials provide services in turn, and thus warrant those positions? To what extent are user fees being used to finance local services, or are local service monopolies allowing those who control them to extra rents—thus requiring deeper reform? Are non-state actors key service providers to be supported alongside the state, or are they undermining the state, and providing little value to taxpayers? In turn, a push for reform requires not only understanding what reform is desirable, but how to get there. To what extent can reform be pursued at the local level, and what would that reform look like? And to what extent must reform begin with changes to the broader fiscal relationship between levels of government?

8.3 Expanding the Smartphone Program and Experiments

While we have reported important findings here, it is important to recall that the smartphone reporting system, and related experiments, were conceptualized in large part as a pilot project, in order to test the plausibility of this type of approach to tracking tax

payments over time, and in this way evaluating interventions designed to affect outcomes. In this spirit, we seek to summarize key lessons learned.

1) *Most importantly, the pilot offers confidence in the viability of the overall approach, at least in urban areas*

The consistency between the smartphone and baseline survey data encourages confidence in both, and suggests that respondents were able to understand the reporting system and report payments with a reasonable degree of accuracy, and over a significant period of time. This is a significant discovery as, to our knowledge, there is no precedent for employing a similar system for tracking such a complex range of tax payments over time. The potential for employing such a system to track national developments, changes in taxing patterns, or to evaluate specific interventions is significant.

2) *However, operating this type of system for tracking all tax payments is complex, somewhat costly and requires significant ongoing support.*

That said operating such a system is challenging, and careful planning for these challenges needs to be built into any such system in order to ensure success. Without careful attention to these elements such systems are unlikely to be effective. We would note seven elements in particular:

a) Survey design: The range of formal taxes paid by individuals in the DRC is enormously broad—and much broader still if one wishes to capture informal taxes as well. It is thus impractical to ask about each tax individually, but essential to develop a reporting template that can record all payment types with relative consistency, while leading respondents towards a consistent categorization of these payments.

b) Training: Given the complexity of the payments that individuals make thorough training and support for respondents is essential, in order not only to allow them to understand how to use the system, but also what should be reported. Of

particular importance is the sometime fuzzy distinction between payments and expenses: if an individual needs to pay a bribe in order to access fuel, for example, it is important that a respondent report the informal payment, but not the entire cost of fuel. More broadly, clear decisions need to be made, and embedded in the survey, about what should and should not be captured.

c) Support: Detailed training at the launch of such a system is critical but, where the system is relatively complex it is also essential that there be ongoing support, particularly initially, to support respondents in using the system effectively, as confusion and uncertainty are likely.

d) Monitoring: Alongside effective training, it is important that any program include provision for follow-up calls to respondents when they do not submit expected data. In our case a significant share of respondents would forget to submit data in any given week, and dedicated staff were required to follow-up with them – and in some cases to visit them in person in order to encourage continued participation. These strategies were ultimately effective and successful, but need to be borne in mind in planning.

e) Cost: In order to ensure continued reporting over time, we found that it was necessary to pay weekly compensation to respondents, along with a bonus at the end of the program, as they were allowed to keep the smartphone used in the intervention. These weekly payments averaged about $5 per week, inclusive of the phone credit needed to upload data to our server on a weekly basis. These payments were modest in individual terms and, as noted above, this made it necessary to invest human resources in ensuring continued reporting, while it also likely meant that the wealthiest potential respondents were not interested in participating. That said, the payments are cumulatively significant: About $2000 per week for 400 respondents even with low payments—and higher cost if payments were to be increased. These costs could, of course, be lower for less sophisticated data collection.

f) Data cleaning: Irrespective of efforts made to ensure careful training and support, data cleaning is likely to be a significant aspect of any effort to gather detailed data on tax payments. This simply reflects the scope for data entry errors given

the need to enter payment categories, frequencies, amounts, and currencies for a wide array of payments. In our experience data cleaning, for both the survey and smartphone data, has been a time intensive task during the post-survey work.

3) *If the goal is to evaluate civil society interventions then the choice of civil society partner is critical, and any partner is likely to require very intensive supervision in order to ensure strict implementation.*

The basic importance of the civil society partner is obvious, with respect to both expertise and trust. They will need to have the necessary expertise to provide meaningful, accurate and useful information to respondents or other partners. Given the complexity of the tax code this is an already high bar for Congolese civil society, though certainly achievable with the right partners. In turn, the partner must be widely trusted by potential respondents, in order for them to be willing to participate and to provide accurate information. Anecdotal evidence from our field teams, as well as other evidence, suggests that there is widespread mistrust of civil society in many quarters, owing to a fear that they may be aligned with government. While out survey evidence suggests that ODEP was relatively widely trusted—and much more trusted than the government—a still significant portion did not trust them, and experience in the field suggests that this increased the recruitment challenge despite extensive efforts to reassure respondents of our neutrality.

Less obvious is the need for sophisticated partners—and detailed supervision—In order to ensure that any experimental interventions are implemented effectively. Our interventions called for careful randomization, and clear rules about what types of information and messages would be provided to which respondents, and which government officials. Some would receive information consulting, but others would not. Advocacy would be carried out in some locations, but not in others. These rules were intuitive in terms of research design, but unintuitive for an advocacy organization accustomed to offering maximum information and support to those it works with. While ODEP members describe a strong understanding of the randomization protocols, our exit

surveys and results seem to indicate that the treatment randomization was not perfectly implemented. The consulting treatment was comparatively successfully randomized, though still with some evidence of information being provided to individuals outside of the treatment group. The advocacy intervention, by contrast, appears to have been very imperfectly randomized, despite major efforts to define and explain those interventions. Any future efforts will need to be highly sensitive to the need for exceptionally careful monitoring of any intervention by civil society partners.

References

De Herdt, Tom, Kristof Titeca, and Inge Wagemakers. "Making investment in education part of the peace dividend in the DRC." In *Chronic Poverty Research Centre conference "Ten Years of War againt Poverty," Mancheter, UK, September*, pp. 8-10. 2010.

Elan RDC. Impact of Taxation on DR Congo Coffee Exports. Mimeo. (2014a).

Elan RDC. Impact of Taxation on River Transport in DR Congo. Mimeo. (2014b)

Englebert, Pierre, and Emmanuel Kasongo. "Essor provincial et asphyxie locale: Paradoxe des réformes de décentralisation en RD Congo."*Décentralisation et espaces de pouvoir* (2014): 51-63.

Jibao, Samuel S., and Wilson Prichard. "The political economy of property tax in Africa: Explaining reform outcomes in Sierra Leone." *African Affairs* (2015): adv022.

Jibao, Samuel, and Wilson Prichard. "Rebuilding Local Government Finances After Conflict: Lessons from a Property Tax Reform Programme in Post-Conflict Sierra Leone." *The Journal of Development Studies* (2016): 1-17.

Joshi, Anu. What have we learned about tax and gender? Presented at Annual Meeting of the International Centre for Tax and Development, Addis Ababa, Ethiopia, February (2016).

Observatoire de la Dépense Publique (ODEP). 'Rapport de l'enquête sur l'évaluation participative de la transparence dans la collecte et l'utilisation des taxes pour l'amélioration du marché central de Kinshasa.' (2013).

Olken, Benjamin A., and Monica Singhal. "Informal taxation." *American Economic Journal: Applied Economics* 3, no. 4 (2011): 1-28.

Paler, Laura. "Keeping the public purse: An experiment in windfalls, taxes, and the incentives to restrain government." *American Political Science Review* 107, no. 04 (2013): 706-725.

Prud'Homme, Rémy. "Informal local taxation in developing countries."*Environment and planning c: government and policy* 10, no. 1 (1992): 1-17.

Titeca, Kristof, and Célestin Kimanuka. "Marcher dans l'obscurité: le commerce informel transfrontalier dans la région des Grands lacs." (2012).

Weijs, Bart, Dorothea J. Hilhorst, and Adriaan Ferf. *Livelihoods, basic services and social protection in Democratic Republic of the Congo*. Secure Livelihoods Research Consortium; Overseas Development Institute, (2012).

World Bank, Facilitating Cross-Border Trade Between the DRC and Neighbours in the Great Lakes Region of Africa: Improving Conditions for Poor Traders, (2011).